

SAMPLE QUALITY ASSURANCE PLAN

30.5m Welded Open Web Girder (25T Loading-2008) as per RDSO's Drg. No. RDSO/B-11678

Name of project

Manufactured by

Workshop Address.....

SN	Component/ Operations	Characteristic Check	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, Structural Section	Identification and correlation with Mill Test Certificate from Supplier e.g., SAIL, TISCO, IISCO etc.	As per Mill T.C. and tests required by RDSO from Govt./NABL approved lab	Challan, Mill T.C.	Verification of reference document	..... Railway	100%	Fabricator's record	Plates: IS 2062-2006, Gr. E 250 B0, 12mm & above thick. Plates are fully killed & normalized or control cooled. Sections IS 2062-2006, Gr. E 250 B0/A	
		Physical condition i.e., Pitting, rusting, straightness, rolling defect, etc.	Visual	-	Complete visual inspection Railway	100%	Fabricator's Record	IS 2062- 2006	-

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1	2	3	4	5	6	7	8	9	10	11
		Mechanical Test as per IS 2062-2006 UTS, YS, % El, Bend test,	Lab Test at appvd. Laboratory	-	Lab Test Report Railway	-	-	IS 2062-2006 Gr. E 250 B fully killed & normalized or control cooled	Raw matl. Clearance shall be by Zonal Railway
		Charpy test at 0°C for plates of thks. 12mm and above	-Do-	-	-Do-	..... Railway	Heat/Cast no. section wise as per IS 2062-2006	-	-	-
		Chemical Analysis as per IS 2062-2006	-Do-	-	-Do-	..... Railway	-Do-	-	Table 1, along with Note No. 2 of IS 2062-2006, Gr. E 250 B	
		Ultrasonic test for 12mm & above thi. Plates, as per IS 4225 or ASTM-SA 435/435M	By ASN Level II operator	-	Lab Test Report	..... Railway	100%	-	IS 4225 or ASTM SA 435/435M	
		Dimensions	Measurement	Challan	Measurement of Dimension	..... Railway	100%	Fabricator's Record & Zonal Railway Records		
1.2	Rivets, Bolts & Nuts	a) Dimensions	Visual/ Measurement	Challan	Verification of Reference Document	..... Railway	As per requirement	-	For Rivet IS 1148 For Bolt: IS 1367(Part ii) & property classes as per relevant Drg.	
		b) As per specn. Mechanical & Chemical	Lab test at Govt. appvd. Lab	Manufacturer's Test Certificate	-Do-	-Do-	-Do-	-Do-	-Do-	

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1.3	Paints	Verification of Manufacturer's Test Certificate, Inspection Certificate, Challan	Visual	Challan., Manufacturer's Test Certificate	Verification of Reference Document Railway	Each Batch	Manufacturer's Test Certificate	IS 102, Contract agreement	Paints to be procured from vendors approved by RDSO
		Tests as per Specification	Lab test at Govt. Appvd. Lab	Challan., Manufacturer's Test Certificate	Verification of Reference Document	..... Railway	Random	Lab. Test Report	IS 102 Contract agreement	-Do-
1.4	Welding Consumables	As per specification and as approved by RDSO	Any test as required	Challan., Manufacturer's Test Certificate	Verification of Reference Document	..... Railway	As per requirement	Fabricator's Record	-	Consumables should be of RDSO appvd. Brand
2.0	Manufacturing Process									
2.1	Lay out of Components & Joints	Dimension	Measurement with calibrated steel tape & gauges	Approved Drawing	Measurement of Dimension	RDSO	100%	Inspection Report of Inspection Official	Relevant IS/IRS Codes & Approved Drawings	Clearance by RDSO
	a) Normal									
	b) Jigs & Templates	Dimension, Intersection lines, pitch, gauge, dia. Of Holes & No. of holes	Measurement with calibrated steel tape & gauges	Approved Drawing	Measurement of Dimension	RDSO	100%	Record of Jigs & fixtures as per proforma issued by RDSO	IRS B1-2001	Clearance by RDSO
	c) Cutting, Straightening, Edge preparation	Dimension, Freedom from defect	Visual/ Measurement	Inspection Report of Inspection Official & Fabricator's Record	Visula& Measurement of dimension	..... Railway	100%	Inspection Report of Inspection Official & Fabricator's Record	IRS B1-2001, IS 1852-85	
3.0	Welding:									
	a) WPSS	Review of WPSS	Verification	IRS B1-2001 IS 9595-96 WBC-2001	Verification of Reference Document	RDSO	100%	Fabricator's Record	IRS B1-2001 IS 9595-96 WBC-2001	Only RDSO certified welders to be engaged in the job.

