SOUTH CENTRAL RAILWAY
OFFICE OF THE PRINCIPAL CHIEF ENGINEER,
'A' BLOCK – 5TH FLOOR, RAIL NILAYAM, SECUNDERABAD – 500 003.

e-mail: cgescr@gmail.com Rly No: 86394 CUG: 9701370204

No: SCR-HQ0ENGG(WKS)/29/2025-Dy CE/WORKS/SCR Date: As signed

**CAO/C/SC, CAO/C/RSP,**
**CPM/GS/BZA, I/SC, II/SC, GTL**
**Sr.DEN/Co-Ord/SC,BZA,GTL,GNT,HYB & NED.**
**Dy.CE/EWS/LGD, Sr.DEN/LGDS,**
**Dy.CE/TM/lines/BZA, Dy.CE/CPOH/RYP**

**Sub**: Standardization and System improvement regarding weld testing and quality control for fabrication of FOBs, COPs and Sheds -Reg

**Ref:**

1. BS 140 - Guidelines for fabrication, Quality control, Erection, Inspection and maintenance of Steel Plate/Composite steel girder Foot over bridges.
2. Foot over Bridges in railways -IRICEN Book

* * *

In order to ensure uniformity, quality assurance, and adherence to standard practices during the fabrication and execution of on-site welding activities for Foot Over Bridges (FOBs), Cover Over Platforms (COPs), and Sheds, the following technical guidelines are issued for strict compliance during various fabrication stages and regular maintenance.

**1. Inspection & Approval Schedule**

The inspection and approval process for FOBs, COPs and Sheds shall strictly follow the **Schedule prescribed under Annexure-II of BS-140**, applicable to both Open Line and Construction Organization of zonal railway.

**2. Quality Assurance Program (QAP)**

The standard **Quality Assurance Program (QAP)** shall be adhered to Para 3.0 & as per **Annexure-I of BS-140**, which consists of **Part A**: Detailing the scope and nature of work to be undertaken. **Part B**: Standard Model QAP to be uniformly adopted at all sites.

**3. Welding Procedure Specification Sheet (WPSS)**

All on-site welding works shall be carried out in accordance with the standard **Welding Procedure Specification Sheet (WPSS)** prescribed under Para 4.0 of BS-140 & **Annexure-I of the IRICEN Book on FOBs in Indian Railways**. No deviations shall be permitted without prior technical sanction and approval from the competent authority.

**4. Welding Procedure Qualification Record (WPQR)**

The qualification and competency of welders, as well as the welding process parameters, shall conform to the **Welding Procedure Qualification Record (WPQR)**

Signature Not Verified
Digitally signed by ROLLAKUPPASWAMY KISHORE
Date: 2026.11.10 18:58:45 IST
Reason: IREPS-CRIS
Location: New Delhi

specified in Para 5.0 of BS-140 & **Annexure-II of the IRICEN Book on FOBs in Indian Railways**. All welder qualification records must be maintained on-site and made available for inspection.

**5. General Compliance**

All field officers, supervisors, and contractors shall ensure strict adherence to the technical provisions, inspection protocols, documentation, and maintenance guidelines laid out in **BS-140**.

This is issued with the approval of PCE/SCR.

Encl: Sample proforma for QAP, WPSS & WPQR.

Digitally Signed by
M.a.rehman
Date: 20-08-2025 12:26:14
Reason: Approved
**Chief General Engineer**

**Copy to:** Secy to PCE for kind information
CPD/SD, CBE, CTE, CE/P&D, CE/SD, CE/RSW, CE/TM,CE/TS,
DRM/SC,BZA,GTL,GNT,HYB & NED, Dy.CVO/Engg for kind information.

