

राजेश कुमार श्रीवास्तव
Rajesh Kumar Srivastava
कार्यकारी निदेशक/पुल एवं संरचना
Executive Director/B&S



भारत सरकार - रेल मंत्रालय
अनुसन्धान अभिकल्प और मानक संगठन
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Government of India-Ministry of Railways
Research Designs & Standards Organization
Lucknow- 226011
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No. CBS/Bridge Insp/Genl Matters

Date: 01.03.2023

1. GM/Con, N.F. Railway
2. All PCEs & CAO(C)s
All Indian Railways
3. Managing Directors
IRCON, RVNL, DFCCIL,
KRCL, MRVC, MRIDCL, HRIDCL

Sub: Abolition of old system of QAP approval processing in RDSO for fabrication inspection and introduction of RDSO model QAPs for quick approvals - for RDSO standard spans of Railway and ROB girders.

1. Under present system of steel girder fabrication inspection, QAP (Quality Assurance Plan) for fabrication of Railway and ROB (Road Over Bridges) steel girders is prepared in each project case and it is sent to RDSO for approval. RDSO after scrutiny from B&S (Bridge & Structures) and M&C (Metallurgical & Chemical) Directorates, approves the QAP with or without corrections.
2. In order to completely wipe away the time taken in approval of these QAPs, RDSO is issuing MODEL QAPs for all cases of fabrication of RDSO standard spans of steel girders- Railway Bridges (Plate Girder type, Composite Girder type and Open Web Girder type) and Road Over Bridges (Bow String Girder type, Open Web Girder type). One Model QAP for each of these five cases has been developed and each Model QAP has a unique MODEL QAP Number as given in the table below:

S.N.	RDSO Standard Type of Steel Girder	MODEL QAP Number
1.	Railway Bridge Girders	
1.1	Plate Girders	RDSO/Infra-II/B&S/RG/PG
1.2	Composite Plate Girders	RDSO/Infra-II/B&S/RG/CG
1.3	Open Web Girders (Through type as well as Under Slung type)	RDSO/Infra-II/B&S/RG/OWG
2.	Road Over Bridges (ROBs)	
2.1	Truss Type Girders (assembled with HSFG bolts at site)	RDSO/Infra-II/B&S/ROB/TTG
2.2	Bow String Girders (assembled by welding at site)	RDSO/Infra-II/B&S/ROB/BSG
2.3	Composite Girders	Model QAP is already issued vide BS-130 (RDSO Guidelines for Fabrication Inspection of RDSO Standards Spans-Composite I-Section Steel Girders for Road Over Bridges (ROBs).

3. **New method of approval:** In the new method of approval, only the Top Sheet bearing the details of project, scope, fabricator, executing agency whether Zonal Railway or Railway PSU, drawings etc. are needed to be filled up and sent to RDSO duly mentioning applicable MODEL QAP numbers from above table. This Top Sheet also contains a declaration that the fabrication work will be carried out as per the applicable MODEL QAP. This Top Sheet shall be signed by representatives of Contractor, Fabricator and Zonal Railway/ Railway PSU (minimum JAG rank officer) as prevailing in the present system of signing QAPs. Only this Top Sheet duly signed by all concerned as mentioned therein shall be sent to RDSO. For this purpose, Top Sheet for each MODEL QAP case is also being issued by RDSO along with MODEL QAP. Approval and confirmation of RDSO regarding undertaking the inspection work shall be quickly issued by RDSO B&S Dte. once Top Sheet(s) duly filled up is received by RDSO.

For record purpose, MODEL QAP sheets duly signed by Zonal railway/ Railway PSU (Minimum JAG rank officer or equivalent), Contractor and Fabricator shall be kept in record by concerned Zonal Railway/Railway PSU. This needs not to be sent to RDSO.

4. If more than one type of girders are involved in a single project then for each type of girder separate Top Sheet is required to be signed and sent to RDSO.
5. **Scope:** Usage of these MODEL QAPs is limited to those cases of fabrication inspection, where RDSO has been chosen as an Inspection Agency and use of RDSO standard drawing is being done. Where other third-party Inspection Agencies like RITES, CEIL, WRI, KRCL etc. are engaged, the QAP shall be approved by the Inspecting Agency chosen. The MODEL QAPs being issued have no bearing whatsoever on the QAP to be followed by these third-party Inspection Agencies for their cases.
6. Inspection calls shall be raised by minimum JAG grade or equivalent officer of Zonal Railway/Railway PSU respectively covering the four points certification as conveyed vide RDSO letter no. CBS/INSP/WBG dated 10.04.2015. This four point certification is supposed to be given directly by officer of Zonal Railway/ Railway PSU, without citing the names of PMCs/other agencies / representatives etc. doing inspection on their behalf and from whom the inspection inputs have been taken.
7. All other processes and instructions issued by RDSO or Railway Board etc. shall remain applicable as before. Cases of QAPs of Non-RDSO span girders shall continue to be processed same as before.
8. The above mentioned MODEL QAPs along with Top Sheets have been uploaded on RDSO Railnet website for easy access of all concerned.
9. It is expected that all fresh QAPs will be processed on above lines under new system. However, QAPs received till 15.03.2023, made as per old system will be processed in RDSO as done previously.

10. Although utmost care has been taken to formulate these instructions and MODEL QAPs, if any discrepancy/ error/ mismatch with previous instructions is still found, the same may kindly be intimated as feedback to RDSO so that the new system may be made flawless. The purpose is to eventually make the system of QAP approval quick and error free.

This is for your kind information and necessary action please.



13/03/2023

(राजेश कुमार श्रीवास्तव)
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Executive Director/B&S

Copy to :

PED/Bridge, Railway Board for kind information please.

MODEL QUALITY ASSURANCE PLAN (QAP) FOR FABRICATION OF RDSO STANDARD RAILWAY PLATE GIRDER**PART-A (TOP SHEET)**

S.No.	Item	Details
1	Name of Project	
2	Zonal Railway jurisdiction	
3	Executing organization of the contract agreement (i.e. Zonal Railway/ Railway PSU)	
4	Contractor Agency	
5	Fabricating Agency	
6	Inspecting Agency	RDSO
7	QAP No.	RDSO/Infra-II/B&S/RG/PG
8	Contract Agreement no. & date	
9	LOA No. & date	
10	Completion date as per Contract Agreement/LOA	
11	Date of MoU Between fabricator and Contractor, if applicable	
12	Scope of fabrication (no. of spans x span length in meter) proposed for fabrication.	
13	Scope of fabrication in MT (Only Railway Plate Girders)	
14.	GAD Approved by	
15	RDSO Drawing Nos. used.	
16.	Specifications	

Note:- It is certified that fabrication work shall be executed as per RDSO model QAP mentioned above.

