
AMENDMENT HISTORY:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Amendment Date</th>
<th>Version</th>
<th>Reasons for Amendments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>14-09-2010</td>
<td>1.0</td>
<td>STR approved by Railway Board.</td>
</tr>
<tr>
<td>2.</td>
<td>22-06-2012</td>
<td>1.1</td>
<td>Minor change in procedure for ONLINE facility only (Facility of Hard Copy with drawn).</td>
</tr>
<tr>
<td>3.</td>
<td>23-10-2012</td>
<td>2.0</td>
<td>Modification in para 2.2, 2.5, 6.1 &amp; 6.2.</td>
</tr>
<tr>
<td>4.</td>
<td>27-06-2014</td>
<td>3.0</td>
<td>Modification in para 2.2.1, 2.2.2, 4.1 to 4.10, 8.1 to 8.3, 8.6 to 8.9 and deletion of para 2.2.2 to 2.6.</td>
</tr>
<tr>
<td>5.</td>
<td>21-09-2015</td>
<td>3.1</td>
<td>Minor Modification in Para 2.2 &amp; 2.2.1.</td>
</tr>
</tbody>
</table>
SCHEDULE OF TECHNICAL REQUIREMENT FOR FABRICATION OF POT-PTFE BEARINGS, ELASTOMERIC BEARINGS AND EXPANSION JOINTS

1. Scope

This specification covers the norms for objective evaluation of capability and capacity of any firm for manufacture and supply of POT-PTFE Bearings, Elastomeric Bearings and Expansion Joints to Railways or use on railway bridges.

2. Procedure for Registration of Firms for manufacture and supply of POT-PTFE Bearings, Elastomeric Bearings and Expansion Joints

2.1 The firm will ensure availability of

(i) The required general and infrastructural facilities.
(ii) Space required for manufacturing, testing and storage viz. manufacturing floor, Godown, store, office and test lab etc.
(iii) Testing and measuring equipment duly calibrated.
(iv) Trained technical manpower.

2.2 In case fabricator is satisfied that the infrastructure and other available requirements listed above are commensurate with the stated requirements, then firm shall apply for registration ON-LINE on the RDSO website. All relevant documents like Guidelines for Registration and Quality Audit of Vendors in Bridge & Structure Directorate, Application Form, Schedule of Technical Requirement (STR), latest version of relevant specifications (if applicable), RDSO Vendor Approval Process Guidelines, etc. are available on the RDSO website. The requisite charges as specified on website are to be deposited through the means as specified on the RDSO website.

2.2.1 The firm has to submit ONLINE complete application form, self compliance of STR and all necessary documents in support of self compliance of STR and documents in support of other important aspects of application. The firm has also to submit the Undertakings and Documents as mentioned in Doc No. BS-G-4.2.3-1 (latest version) titled “Guidelines for Registration and Quality Audit of Vendors in Bridge & Structure Directorate.”

2.2.2 For detail procedure for Registration and other related aspects, refer to Doc No. BS-G-4.2.3-1 (latest version) titled “Guidelines for Registration and Quality Audit of Vendors in Bridge & Structure Directorate.”
3. **Norms for Acceptance:**

3.1 To qualify for manufacture and supply of POT-PTFE Bearings, Elastomeric Bearings, a firm must satisfy the requirement as laid down in para 4, 5, 6 & 8.

3.2 To qualify for manufacture and supply of expansion joints, a firm must satisfy the requirement as laid down in para 4, 5, 7 & 8.

4. **General and Infrastructural Requirements:** Provide Detail Information on items given below and enclose necessary documents in support as applicable ONLINE:-

4.1 The fabricator must have adequate organization including supervisors, skilled worker and other categories of manpower to execute the fabrication work in competent manner. (Enclose list of staff along with Qualification & experience of employees.).

4.2 A proper organization must exist to perform the functions of purchasing of various raw materials, bought-out components, consumables, etc. and maintaining the purchasing documents including inspection certificates, test certificate etc. (Enclose list of staff along with Qualification & experience of employees.).

4.3 A proper procedure for maintenance of records for receipt and consumption of raw material including steel should be in vogue or developed so as to allow verification by railway’s representative.

4.4 Adequate power supply should be arranged through distribution agencies with back up through captive generation. (Necessary documents in support to be enclosed).

4.5 Covered bay area with proper handling facilities should be available to handle day-to-day fabrication of POT-PTFE Bearings, Elastomeric Bearings and Expansion Joints.

4.6 The premises should have covered storage area to store raw material, sub-assemblies and finished products.

4.7 Covered shed area protected from rain, dust etc. should be provided for surface preparation/painting/metallisising. Adequate space for storing fabricated component awaiting painting shall be available.