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	b) WPQR	Witnessing of established WPSS Witnessing of Welder Qualification test	Visual, DT & NDT at approved lab	As per code requirement	Verification of Reference Document	RDSO	100%	WPQR Sheet to be recorded in presence of RDSO Rep.	IS 7310(l)-74	
	c) Preheating	Measurement of Temperature	Visual with thermal Chalk	As per approved WPSS	Verification of Reference Document	..... Railway	Random	Inspection Report of Inspection Official & Fabricator's Record	IRS B1-2001	
	d) Baking of Electrode, Flux	To have moisture free Electrode & Flux	Visual Check of Electrodes & beating	As per Manufacture's recommendations	Verification of Reference Document	..... Railway	100%	Inspection Report of Inspection Officials & Fabricator's Record	IRS B1-2001	
	e) Selection of correct Electrodes & Flux	Reference to WPSS, IRS Class, etc.	Visual	As per approved WPSS	Verification of Reference Document	..... Railway	100%	Inspection Report of inspection official & Fabricator's Record	As per list of vendors approved by RDSO	
	f) Current Condition	Measurement of Amp. & Voltage	Visual with Ammeter & Voltmeter	As per approved WPSS	Verification of Reference Document	..... Railway	Random	Inspection Report of Inspection Official & Fabricator's Record	IRS B1-2001	
	g) Sequence of Welding	To control distortion	Visual	As per approved WPSS	Verification of Reference Document	..... Railway	Random	Inspection Report of Inspection Official & Fabricator's Record	IRS B1-2001	
	h) Provision of Run-on & Run off Plates	To avoid crater defects	Visual	As per IRS B1-2001	Verification of Reference Document Railway	100%	Inspection Report of Inspection Official & Fabricator's Record		

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4.0	Inspection of Welding	a) For Fillet Welds: Visual, D.P.Test Fillet Size, Penetration, Leg Length, Throat thickness, etc. b) For butt Welds RT/UT tests, as applicable	Visual, Gauge & Macro Etching.	Approved Drg. & WPSS	Visual Inspection & Verification of dimension by gauges	RDSO	100%	Fabricator's Record	Relevant IS/IRS Code, Approved Drg. & WBC-2001	Clearance by RDSO
5.0	Trial Assembly	a) Camber on Jack b) Dead Load deflection c) Dimension d) Fairness of holes e) Temporary fasteners f) Infringement g) Butting of compression edges	Visual & Dimensional	Approved. Drg.	Complete dimensional check of Control Assembly	RDSO	One complete span	Inspection Report of Inspection Official & Fabricator's Record	IRS B1-2001	Clearance by RDSO
6.0	Final Clearance	Component completeness of 1 st span after dismantling & 2 nd span onwards	Visual Dimensional & Structural	Stage clearance Record	Verification of Stage clearance Record	Day to day inspection by Railways and final inspection by RDSO	Girder fabrication with approved Jigs-100%	Inspection Report of Inspection Official & Fabricator's Record	IRS B1-2001	Initial inspection by Railways and final Clearance by RDSO
7.0	Surface preparation by Shot Blasting & Metalizing	Surface condition after blasting	Visual checking with reference to surface preparation	Approved Fabrication Drawing & IRS B1-2001	Verification of stage clearance records	..... Railway	100% by fabricator & Random by Railway	Fabricators record	IRS B1-2001 Appendix-VII IS: 6586 IS: 5905 IS: 2590.	Clearance shall be given by Zonal Railway
		Surface finish after Metalizing	Visual checking	-Do-	-Do-	..... Railway	-Do-	-Do-		
		DFT checking	Measurement	-Do-	-Do- Railway	Minimum one reading per M ²	Measurement Record		

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8.0	Cleaning & Painting	Surface condition before painting	Visual checking .	Approved Fabrication Drawing & IRS B1-2001	Verification of stage clearance records Railway	100% by fabricator & Random by Railway	Fabricators record	IRS B1-2001 IS:104, IS:51, IS:2339, IS:5666	Clearance shall be given by Zonal Railway
		Surface finish after painting	Visual checking	-Do-	-Do-	..... Railway	-Do-	-Do-		
		DFT checking	Measurement	-Do-	-Do-	..... Railway	Minimum one reading per M ²	Measurement Record		

- Note:
1. During fabrication, internal inspection to be done by Railways to ensure that only RDSO approved welders carry out welding as per approved WPSS, work is as per dimensional tolerances and other quality aspects and should satisfy itself before sending Inspection call to RDSO for Trial Assembly or components Inspection.
 2. For ROB's Inspection/Approval Agency for all stages will be concerned Railways.

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