Contractor	Fabricator	Zonal Railway/Railway PSU	RDSO
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PART B - MODEL QAP

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
1.0	RAW MATERIAL									
1.1	Steel Plates and other Structural Steel Sections	Identification and Co-relation with Mill Test Certificate from Supplier. Source/Brand of steel to be decided as per prevailing instructions issued from Railway Board.	As per Mill Test Certificate & test required by Zonal Railway or Railway PSU from approved Laboratory/ Govt. approved Laboratory/ NABL/ NABCB.	Challan, Mill T.C.	Verification of reference documents	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	1) Steel Plates: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing. 2) Plates 12mm and above thick are fully killed/normalized or control cooled. 3) Rolled Sections or any other structural steel member: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing.	1. Grade and Quality of Steel Plates, structural section to be same as mentioned in the respective approved drawings 2. For other details of structural steel plates and structural section A&C no. 5 of IRS-B1: 2001, IS 2062-2011 and codes referred in these shall be complied as applicable. 3. Raw Material clearance shall be done by Zonal Railway/ Railway PSUs as per prevailing instructions issued from Railway Board.

		Physical Condition i.e.- Pitting, rusting, straightness, rolling defects etc.	Visual	--	Complete Visual inspection	Zonal Railway/ Railway PSU	100%	Fabricator's Record	A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable	
		Mechanical Test as per IS-2062:2011 UTS,YS,%EL, Bend Test	Lab test at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	-	-	Table 2 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	
		Charpy Test at 0 ° C for plates 12 mm thick and above	Lab test at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062-2011	-		
		Chemical Analysis as per IS 2062-2011	Lab test at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062-2011	-	Table 1 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	

		Ultra sonic test for 12mm and above thick plates as per IS-4225/ASTM SA-435/435M	By ASNT level- II operator	-	Lab Test Report	Zonal Railway/ Railway PSUs	100%	-	IS-4225 or ASTM SA-435/435M and codes referred in it as per applicability	
		Dimension	Measurement	Challan	Measurement of dimension		100%	Fabricator's Record & Zonal Railway Record	IS 2062: 2011 or other relevant codes referred in it as applicable	
1.2	HSFG Bolts with DTI washers	Dimensions	Visual / Measurement	Challan and Manufacturer's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per BS-111 (Latest revision)	Fabricator's Record	As per BS – 111 (Latest revision)	Procure from RDSO approved Vendor only.
		Mechanical & Chemical properties	T.C. And tests required from Govt./NABL/ NABCB approved lab as per BS-111 (Latest revision)	Manufacturer Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs				

1.3	Paints and Primers	Verification of Manufacturer's Test Certificate, Inspection Certificate, Challan	Visual	Challan , Manufacture 's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer's Test Certificate	IRS B1-2001, IS:5666, IS:51, IS:104, IS:2339 and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSU
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture 's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.4	Aluminium wire	Properties of Aluminium wire such as Dia, class and purity as mentioned in appendix-VII of IRS B1-2001	Review of reference documents with material	Challan , Manufacture 's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer's Test Certificate	IRS B1-2001, IS:2590 and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSU
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture 's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.5	Welding Consumables	As Per Specification and approved WPSS	Any Test as required	Challan & Manufacture r's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per requirement	Fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per specification and WPSS

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
2.0	Manufacturing Process									
2.1	Layout	Dimension	Measurement with calibrated steel Tape	Approved Drawings	Measurement of dimensions	RDSO	100%	Inspection Report of Inspection officials	Approved fabrication Drawings and relevant IS/IRS codes.	
2.2	Master Plates	Dimension, intersection line,pitch, gauge, Dia. of holes & No. of holes.	Measurement with calibrated steel Tape & gauges.	Approved Drawings	Measurement of dimensions	RDSO	100%	Record for Master Plates on proforma same as of Appendix I(1) proforma given in IRS B1-2001	Approved fabrication drawings, IRS B1-2001 and BS-110 (Latest revision)	
2.3	Preparatory work such as Cutting, Straightening, Edge Preparation, Marking, Drilling, Fit up, Pre-assembly, End finishing	Dimension , freedom from defects	Visual / Measurement with master plates and templates	Inspection Report of Inspection officials & fabricator's record	Visual & Measurement of dimensions	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	Approved fabrication drawings, IRS B1-2001, IS-1852-85 and codes referred in these codes as applicable	--

Sl. No.	Component / Operations	Characteristic checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
3.0	Welding									
3.1	WPSS	Approval of WPSS	Verification	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Verification Reference Documents	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO
3.2	WPQR	1. Witnessing of established WPSS. 2. Witnessing of Welder Qualification test	Visual DT and NDT at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	As per Codal Requirement	Verification of Reference Documents	RDSO	100%	WPQR Sheet to be recorded in presence of RDSO	IS 7307 (Part-1), IS 7310 (Part-1), IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Only RDSO certified welders to be engaged in the job
3.3	Preheating	Measurement of Temperature	Visual with thermal Chalk or Infrared Thermometer	Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--

3.4	Baking of Electrode, flux	To have moisture free electrode and flux	Visual check of Electrodes and heating	As per Manufacture's Recommendation	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001 and other applicable codes.	--
3.5	Selection of Correct Electrodes & flux	Reference to WPSS.	Visual	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per WPSS and other codes applicable.
3.7	Current Condition	Measurement of Amp./Voltage	Visual with Ammeter and Voltmeter	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	As per WPSS and other codes applicable.
3.8	Sequence of Welding	Controlling Distortion	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.9	Provision of Run-on and Run-off Plates	To avoid crater defects	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
4.0	Inspection of Welded components	For Fillet Welds - Visual, D.P. Test, Fillet Size, Penetration, Leg length, Throat thickness etc. .	Visual, Gauge and Macro etching	Approved fabrication Drawings & WPSS	Visual Inspection & Verification of Dimension by Gauge	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	It is to be ensured during fabrication process that fabrication has been done as per the WPSS approved by RDSO and Welders approved by RDSO. This is to be ensured by Zonal Railway/ Railway PSUs and certificate to this effect (By Minimum JAG officer) shall be given in the form of four point certification along with inspection call raised to RDSO

5.0	Inspection of first span in assembled condition	a) Overall length b) Bearing centres c) Height d) Girder Centres e) Squareness f) Verticality g) Camber on Jack (if provided in drawing.) h) Dead Load deflection (Camber without Jack if provided in drawing) i) Dimension j) Fairness of Holes k) Temporary fasteners l) Any Infringement m) Butting of compression members	Visual & Dimensional	Approved Drawings	Complete Dimensional Check of Assembly	RDSO	First span	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	1. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks. 2. Assembly shall be done in Workshop of fabricator only. Fabricator shall ensure that sufficient space is available in workshop for assembly before finalizing the order of fabrication for a particular span.
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6.0	Inspection of Components of 2nd span onwards	i) Overall length ii) Bearing centres iii) Height iv) Girder Centres v) Squareness vi) Verticality vii) Camber if provided in drawing viii) Dimension ix) Fairness of Holes x) Butting of compression flanges	Visual, Dimensional & Structural	Stage clearance Record	Verification of Stage clearance Record	RDSO	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	1. All spans are to be checked in leaf assembled condition 2.RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks.
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7.0	Surface Preparation by Blasting & Metalizing	Surface condition after blasting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record	IRS B1-2001 Appendix- VII IS: 6586, IS:5905 , IS:2590 and codes referred in these codes	1. Clearance shall be given by Zonal Railway/ Railway PSUs
		Surface finish after metalizing	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		

8.0	Cleaning & Painting	Surface condition before painting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record	Clause 39.2.1 and appendix VII of IRS B1-2001, IS: 5666, IS:51, IS:104, IS: 2339 and applicable codes referred in these codes	
		Surface finish after painting	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		
9.0	Final Dispatch including packing, Shipping mark and loading etc.	1. Shipping Mark on all Components as per Approved Fabrication drawings 2. Fixing of Inscription Plate 3. Packing 4. Loading	Visual	Fabricator's Record		Zonal Railway/ Railway PSUs	Random	Approved Fabrication Drawing & Fabricator's record	Approved Fabrication Drawing & Clause 42, 43 and 44 of IRS - B1-2001 and codes referred in these	Site Painting is to be done after assembly and erection of girder on site as per IRS B1-2001

Note: During fabrication, internal inspection are to be done by Zonal Railway/ Railway PSU to ensure that only RDSO approved welders carry out welding as per approved WPSS, work is as per dimensional tolerances & other quality aspects. Zonal Railway/ Railway PSU to satisfy itself before sending Inspection call to RDSO for Assembly or components inspection etc.