# Standard QAP for Steel Plate/Composite Steel Girder FOB

## MODEL QUALITY ASSURANCE PLAN (QAP) FOR FABRICATION OF STEEL PLATE/COMPOSITE I-GIRDER TYPE FOB

## PART-A (DETAILS OF WORK)

| S.No | Item | Details |
|---|---|---|
| 1 | Name of Project | |
| 2 | Project falls into Zonal Railwayjurisdiction of | |
| 3 | Executing organization of the agreement (i.e. Zonal Railway/ Railway PSU/NHAI or any other government agency) | |
| 4 | Contractor Agency (Name and address) | |
| 5 | Fabricating Agency (Name and address) | |
| 6 | Inspecting Agency | |
| 7 | QAP No. | |
| 8 | Agreement No./LOA No. | |
| 9 | Date of Agreement/LOA | |
| 10 | Completion date as per Agreement/LOA | |
| 11 | Scope of fabrication (in no. of spans andtonnage) | |
| 12 | Drawing No. | |
| 13 | Any other relevant detail | |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Inspectin gagency | Extent of Inspectio n | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1.0 | **RAW MATERIAL** | | | | | | | | | |
| 1.1 | **Steel Platesand other Structural Steel Sections** | Identification and Co-relation with Mill Test Certificate fromSupplier. Source/Brand of steel to be decided as perprevailing instructions issued from Railway Board. | As per Mill Test Certificate & test certificate from approved Laboratory/ Govt. approved Laboratory/ NABL/ NABCB for the test required by Zonal Railway or Railway PSU. | Challan, MillT.C. | Verification of reference documents | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% | Fabricator'sRecord | Steel Plates or Rolled sections: IS2062:2011 Grade E250 or higher of Quality "A" as mentioned in therespective approved drawings. | 1. Grade and Quality of Steel Plates, structural section to be same as mentioned in therespective approved drawings<br>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.<br>3. Raw Material clearance shall bedone by Zonal Railway/ Railway PSUs as per prevailing instructions issued from Railway Board. |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Physical Condition i.e.- Pitting, rusting, straightness, rolling defects etc. | Visual | -- | Complet eVisual inspectio n | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% | Fabricator' sRecord | 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 Laborator y/NABL/ NABCB | - | Lab Test Report | Proj. Executing Authority of Zonal Railway/ Railway PSUs | - | - | Table 2 along with notes below and other relevant clauses of IS- 2062-2011 and codes referred in it, for qualityand grade of steel as mentioned in respective drawings as applicable. | |
| | | **Chemical Analysis** as per IS 2062-2011 | Lab test at approved laboratory Govt. approved Laborator y/NABL/ NABCB | - | Lab Test Report | Proj. Executing Authority of 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 qualityand 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 operato r | - | Lab Test Report | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% | - | IS-4225 or ASTM SA-435/435M and codesreferred in it as per applicability | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Dimension | Measurement | Challan | Measurement of dimension | | 100% | Fabricator'sRecord & Zonal Railway Record | IS 2062: 2011 or otherrelevant codes referred in it as applicable | |
| **1.2** | **HSFG Boltswith DTI washers** | Dimensions | Visual / Measurement | Challan and Manufacturer'sTest Certificate | Verification of reference Documents | Proj. Executing Authority of Zonal Railway/ Railway PSUs | As per BS - 111 (Latest revision ) | Fabricator'sRecord | 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 labAs per BS – 111 (Latest revision) | Manufacturer Test Certificate | Verification of reference Documents | Proj. Executing Authority of 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 | Proj. Executing Authority of 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 thesecodes therein. | Test at the approved laboratory suitable for the purpose shall bedone as per the instruction of theZonal 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** | **Aluminiumwire** | 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 | Verificationof Reference Documents | Proj. Executing Authority of 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 bedone as per the instruction of theZonal Railway/ Railway PSU. |
| | | Tests as per specification | Lab test at approved laboratory Govt. approved Laboratory/ NABL/ NABCB | Challan , Manufacture's Test Certificate | Verificationof Reference Documents | | Random | Lab Test Report | | |
| **1.5** | **Welding Consumables** | As Per Specification and approved WPSS | Any Test as required | Challan & Manufacturer'sTest Certificate | Verificationof reference Documents | Proj. Executing Authority of Zonal Railway/ Railway PSUs | As per requirement | Fabricator'srecord | IRS Welded Bridge Code 2001, IRS M28,IRS M39, IRS M46 and other applicable codes referred in these codes and specifications | As per specification andWPSS. |
| **1.6** | **Stud** | Visual Inspection , dimensions inspection | Test as mentioned in BS 115 (Latest Revision) | Approved Fabrication Drawings andWPSS | 100 % Visual inspection& verificationof dimensionby gauge and test record | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% | Test Reports & Fabricatorreport | Approved Fabrication Drawing, IS 9595-96, IRSB1-2001 and codes as applicable instructions issued byRailway Board also tobe followed. | |
| **2.0** | **Manufacturing Process** | | | | | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **2.1** | **Layout** | Dimension | Measurement with calibrated steel Tape | Approved Drawings | Measurement of dimensions | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% | Inspection Report of Inspection officials | Approved fabrication Drawings and relevantIS/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 | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 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 Preparatio n, 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 & Measure m ent of dimensio ns | Proj. Executing Authority of 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 thesecodes as applicable | -- |