MODEL QUALITY ASSURANCE PLAN (QAP) FOR FABRICATION OF RDSO STANDARD RAILWAY COMPOSITE GIRDER**PART-A (TOP SHEET)**

S.No.	Item	Details
1	Name of Project	
2	Zonal Railway jurisdiction	
3	Executing organization of the contract agreement (i.e. Zonal Railway/ Railway PSU.)	
4	Contractor Agency	
5	Fabricating Agency	
6	Inspecting Agency	RDSO
7	QAP No.	RDSO/Infra-II/B&S/RG/CG
8	Contract Agreement no. & date	
9	LOA No. & date	
10	Completion date as per Contract Agreement/LOA	
11	Date of MoU Between fabricator and Contractor, if applicable	
12	Scope of fabrication (no. of spans x span length in meter) proposed for fabrication.	
13	Scope of fabrication in MT (Only Railway composite Girders)	
14.	GAD Approved by	
15	RDSO Drawing Nos. used.	
16	Specifications	

Note:- It is certified that fabrication work shall be executed as per RDSO model QAP mentioned above.

Contractor	Fabricator	Zonal Railway/Railway PSU	RDSO
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PART B - MODEL QAP

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
1.0	RAW MATERIAL									
1.1	Steel Plates and other Structural Steel Sections	Identification and Co-relation with Mill Test Certificate from Supplier. Source/Brand of steel to be decided as per prevailing instructions issued from Railway Board.	As per Mill Test Certificate & test required by Zonal Railway or Railway PSU from approved Laboratory/ Govt. approved Laboratory/ NABL/ NABCB.	Challan, Mill T.C.	Verification of reference documents	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	1) Steel Plates: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing. 2) Plates 12mm and above thick are fully killed/normalized or control cooled. 3) Rolled Sections or any other structural steel member: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing.	1. Grade and Quality of Steel Plates, structural section to be same as mentioned in the respective approved drawings 2. For other details of structural steel plates and structural section A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable. 3. Raw Material clearance shall be done by Zonal Railway/ Railway PSUs as per prevailing instructions issued from Railway Board.

		Physical Condition i.e.- Pitting, rusting, straightness, rolling defects etc.	Visual	--	Complete Visual inspection	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable	
		Mechanical Test as per IS-2062:2011 UTS,YS,%EL,B end Test	Lab test at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	-	-	Table 2 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	
		Charpy Test at 0 ° C for plates 12 mm thick and above	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062-2011	-		
		Chemical Analysis as per IS 2062-2011	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062-2011	-	Table 1 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	

		Ultra sonic test for 12mm and above thick plates as per IS-4225/ASTM SA-435/435M	By ASNT level- II operator	-	Lab Test Report	Zonal Railway/ Railway PSUs	100%	-	IS-4225 or ASTM SA-435/435M and codes referred in it as per applicability	
		Dimension	Measurement	Challan	Measurement of dimension		100%	Fabricator's Record & Zonal Railway Record	IS 2062: 2011 or other relevant codes referred in it as applicable	
1.2	HSFG Bolts with DTI washers	Dimensions	Visual / Measurement	Challan and Manufacturer's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per BS-111(Latest revision)	Fabricator's Record	As per BS – 111 (Latest revision)	Procure from RDSO approved Vendor only.
		Mechanical & Chemical properties	T.C. And tests required from Govt./NABL/ NABCB approved lab As per BS – 111 (Latest revision)	Manufacturer Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs				

1.3	Paints and Primers	Verification of Manufacturer's Test Certificate, Inspection Certificate, Challan	Visual	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer's Test Certificate	IRS B1-2001, IS: 5666 IS: 51, IS: 104, IS: 2339 and applicable codes referred in these codes therein.	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSU.
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.4	Aluminium wire	Properties of Aluminium wire such as Dia, class and purity as mentioned in appendix-VII of IRS B1-2001	Review of reference documents with material	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer's Test Certificate	IRS B1-2001, IS:2590 and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSU.
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.5	Welding Consumables	As Per Specification and approved WPSS	Any Test as required	Challan & Manufacturer's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per requirement	Fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these	As per specification and WPSS.

									codes and specifications	
1.6	Stud	Visual Inspection , dimensions inspection	Test as mentioned in BS 115 (Latest Revision)	Approved Fabrication Drawings and WPSS	100 % Visual inspection & verification of dimension by gauge and test record	Zonal Railway/ Railway PSUs	100%	Test Reports & Fabricator report	Approved Fabrication Drawing, IS 9595-96, IRSB1-2001 and codes as applicable instructions issued by Railway Board also to be followed.	
2.0	Manufacturing Process									
2.1	Layout	Dimension	Measurement with calibrated steel Tape	Approved Drawings	Measurem ent of dimensions	RDSO	100%	Inspection Report of Inspection officials	Approved fabrication Drawings and relevant IS/IRS codes.	
2.2	Master Plates	Dimension, intersection line, pitch, gauge, Dia. of holes & No. of holes.	Measurement with calibrated steel Tape & gauges.	Approved Drawings	Measurem ent of dimensions	RDSO	100%	Record for Master Plates on proforma same as of Appendix I(1) proforma given in IRS B1-2001	Approved fabrication drawings, IRS B1-2001 and BS-110 (Latest Revision)	

2.3	Preparatory work such as Cutting, Straightening, Edge Preparation, Marking, Drilling, Fit up, Pre-assembly, End finishing	Dimension, freedom from defects	Visual / Measurement with master plates and templates	Inspection Report of Inspection officials & fabricator's record	Visual & Measurement of dimensions	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	Approved fabrication drawings, IRS B1-2001, IS- 1852-85 and codes referred in these codes as applicable	--
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3.0	Welding									
3.1	WPSS	Approval of WPSS	Verification	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Verification Reference Documents	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO
3.2	WPQR	1. Witnessing of established WPSS. 2. Witnessing of Welder Qualification test	Visual DT and NDT at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	As per Codal Requirement	Verification of Reference Documents	RDSO	100%	WPQR Sheet to be recorded in presence of RDSO.	IS 7307 (Part-1), IS 7310 (Part-1), IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Only RDSO certified welders to be engaged in the job

3.3	Preheating	Measurement of Temperature	Visual with thermal Chalk or Infrared Thermometer	Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.4	Baking of Electrode, flux	To have moisture free electrode and flux	Visual check of Electrodes and heating	As per Manufacture's Recommendation	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001 and other applicable codes.	--
3.5	Selection of Correct Electrodes & flux	Reference to WPSS.	Visual	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per WPSS and other codes applicable.
3.7	Current Condition	Measurement of Amp./Voltage	Visual with Ammeter and Voltmeter	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	As per WPSS and other codes applicable.
3.8	Sequence of Welding	Controlling Distortion	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--

3.9	Provision of Run-on and Run-off Plates	To avoid crater defects	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
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Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
4.0	Inspection of Welded components	For Fillet Welds - Visual, D.P. Test, Fillet Size, Penetration, Leg length, Throat thickness etc.	Visual, Gauge and Macro etching	Approved fabrication Drawings & WPSS	Visual Inspection & Verification of Dimension by Gauge	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	It is to be ensured during fabrication process that fabrication has been done as per the WPSS approved by RDSO and Welders approved by RDSO. This is to be ensured n by Zonal Railway/ Railway PSUs and certificate to this effect (By Minimum JAG officer) shall be given in the form of four point certification along with inspection call raised to RDSO.

4.1	Stud Welding	Visual Inspection, dimensions inspection, ring test and bend test etc. As applicable, for good penetration & crack free weld.	Test as mentioned in BS 115 (Latest revision)	Approved Fabrication Drawings and WPSS	100 % Visual inspection & verification of dimension by gauge and test record	Zonal Railway/ Railway PSUs	100%	Test Reports & Fabricator report	Approved Fabrication Drawings 9595-96, IRSB1-2001 and codes as applicable instructions issued by Railway Board also to be followed.	
5.0	Inspection of first span in assembled condition	a) Overall length b) Bearing centres c) Height d) Girder Centres e) Squareness f) Verticality g) Camber on Jack h) Dead Load deflection (Camber without Jack) i) Dimension j) Fairness of Holes k) Temporary fasteners l) Any Infringement m) Butting of compression members	Visual & Dimensional	Approved Drawings	Complete Dimensional Check of Assembly	RDSO	First span	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	1. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks. 2. Assembly shall be done in Workshop of fabricator only. Fabricator shall ensure that sufficient space is available in workshop for assembly before finalizing the order of fabrication for a particular

[illegible]

7.0	Surface Preparation by Blasting & Metalizing	Surface condition after blasting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record	IRS B1-2001 Appendix- VII IS: 6586, IS:5905 , IS:2590 and codes referred in these codes	1. Clearance shall be given by Zonal Railway/ Railway PSUs
		Surface finish after metalizing	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		

8.0	Cleaning & Painting	Surface condition before painting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record	Clause 39.2.1 and appendix VII of IRS B1-2001, IS: 5666, IS:51, IS:104, IS: 2339 and applicable codes referred in these codes	
		Surface finish after painting	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		
9.0	Final Dispatch including packing, Shipping mark and loading etc.	1. Shipping Mark on all Components as per Approved Fabrication drawings 2. Fixing of Inscription Plate 3. Packing 4. Loading	Visual	Fabricator's Record		Zonal Railway/ Railway PSUs	Random	Approved Fabrication Drawing & Fabricator's record	Approved Fabrication Drawing & Clause 42, 43 and 44 of IRS - B1-2001 and codes referred in these	Site Painting is to be done after assembly and erection of girder on site as per IRS B1-2001

Note: During fabrication, internal inspection are to be done by Zonal Railway/ Railway PSU to ensure that only RDSO approved welders carry out welding as per approved WPSS, work is as per dimensional tolerances & other quality aspects. Zonal Railway/ Railway PSU to satisfy itself before sending Inspection call to RDSO for Assembly or components inspection etc.

MODEL QUALITY ASSURANCE PLAN (QAP) FOR FABRICATION OF RDSO STANDARD RAILWAY OPEN WEB GIRDER**PART-A (TOP SHEET)**

S.No.	Item	Details
1	Name of Project	
2	Zonal Railway jurisdiction	
3	Executing organization of the contract agreement (i.e. Zonal Railway/ Railway PSU.)	
4	Contractor Agency	
5	Fabricating Agency	
6	Inspecting Agency	RDSO
7	QAP No.	RDSO/Infra-II/B&S/RG/OWG
8	Contract Agreement no. & date	
9	LOA No. & date	
10	Completion date as per Contract Agreement/LOA	
11	Date of MoU Between fabricator and Contractor, if applicable	
12	Scope of fabrication (no. of spans x span length in meter) proposed for fabrication.	
13	Scope of fabrication in MT (Only Railway Open Web Girder)	
14.	GAD Approved by	
15	RDSO Drawing Nos. used.	
16	Specifications	

Note:- It is certified that fabrication work shall be executed as per RDSO model QAP mentioned above.

Contractor	Fabricator	Zonal Railway/Railway PSU	RDSO
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PART B - MODEL QAP

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
1.0	RAW MATERIAL									
1.1	Steel Plates and other Structural Steel Sections	Identification and Co-relation with Mill Test Certificate from Supplier. Source/Brand of steel to be decided as per prevailing instructions issued from Railway Board.	As per Mill Test Certificate & test required by Zonal Railway or Railway PSU from approved Laboratory/ Govt. approved Laboratory/ NABL/ NABCB.	Challan, Mill T.C.	Verification of reference documents	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	1) Steel Plates: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing. 2) Plates 12mm and above thick are fully killed/normalized or control cooled. 3) Rolled Sections or any other structural steel member: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing.	1. Grade and Quality of Steel Plates, structural section to be same as mentioned in the respective approved drawings 2. For other details of structural steel plates and structural section A&C no. 5 of IRS-B1: 2001, IS 2062-2011 and codes referred in these shall be complied as applicable. 3. Raw Material clearance shall be done by Zonal Railway/ Railway PSUs as per prevailing instructions issued from Railway Board

		Physical Condition i.e.- Pitting, rusting, straightness, rolling defects etc.	Visual	--	Complete Visual inspection	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable	
		Mechanical Test as per IS- 2062:2011 UTS,YS,%EL ,Bend Test	Lab test at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	-	-	Table 2 along with notes below and other relevant clauses of IS- 2062- 2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	
		Charpy Test at 0 ° C for plates 12 mm thick and above	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062- 2011	-		
		Chemical Analysis as per IS 2062- 2011	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062- 2011	-	Table 1 along with notes below and other relevant clauses of IS- 2062- 2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	

		Ultra sonic test for 12mm and above thick plates as per IS-4225/ASTM SA-435/435M	By ASNT level- II operator	-	Lab Test Report	Zonal Railway/ Railway PSUs	100%	-	IS-4225 or ASTM SA-435/435M and codes referred in it as per applicability	
		Dimension	Measurement	Challan	Measureme nt of dimension		100%	Fabricator's Record & Zonal Railway Record	IS 2062: 2011 or other relevant codes referred in it as applicable	
1.2	HSFG Bolts with DTI washers	Dimensions	Visual / Measurement	Challan and Manufacturer's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per BS-111(Latest revision)	Fabricator's Record	As per BS – 111 (Latest revision)	Procure from RDSO approved Vendor only.
		Mechanical & Chemical properties	T.C. And tests required from Govt./NABL/ NABCB approved lab as per BS-111 (latest revision)	Manufacturer Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs				

1.3	Paints and Primers	Verification of Manufacturer's Test Certificate, Inspection Certificate, Challan	Visual	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer's Test Certificate	IRS B1-2001, IS:5666, IS:51, IS:104, IS:2339 and applicable codes referred in these codes therein.	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSUs.
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.4	Aluminium wire	Properties of Aluminium wire such as Dia, class and purity as mentioned in appendix-VII of IRS B1-2001	Review of reference documents with material	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacture's Test Certificate	IRS B1-2001, IS:2590 and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSUs.
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.5	Welding Consumables	As Per Specification and approved WPSS.	Any Test as required	Challan , Manufacture's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per requirement	Fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per specification and WPSS.