| **3.0** | **Welding** | | | | | | | | | |
| **3.1** | **WPSS** | Approval ofWPSS | Verification | IS 9595-96, IRS B1-2001,IRS WBC-2001 and codes referred in these codes as applicable | Verification Reference Documents | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 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 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **3.2** | **WPQR** | i) Witnessing of established WPSS.<br>ii) 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 | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% | WPQR Sheet to be recorded in presence Project Exceuting Authoriyu pf Zonal Railway/ Railway PSU | IS 7307 (Part-1), IS 7310 (Part-1), IRS B1-2001, IRS WBC-2001 and codes referred in thesecodes as applicable | Only welders approved by Project Executing Agency to be engaged in the job |
| **3.3** | **Preheating** | Measurement of Temperature | Visual with thermal Chalk or Infrared Thermometer | Approve dWPSS | Verification of Reference Documents | Proj. Executing Authority of 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 | Proj. Executing Authority of 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 Approve dWPSS | Verification of Reference Documents | Proj. Executing Authority of 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. |
| **3.6** | **Current Condition** | Measurement of Amp./ Voltage | Visual with Ammeter and Voltmeter | As per Approve dWPSS | Verification of Reference Documents | Proj. Executing Authority of 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. |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **3.7** | **Sequence of Welding** | Controlling Distortion | Visual | As per Approve dWPSS | Verification Reference Documents | Proj. Executing Authority of 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 | -- |
| **3.8** | **Provision of Run-on and Run-off Plates** | To avoid crater defects | Visual | As per Approve dWPSS | Verification Reference Documents | Proj. Executing Authority of 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 | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 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 Project executing Authority and Welders approved by Project executing Authority. This is to be ensured by Zonal Railway/ Railway PSUs |
| 4.1 | **Stud Welding (in case of composite steel girder FOB)** | 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 | Proj. Executing Authority of 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 Girder Leaves in assembled condition** | a) Overall length<br>b) Bearingcentres<br>c) Height<br>d) GirderCentres<br>e) Squareness<br>f) Verticality<br>g) Camber onJack<br>h) Dead Load deflection (Camber withoutJack)<br>i) Dimension<br>j) Fairness ofHoles<br>k) Temporary fasteners<br>l) Any Infringement<br>m) Butting of compression members | Visual & Dimensions1 | Approved Drawings | Complete Dimensional Check of Assembly | Proj. Executing Authority of Zonal Railway/ Railway PSUs | First span | Inspection Report of Inspection officials & fabricator's record | IRS B1-2001, IRS WBC-2001 and applicable codes referred in these codes. | 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. |
| **6.0** | **Surface Preparation by Blasting & Metalizing** | Surface condition afterblasting | Visual checking with reference to surface preparation | Approved Fabrication Drawing & IRS -B1-2001 and codes referred in these | Verification of Stage clearance Record | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% by fabricator &Random byZonal Railway/ RailwayPSUs | Fabricator's Record | IRS B1-2001 Appendix-VII IS: 6586, IS:5905 , IS:2590 and codes referredin these codes | 1.Clearance shall be given by Proj. Executing Authority of Zonal Railway/ Railway PSUs 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 | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% by fabricator &Random byZonal 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 | Proj. Executing Authority of Zonal Railway/ Railway PSUs | Minimum onereading per square meter | Measurement Record | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **7.0** | **Cleaning &Painting** | Surface condition beforepainting | Visual checking with reference to surface preparation | Approved Fabrication Drawing & IRS -B1-2001 and codes referred in these | Verification of stage clearance records | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% by fabricator &Random byZonal Railway | Fabricator'sRecord | 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 finishafter painting | Visual checking | Approved Fabrication Drawing & IRS -B1-2001 and codes referred in these | Verification of stage clearance records | Proj. Executing Authority of Zonal Railway/ Railway PSUs | 100% by fabricator &Random byZonal Railway | Fabricator'sRecord | | |
| | | DFT checking | Measurement | Approved Fabrication Drawing & IRS -B1-2001 and codes referred in these | Verification of stage clearance records | Proj. Executing Authority of Zonal Railway/ Railway PSUs | Minimum onereading per square meter | Measurement Record | | |
| **8.0** | **Final Dispatch including packing, Shipping mark and loading etc.** | 1. Shipping Mark on all Components asper Approved Fabrication drawings<br>2. Fixing of Inscription Plate<br>3. Packing<br>4. Loading | Visual | Fabricator'sRecord | | Proj. Executing Authority of Zonal Railway/ Railway PSUs | Random | Approved Fabrication Drawing& Fabricator'srecord | 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 asper IRS B1-2001 |