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
2.0	Manufacturing Process									
2.1	Layout	Dimension	Measurement with calibrated steel Tape	Approved Drawings	Measurement of dimensions	RDSO	100%	Inspection Report of Inspection officials	Approved fabrication Drawings and relevant IS/IRS codes.	
2.2	Master Plates	Dimension, intersection line,pitch, gauge, Dia. of holes & No. of holes.	Measurement with calibrated steel Tape & gauges.	Approved Drawings	Measurement of dimensions	RDSO	100%	Record for Master Plates on proforma same as of Appendix I(1) proforma given in IRS B1-2001	Approved fabrication drawings, IRS B1-2001 and BS-110 (Latest revision)	
2.3	Preparatory work such as Cutting, Straightening, Edge Preparation, Marking, Drilling, Fit up, Pre-assembly, End finishing	Dimension , freedom from defects	Visual / Measurement with master plates and templates	Inspection Report of Inspection officials & fabricator's record	Visual & Measurement of dimensions	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	Approved fabrication drawings, IRS B1-2001, IS-1852-85 and codes referredin these codes as applicable	--

Sl. No.	Component / Operations	Characteristic checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
3.0	Welding									
3.1	WPSS	Approval of WPSS	Verification	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Verification Reference Documents	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO
3.2	WPQR	1. Witnessing of established WPSS. 2. Witnessing of Welder Qualification test	Visual DT and NDT at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	As per Codal Requirement	Verification of Reference Documents	RDSO	100%	WPQR Sheet to be recorded in presence of RDSO.	IS 7307 (Part-1), IS 7310 (Part-1), IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Only RDSO certified welders to be engaged in the job
3.3	Preheating	Measurement of Temperature	Visual with thermal Chalk or Infrared Thermometer	Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.4	Baking of Electrode, flux	To have moisture free electrode and flux	Visual check of Electrodes and heating	As per Manufacture's Recommendation	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001 and other applicable codes.	--

3.5	Selection of Correct Electrodes & flux	Reference to WPSS.	Visual	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per WPSS and other codes applicable.
3.7	Current Condition	Measurement of Amp./Voltage	Visual with Ammeter and Voltmeter	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	As per WPSS and other codes applicable
3.8	Sequence of Welding	Controlling Distortion	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.9	Provision of Run-on and Run-off Plates	To avoid crater defects	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
4.0	Inspection of Welded components	For Fillet Welds - Visual, D.P. Test, Fillet Size, Penetration, Leg length, Throat thickness etc.	Visual, Gauge and Macro etching	Approved fabrication Drawings & WPSS	Visual Inspection & Verification of Dimension by Gauge	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	It is to be ensured during fabrication process that fabrication has been done as per the WPSS approved by RDSO and Welders approved by RDSO. This is to be ensured by Zonal Railway/ Railway PSUs and certificate to this effect (By Minimum JAG officer) shall be given in the form of four point certification along with inspection call raised to RDSO

5.0	Inspection of trial assembly of first span.	a) Overall length b) Bearing centres c) Height d) Girder Centres e) Squareness f) Verticality g) Camber on Jack h) Dead Load deflection (Camber without Jack) i) Dimension j) Fairness of Holes k) Temporary fasteners l) Any Infringement m) Butting of compression members	Visual & Dimensional	Approved Drawings	Complete Dimensional Check of Assembly	RDSO	First span	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	1. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks. 2. Assembly shall be done in Workshop of fabricator only. Fabricator shall ensure that sufficient space is available in workshop for assembly before finalizing the order of fabrication for a particular span.
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6.0	Inspection of dismantled Components of 1st span and 2nd span onwards	Dimensional check.	Visual and Dimensional	Stage clearance Record	Verification of Stage clearance Record	RDSO	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks.
7.0	Surface Preparation by Blasting & Metalizing	Surface condition after blasting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record	IRS B1-2001 Appendix- VII IS: 6586, IS:5905 , IS:2590 and codes referred in these codes	1. Clearance shall be given by Zonal Railway/ Railway PSUs
		Surface finish after metalizing	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		

8.0	Cleaning & Painting	Surface condition before painting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record	Clause 39.2.1 and appendix VII of IRS B1-2001, IS: 5666, IS:51, IS: 104 IS: 2339 and applicable codes referred in these codes	
		Surface finish after painting	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		
9.0	Final Dispatch including packing, Shipping mark and loading etc.	1. Shipping Mark on all Components as per Approved Fabrication drawings 2. Fixing of Inscription Plate 3. Packing 4. Loading	Visual	Fabricator's Record		Zonal Railway/ Railway PSUs	Random	Approved Fabrication Drawing & Fabricator's record	Approved Fabrication Drawing & Clause 42, 43 and 44 of IRS - B1-2001 and codes referred in these	Site Painting is to be done after assembly and erection of girder on site as per IRS B1-2001

Note: During fabrication, internal inspection are to be done by Zonal Railway/ Railway PSU to ensure that only RDSO approved welders carry out welding as per approved WPSS, work is as per dimensional tolerances & other quality aspects. Zonal Railway/ Railway PSU to satisfy itself before sending Inspection call to RDSO for Assembly or components inspection etc.

MODEL QUALITY ASSURANCE PLAN (QAP) FOR FABRICATION OF RDSO STANDARD TRUSS TYPE ROB GIRDER**PART-A (TOP SHEET)**

S.No.	Item	Details
1	Name of Project	
2	Zonal Railway jurisdiction	
3	Executing organization of the contract agreement (i.e. Zonal Railway/ Railway PSU /NHAI or any other government agency.)	
4	Contractor Agency	
5	Fabricating Agency	
6	Inspecting Agency	RDSO
7	QAP No.	RDSO/Infra-II/B&S/ROB/TTG
8	Contract Agreement no. & date	
9	LOA No. & date	
10	Completion date as per Contract Agreement/LOA	
11	Date of MoU Between fabricator and Contractor, if applicable	
12	Scope of fabrication (no. of spans x span length in meter) proposed for fabrication.	
13	Scope of fabrication in MT (Only ROB Truss Type Girder)	
14.	GAD Approved by	
15	RDSO Drawing Nos. used.	
16	Specifications	

Note:- It is certified that fabrication work shall be executed as per RDSO model QAP mentioned above.

Contractor	Fabricator	Zonal Railway/Railway PSU	RDSO
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PART B - MODEL QAP

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
1.0	RAW MATERIAL									
1.1	Steel Plates and other Structural Steel Sections	Identification and Co-relation with Mill Test Certificate from Supplier. Source/Brand of steel to be decided as per prevailing instructions issued from Railway Board.	As per Mill Test Certificate & test required by Zonal Railway or Railway PSU from approved Laboratory/ Govt. approved Laboratory/ NABL/ NABCB.	Challan, Mill T.C.	Verification of reference documents	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	1) Steel Plates: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing. 2) Plates 12mm and above thick are fully killed/normalized or control cooled. 3) Rolled Sections or any other structural steel member: IS 2062:2011 Grade E250 Quality B0 as mentioned in the respective approved drawing.	1. Grade and Quality of Steel Plates, structural section to be same as mentioned in the respective approved drawings 2. For other details of structural steel plates and structural section A&C no. 5 of IRS-B1: 2001, IS 2062-2011 and codes referred in these shall be complied as applicable. 3. Raw Material clearance shall be done by Zonal Railway/ Railway PSUs as per prevailing instructions issued from Railway Board

		Physical Condition i.e.- Pitting, rusting, straightness, rolling defects etc.	Visual	--	Complete Visual inspection	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable	
		Mechanical Test as per IS-2062: 2011 UTS,YS,%EL, Bend Test	Lab test at approved laboratory/ Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	-	-	Table 2 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	
		Charpy Test at 0 ° C for plates 12 mm thick and above	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062-2011	-		
		Chemical Analysis as per IS 2062-2011	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no. section wise as per IS 2062-2011	-	Table 1 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	

		Ultra sonic test for 12mm and above thick plates as per IS-4225/ASTM SA-435/435M	By ASNT level- II operator	-	Lab Test Report	Zonal Railway/ Railway PSUs	100%	-	IS-4225 or ASTM SA-435/435M and codes referred in it as per applicability	
		Dimension	Measure-ment	Challan	Measurement of dimension		100%	Fabricator's Record & Zonal Railway Record	IS 2062: 2011 or other relevant codes referred in it as applicable	
1.2	HSFG Bolts with DTI washers	Dimensions	Visual / Measurem ent	Challan and Manufacturer's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per BS-111(Latest revision)	Fabricator's Record	As per BS – 111 (Latest revision)	Procure from RDSO approved Vendor only.
		Mechanical & Chemical properties	T.C. And tests required from Govt./NAB L/ NABCB approved lab as per BS-111 (latest revision)	Manufacturer Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs				

1.3	Paints and Primers	Verification of Manufacturer's Test Certificate, Inspection Certificate, Challan	Visual	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufactur er's Test Certificate	IRS B1-2001, IS:5666, IS:51, IS:104, IS:2339 and applicable codes referred in these codes therein.	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSUs.
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.4	Aluminium wire	Properties of Aluminium wire such as Dia, class and purity as mentioned in appendix-VII of IRS B1-2001	Review of reference documents with material	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufactur e's Test Certificate	IRS B1-2001, IS:2590 and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the Zonal Railway/ Railway PSUs.
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.5	Welding Consumables	As Per Specification and approved WPSS.	Any Test as required	Challan , Manufacture's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per requirement	Fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per specification and WPSS.
1.6	Stud	Visual Inspection, dimensions inspection	Test as mentioned in BS 115 (latest revision)	Approved Fabrication Drawings and WPSS	100 % Visual inspection & verification of dimension by gauge	Zonal Railway/ Railway PSUs	100%	Test Reports & Fabricator report	Approved Fabrication Drawing, IS 9595-96, IRSB1-2001 and codes as applicable Instructions issued by Railway Board also to be followed.	

					and test record					
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Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
2.0	Manufacturing Process									
2.1	Layout	Dimension	Measurement with calibrated steel Tape	Approved Drawings	Measurement of dimensions	RDSO	100%	Inspection Report of Inspection officials	Approved fabrication Drawings and relevant IS/IRS/IRC codes.	
2.2	Master Plates	Dimension, intersection line,pitch, gauge, Dia. of holes & No. of holes.	Measurement with calibrated steel Tape & gauges.	Approved Drawings	Measurement of dimensions	RDSO	100%	Record for Master Plates on proforma same as of Appendix I(1) proforma given in IRS B1-2001	Approved fabrication drawings, IRS B1-2001 and BS-110 (Latest revision)	
2.3	Preparatory work such as Cutting, Straightening, Edge Preparation, Marking, Drilling, Fit up,	Dimension , freedom from defects	Visual / Measurement with master plates and templates	Inspection Report of Inspection officials & fabricator's record	Visual & Measurement of dimensions	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	Approved fabrication drawings, IRS B1-2001, IS-1852-85 and codes referredin these codes as applicable	--

Sl. No.	Component/ Pre-assembly/ End finishing	Characteristic checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks	
						Inspecting agency	Extent of Inspection				
1	2	3	4	5	6	7	8	9	10	11	
3.0	Welding										
3.1	WPSS	Approval of WPSS	Verification	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Verification Reference Documents	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO	
3.2	WPQR	1. Witnessing of established WPSS. 2. Witnessing of Welder Qualification test	Visual DT and NDT at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	As per Codal Requirement	Verification of Reference Documents	RDSO	100%	WPQR Sheet to be recorded in presence of RDSO.	IS 7307 (Part-1), IS 7310 (Part-1), IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Only RDSO certified welders to be engaged in the job	
3.3	Preheating	Measurement of Temperature	Visual with thermal Chalk or Infrared Thermometer	Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--	
3.4	Baking of Electrode, flux	To have moisture free electrode and flux	Visual check of Electrodes and heating	As per Manufacture's Recommendation	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001 and other applicable codes.	--	

3.5	Selection of Correct Electrodes & flux	Reference to WPSS.	Visual	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per WPSS and other applicable codes.
3.7	Current Condition	Measurement of Amp./Voltage	Visual with Ammeter and Voltmeter	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	As per WPSS and other applicable codes.
3.8	Sequence of Welding	Controlling Distortion	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.9	Provision of Run-on and Run-off Plates	To avoid crater defects	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
4.0	Inspection of Welded components	For Fillet Welds - Visual, D.P. Test, Fillet Size, Penetration, Leg length, Throat thickness etc.	Visual, Gauge and Macro etching	Approved fabrication Drawings & WPSS	Visual Inspection & Verification of Dimension by Gauge	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	It is to be ensured during fabrication process that fabrication has been done as per the WPSS approved by RDSO and Welders approved by RDSO. This is to be ensured by Zonal Railway/ Railway PSUs and certificate to this effect (By Minimum JAG officer) shall be given in the form of four point certification along with inspection call raised to RDSO