Annexure-II

## Schedule for the Inspection and Approvals for FOBs

| **ExecutingAgency** | | **Zonal Railway (Open Line ) & Construction Org. of ZonalRailway** | **Railway PSU like RVNL, DFCCIL etc.** |
|---|---|---|---|
| (1) | | (2) | (3) |
| **1.** | **QAP preparation** | Fabricator | Fabricator |
| **2.** | **QAP Approval** | Project Executing Authority (minimum JAG officer) | Project Executing Authority (equivalent of Minimum JAG officer) |
| **3.** | **WPSS preparation** | Fabricator | Fabricator |
| **4.** | **WPSS Approval** | Project Executing Authority (minimum JAG officer) | Project Executing Authority (minimum JAG officer) |
| **5.** | **WPQR - Preparation** | Fabricator | Fabricator |
| **6.** | **WPQR - Approval** | Project Executing Authority (minimum JAG officer) | Project Executing Authority (minimum JAG officer) |
| **10.** | **Camber checking of Steel/Composite Girders in Fabricator's workshop** | Project Executing Authority (minimum JAG officer) | Project Executing Authority |
| **11.** | **Component Inspection & Approval** | Project Executing Authority (minimum JAG officer) | Project Executing Authority (minimum JAG officer) |
| **12.** | **Test-check of assembly/ camber at site before & after launching** | Project Executing Authority (minimum JAG officer) | Project Executing Authority (minimum JAG officer) |

Note: In case of Multiple FOBs of similar type, Project Executing Authority may waive off stage no. 10 for subsequent FOBs after the approval of First FOB.

**ANNEXURE-I**

**(Ref.: Cl.4.1.8)**

**1. Proforma for Welding Procedure Specification Sheet (WPSS)**

Name and address of Fabricator:

Welding procedure specification No.

1.0 Weld joint description :

2.0 Base Metal :

3.0 Welding Process :

4.0 Welding position :

5.0 Welding consumables :

5.1 Electrode/wire Class :

Dia :

Drying method :

5.2 Flux Class :

Dia :

Drying method :

5.3.1 Shielding gas :

6.0 Base Metal preparation :

6.1 Joint design details :

(Give sketch showing arrangement of parts, welding groove details, weld passes & their sequence etc.)

6.2 Joint preparation :

7.0 Welding current : Type :

Polarity :

8. Welder qualification :

9. Welding parameters and technique:

9.1 Welding Parameters :

| Weld Pass No. | Electrodes/ wire dia. (mm) | Current (amp) | Arc Voltage (volt) | Wire feed speed (m/ min) | Travel speed (m/min) | Electrical stick out (mm) | Gas flow rate (litre/min.) |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

9.2 Welding sequence and technique :

(Give sketch showing sequence and direction of welding).

10.0 Provision of run in and run-off tabs:

11.0 Cleaning of weld bead before laying next weld bead:

12.0 Root preparation before welding other side of groove weld:

13.0 Preheating and inter pass temperature:

14.0 Peening:

15.0 Post weld treatment:

16.0 Rectification of weld defects:

17.0 Inspection of weld:

18.0 Any other relevant details:

Prepared by

Signature _____

Designation _____

Date _____

(for & on behalf of Fabricator)

**ANNEXURE-II**
**(Ref.: Cl.4.1.8)**

## 1. Proforma for Welding Procedure Qualification Record (WPQR)

Name and address of Fabricator

| | | | |
|---|---|---|---|
| 1.0 | Description of Weld | : | |
| 2.0 | Welding procedure specification no. | : | |
| 3.0 | Name of welder | : | |
| 4.0 | Date of preparation of test piece | : | |
| 5.0 | Dimensions of test piece | : | |
| 6.0 | Base Metal | : | |
| 7.0 | Welding Process | : | |
| 8.0 | Welding position | : | |
| 9.0 | Welding Current | : Type | : |
| | | Polarity | : |
| 10.0 | Weld joint design details | | : |
| 11.0 | Welding consumables | | : |
| 11.1 | Electrode/wire | Class | : |
| | | Dia | : |
| | | Brand | : |
| 11.2 | Flux | Class | : |
| | | Type | : |
| | | Brand | : |

11.3 Shielding gas :

12.0 Welding parameters :

| Weld Pass No. | Electrodes/ wire dia. (mm) | Current (amp) | Arc Voltage (volt) | Wire feed speed (m/min) | Travel speed (m/min) | Electrical stick out (mm) | Shielding gas flow rate (lit/min.) |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

13.0 Preheating and interpass temperature:

14.1 Results of Qualification Tests:

| Test | Specimen No. | Result |
|---|---|---|
| **1** | **2** | **3** |
| Non-destructive tests | | |
| i) Visual examination:<br>ii) Dye penetrant test:<br>iii) Magnetic particle test:<br>iv) Radiographic/Ultrasonic test: | | |
| Destructive tests:<br>i) Macro-examination:<br>ii) Hardness survey:<br>iii) Fillet weld fracture test:<br>iv) Transverse tensile test: | | |

| | | |
|---|---|---|
| Tensile strength<br>Yield Stress<br>Location of fracture<br>v) All-weld tensile test:<br>Tensile strength<br>Yield Stress<br>Elongation %<br>vi) Guided bend test:<br>Root bend test<br>Face bend test<br>Side bend test<br>vii) Any other tests | | |

Signature _____

Designation _____

Date _____

(for & on behalf of Fabricator)