4.1	Stud Welding	Visual Inspection, dimensions inspection, ring test and bend test etc. As applicable, for good penetration & crack free weld.	Test as mentioned in BS 115 (latest revision)	Approved Fabrication Drawings and WPSS	100 % Visual inspection & verification of dimension by gauge and test record	Zonal Railway/ Railway PSUs	100%	Test Reports & Fabricator report	Approved Fabrication Drawing IS 9595-96, IRSB1-2001 and codes as applicable and instructions issued by Railway Board are also to be followed.	1. Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO 2: For details of Stud welding refer BS 115 (latest revision)
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5.0	Inspection of trial assembly of first span.	a) Overall length b) Bearing centres c) Height d) Girder Centres e) Squareness f) Verticality g) Camber on Jack h) Dead Load deflection (Camber without Jack) i) Dimension j) Fairness of Holes k) Temporary fasteners l) Any Infringement m) Butting of compression members	Visual & Dimensional	Approved Drawings	Complete Dimensional Check of Assembly	RDSO	First span	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	1. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks. 2. Assembly shall be done in Workshop of fabricator only. Fabricator shall ensure that sufficient space is available in workshop for assembly before finalizing the order of fabrication for a particular span.
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6.0	Inspection of dismantled Components of 1st span and 2nd span onwards	Dimensional check.	Visual and Dimensional	Stage clearance Record	Verification of Stage clearance Record	RDSO	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks.
7.0	Surface Preparation by Blasting & Metalizing	Surface condition after blasting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record	IRS B1-2001 Appendix- VII IS: 6586, IS:5905 , IS:2590 and codes referred in these codes	1. Clearance shall be given by Zonal Railway/ Railway PSUs
		Surface finish after metalizing	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway/ Railway PSUs	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		

8.0	Cleaning & Painting	Surface condition before painting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record	Clause 39.2.1 and appendix VII of IRS B1-2001, IS: 5666, IS:51, IS: 104 IS: 2339 and applicable codes referred in these codes.	
		Surface finish after painting	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		
9.0	Final Dispatch including packing, Shipping mark and loading etc.	1. Shipping Mark on all Components as per Approved Fabrication drawings 2. Fixing of Inscription Plate 3. Packing 4. Loading	Visual	Fabricator's Record		Zonal Railway/ Railway PSUs	Random	Approved Fabrication Drawing & Fabricator's record	Approved Fabrication Drawing & Clause 42, 43 and 44 of IRS - B1-2001 and codes referred in these	Site Painting is to be done after assembly and erection of girder on site as per IRS B1-2001

Note: During fabrication, internal inspection are to be done by Zonal Railway/ Railway PSU to ensure that only RDSO approved welders carry out welding as per approved WPSS, work is as per dimensional tolerances & other quality aspects. Zonal Railway/ Railway PSU to satisfy itself before sending Inspection call to RDSO for Assembly or components inspection etc.

MODEL QUALITY ASSURANCE PLAN (QAP) FOR FABRICATION OF RDSO STANDARD WELDED BOW STRING TYPE ROB GIRDER**PART-A (TOP SHEET)**

S.No.	Item	Details
1	Name of Project	
2	Zonal Railway jurisdiction	
3	Executing organization of the contract agreement (i.e. Zonal Railway/ Railway PSU/NHAI or any other government agency)	
4	Contractor Agency	
5	Fabricating Agency	
6	Inspecting Agency	RDSO
7	QAP No.	RDSO/Infra-II/B&S/ROB/BSG
8	Contract Agreement no. & date	
9	LOA No. & date	
10	Completion date as per Contract Agreement/LOA	
11	Date of MoU Between fabricator and Contractor, if applicable	
12	Scope of fabrication (no. of spans x span length in meter) proposed for fabrication	
13	Scope of fabrication in MT (Only Bow String Girder(s))	
14.	GAD Approved by	
15	RDSO Drawing Nos. used	
	RDSO Drawing no. for ISMB Intermediate Cross Girders	RDSO/B-10413
16	Specifications	

Note: It is certified that fabrication work shall be executed as per RDSO model QAP mentioned above.

Contractor	Fabricator	Zonal Railway/Railway PSU	RDSO
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PART B - MODEL QAP

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
1.0	RAW MATERIAL									
1.1	Steel Plates and other Structural Steel Sections	Identification and Co-relation with Mill Test Certificate from Supplier. Source/Brand of steel to be decided as per prevailing instructions issued from Railway Board.	As per Mill Test Certificate & test required by Zonal Railway/ Railway PSUs or RDSO from Govt. approved Laboratory/ NABL/ NABCB	Challan, Mill T.C., Test Report	Verification of reference documents	Zonal Railway/ Railway PSUs	100%	Fabricator's Record	1) Steel Plates: IS 2062:2011 Grade E250 or E350, Quality B0 as mentioned in the respective approved drawing. 2) Plates 12mm and above thick, Plates are fully killed/normalized or control cooled. 3) Rolled Sections or any other structural steel member: IS 2062:2011 Grade E250 or E350, Quality B0 as mentioned in the respective approved drawing.	1. Grade and Quality of Steel Plates, structural section to be same as mentioned in the respective approved drawings 2. For other details of structural steel plates and structural section A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable. 3. Raw Material clearance shall be done by Zonal Railway/ Railway PSUs as per prevailing instructions issued from Railway Board.

		Physical Condition i.e.- Pitting, rusting, straightness, rolling defects etc.	Visual	--	Complete Visual inspection	Zonal Railway/ Railway PSU.	Zonal100%	Fabricator's Record	A&C no. 5 of IRS-B1: 2000, IS 2062-2011 and codes referred in these shall be complied as applicable	
		Mechanical Test as per IS-2062:2011 UTS,YS,%EL,B end Test	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	-	-	Table 2 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	
		Charpy Test at 0 ° C for plates 12 mm thick and above	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no section wise as per IS 2062-2011	-		
		Chemical Analysis as per IS 2062-2011	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	-	Lab Test Report	Zonal Railway/ Railway PSUs	Heat / Cast no section wise as per IS 2062-2011	-	Table 1 along with notes below and other relevant clauses of IS-2062-2011 and codes referred in it, for quality and grade of steel as mentioned in respective drawings as applicable.	
		Ultra sonic test for 12mm and above thick plates as per	By ASNT level- II operator	-	Lab Test Report	Zonal Railway/ Railway PSUs	100%	-	IS-4225 or ASTM SA-435/435M and codes referred in it as per applicability	

		IS-4225/ASTM SA-435/435M								
		Dimension	Measurement	Challan	Measurement of dimension		100%	Fabricator's Record & Zonal Railway Record	IS 2062: 2011 or other relevant codes referred in it as applicable	
1.2	Paints and Primers	Verification of Manufacturer's Test Certificate, Inspection Certificate, Challan	Visual	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer Test Certificate	IRS B1-2001, IS:5666 IS:51, IS:104, IS:2339, and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of the inspecting agency which is responsible for passing of the material
		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan, Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		
1.3	Aluminium wire	Properties of Aluminium wire such as Dia, class and purity as mentioned in appendix-VII of IRS B1-2001	Review of reference documents with material	Challan , Manufacture's Test Certificate	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Each Batch	Manufacturer's Test Certificate	IRS B1-2001, IS:2590 and applicable codes referred in these codes	Test at the approved laboratory suitable for the purpose shall be done as per the instruction of

		Tests as per specification	Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB	Challan , Manufacture's Test Certificate	Verification of Reference Documents		Random	Lab Test Report		Zonal Railway/PSUs
1.4	Welding Consumables	As Per Specification /WPSS	Any Test as required	Challan & Manufacturer's Test Certificate	Verification of reference Documents	Zonal Railway/ Railway PSUs	As per requirement	Fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As Per Specification /WPSS
1.5	Stud	Visual Inspection , dimensions inspection	Test as mentioned in BS 115 (latest revision)	Approved Fabrication Drawings and WPSS	100 % Visual inspection & verification of dimension by gauge and test record	Zonal Railway/ Railway PSUs	100%	Test Reports & Fabricator report	Approved Fabrication Drawing, IS 9595-96, IRSB1-2001 and codes as applicable Instructions issued by Railway Board also to be followed.	

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
2.0	Manufacturing Process									
2.1	Layout as applicable	Dimension	Measurement with calibrated steel Tape	Approved Drawings	Measurement of dimensions	Zonal Railway/ Railway PSUs as delegated vide RDSO letter no. CBS/Insp./ROB dated 24.02.2020	100%	Inspection Report of Inspection officials	Approved fabrication Drawings and relevant IS/IRS/IRC codes.	
2.2	Preparatory work such as Cutting, Straightening, Edge Preparation, Marking, Drilling, Fit up, Pre-assembly, End finishing	Dimension , freedom from defects	Visual / Measurement with master plates and templates	Inspection Report of Inspection officials & fabricator's record	Visual & Measurement of dimensions	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	Approved fabrication drawings, IRS B1-2001, IS-1852-85 and codes referred in these codes as applicable	--

Sl. No.	Component / Operations	Characteristic checked	Frequency & type of check	Reference Document	Fabricator's Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
3.0	Welding									
3.1	WPSS	Approval of WPSS	Verification	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Verification Reference Documents	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO
3.2	WPQR	1. Witnessing of established WPSS. 2. Witnessing of Welder Qualification test	1. Visual DT and NDT at approved laboratory Govt. approved Laboratory/ NABL/ NABCB 2. If butt weld then RT/UT test required.	As per Codal Requirement	Verification of Reference Documents	RDSO	100%	WPQR Sheet to be recorded in presence of RDSO	IS 7307 (Part-1), IS 7310 (Part-1), IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	RDSO certified welders to be engaged in the job
3.3	Preheating	Measurement of Temperature	Visual with thermal Chalk or Infrared Thermometer	Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.4	Baking of Electrode, flux	To have moisture free electrode and flux	Visual check of Electrodes and heating	As per Manufacture's Recommendation	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001 and other applicable codes.	--

3.5	Selection of Correct Electrodes & flux	Reference to WPSS	Visual	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IRS Welded Bridge Code 2001, IRS M28, IRS M39, IRS M46 and other applicable codes referred in these codes and specifications	As per wpss and other applicable codes.
3.7	Current Condition	Measurement of Amp./Voltage	Visual with Ammeter and Voltmeter	As per Approved WPSS	Verification of Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	As per WPSS and other applicable codes
3.8	Sequence of Welding	Controlling Distortion	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	Random	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--
3.9	Provision of Run-on and Run-off Plates	To avoid crater defects	Visual	As per Approved WPSS	Verification Reference Documents	Zonal Railway/ Railway PSUs	100%	Inspection Report of Inspection officials & fabricator's record	IS 9595-96, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	--

Sl. No.	Component / Operations	Characteristic to be checked	Frequency & type of check	Reference Document	Fabricators Quality Control	Inspection Details		Type of record	Acceptance Criteria	Remarks
						Inspecting agency	Extent of Inspection			
1	2	3	4	5	6	7	8	9	10	11
4.0	Inspection of Welded components at workshop	1. For Fillet Welds - Visual, D.P. Test, Fillet Size, Penetration, Leg length, Throat thickness etc. 2. For butt welds – RT/UT test from approved lab.	Visual, Gauge and Macro etching	Approved fabrication Drawings & WPSS	Visual Inspection & Verification of Dimension by Gauge	RDSO	100%	Fabricator's Record	Approved fabrication Drawings, IRS B1-2001, IRS WBC-2001 and codes referred in these codes as applicable	It is to be ensured during fabrication process that fabrication has been done as per the WPSS approved by RDSO and Welders approved by RDSO. This is to be ensured by Zonal Railway/ Railway PSUs and certificate to this effect (By Minimum JAG officer) shall be incorporated in the form of four point certification while raising inspection call to RDSO.

4.1	Stud Welding	Visual Inspection , dimensions inspection , ring test and bend test etc. As applicable, for good penetration & crack free weld.	Test as mentioned in BS 115 (latest revision)	Approved Fabrication Drawings and WPSS	100 % Visual inspection & verification of dimension by gauge and test record	Zonal Railway/ Railway PSUs	100%	Test Reports & Fabricator report	Approved Fabrication Drawing IS 9595-96, IRSB1-2001 and codes as applicable and instructions issued by Railway Board are also to be followed.	1. Welding to be performed following the different specification and parameters mentioned in WPSS approved by RDSO 2: For details of Stud welding refer BS 115 (latest revision)
5.0	Components Inspection of first span and 2nd span onward	a) Overall length b) Cross – section etc.	Visual & Dimensional	Approved Drawings	Complete Dimensional Check of Assembly	RDSO	First span	Inspection Report of Inspection officials & fabricator's record	IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes.	1. Half laydown assembly of first span to be checked by RDSO. 2. There after only components of first and subsequent spans to be checked by RDSO. 3. RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks.

		Surface finish after metalizing	Visual checking	Approved Fabrication Drawing & IRS- B1- 2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS- B1- 2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		
6.0	Surface Preparation by Blasting & Metalizing	Surface condition after blasting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1- 2001 and codes referred in these	Verification of Stage clearance Record	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record	IRS B1-2001 Appendix- VII IS: 6586, IS:5905 , IS:2590 and codes referred in these codes	

7.0	Cleaning & Painting	Surface condition before painting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record	Clause 39.2.1 and appendix VII of IRS B1-2001, IS: 5666 IS:51, IS:104 IS:2339 and applicable codes referred in these codes	
		Surface finish after painting	Visual checking	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	100% by fabricator & Random by Zonal Railway	Fabricator's Record		
		DFT checking	Measurement	Approved Fabrication Drawing & IRS - B1-2001 and codes referred in these	Verification of stage clearance records	Zonal Railway/ Railway PSUs	Minimum one reading per square meter	Measurement Record		
8.0	Final inspection in assembled condition before launching at site. (Including Site welding)	Complete Assembly	Visual & Measurement	Fabricator's Record		RDSO	100%	Approved Fabrication Drawing & Fabricator's record	Approved Fabrication Drawing & Clause 42, 43 and 44 of IRS - B1-2001 and codes referred in these	RDSO inspection call to be raised by Zonal Railway/ Railway PSUs in the form of 4 point certification after satisfactory quality checks.

Note: During fabrication, internal inspection are to be done by Zonal Railway/ Railway PSU to ensure that only RDSO approved welders carry out welding as per RDSO approved WPSS, work is as per dimensional tolerances & other quality aspects. Zonal Railway/ Railway PSU to satisfy itself before sending Inspection call to RDSO for Assembly or components inspection etc.