**Note:** For para 4.5 to 4.7 Applicant has to submit ONLINE neat copy of plan of works premises & show detail of items given below:-
(a) Covered bay area with proper handling facilities available to handle
day-to-day fabrication of POT-PTFE bearings, Elastomeric Bearings
and Expansion Joints.

(b) Area for storing raw material, sub-assemblies & finished products etc.

(c) Area for separate line for inspection and testing of Bearings and
Expansion Joints.

(d) Covered shed area protected from rain, dust etc, available for surface
preparation/painting/metallizing.

4.8 An adequately equipped and staffed Drawing Office is required for preparation
of fabrication drawings. (Enclose list of staff along with Qualification &
experience of employees).

4.9 For making different bearings/expansion joints components essential to have
proper jigs and fixtures, templates etc. in order to obtain the desired quality
and inter-changeability. The fabricator should be capable of designing these
fixture, templates etc.

4.10 Firm should submit the details of equipments/machinery i.e. make, model,
year of manufacture, machine no. etc. for Equipments and Machineries
mentioned in para 5 to 7 preferably in a chart form along with the copies of
documents showing ownership by the firm along with application of seeking
approval (machinery owned by sister concern will not be accepted).

4.11 It should be mandatory to inform the RDSO through FAX (followed by
confirmation copy through courier/speed post) as soon as any machinery is
removed from the firm’s premise (even for repair etc.). RDSO should be
informed again, when brought back and made operational.

4.12 Firm should be required to give an undertaking at the time of seeking approval
that if at any time after approval is accorded, some machinery is found
deficient without intimation to RDSO, then it will be presumed that machinery
was not there since beginning and firm’s approval will be withdrawn
immediately.

4.13 Digital Signatures:

It is mandatory for all the vendors to obtain Digital Signature Certificate & get
registered with IREPS at http://www.ireps.gov.in.

5. Facilities required for fabrication of elastomer/rubber components

Fabricator should either have the neoprene molding and manufacturing
facilities in house or should get it done from recognized source which should
be identified in advance. Following equipments and plants, lab facilities and additional fixtures are considered essential for fabrication of neoprene sheets.

5.1 M&P
- Close Mixing mill/Open mixing mill
- Extruder
- Automatic thermic heating moulding
- Adequate number of dies and transfer moulds for the product.

5.2 Laboratory facilities
- Rubber testing facilities along with Spectrophotometer for ozone testing or rubber in Controlled laboratory environment facilities to maintain standard temperature and humidity for rubber testing as per IS:13867.
- Separate laboratory mixing mill and laboratory testing hydraulic press with temperature control and digital indicator timer & pressure gauge.
- Minimum two numbers shore hardness testers with standard test pieces.
- Specific gravity testing apparatus at least one number
- Facility to check viscosity of the adhesive (Viscometer).
- Compression set testing
- Minimum two sets suitable fixtures for compression load deflection test.
- Fixtures for load deflection.
- Fixtures for Bond Test.
- Universal Testing Machine.
- Aging Chamber (for elastomeric bearing)

Provide quantity, make, model no., S.No., capacity, year of manufacture/commissioning, Machine number etc. preferably in a chart form as applicable.

6.0 Facilities required for manufacturing and supply of POT-PTFE Bearings and Elastomeric Bearings

6.1 Following machines/equipment shall be available with the manufacturers: for supply of POT-PTFE Bearings. Provide quantity, make, model no., S.No., capacity, year of manufacture/commissioning, Machine number etc. preferably in a chart form as applicable.
- Oxy-acetylene gas profile cutting equipment of adequate size.
- Straight cutting equipment.
- Radial drilling machines of adequate capacity.
- Lathe machine.
- Planner or Shaper machine.
- Buffing machine.
- Welding rectifier/transformer.
- Adequate number of potable pneumatic tools (grinders, drilling machines, chipping machines).
- Facilities for surface preparation/painting/metallising.
- Elcometer.
- Suitable spraying facilities for application of adhesive with in built provision of stirring.
- Adequate no. of measuring instruments (micrometers, dial gages, vernier calipers, Go-No-Go gauges).
- Automatic weighing system.

6.1.1 Material to be procured must meet the requirement of relevant specifications (current version). Generally following specifications are referred to and fabricator is required to have copies of these specifications:

- IS : 1030 for cast steel
- IS : 2062 for structural steel
- AISI : 304 for stainless steel
- BS : 3784 Gr. A for P.T.F.E.
- IRC : 83 for Elastomer

6.2 Following machines/equipment shall be available with the manufacturers: for supply of Elastomeric Bearings. Provide quantity, make, model no., S.No., capacity, year of manufacture/commissioning, Machine number etc. preferably in a chart form as applicable.

- Adequate number of potable pneumatic tools (grinders, drilling machines, chipping machines).
- Cutting die for steel plates.
- Buffing machine.
- Suitable spraying facilities for application of adhesive with in built provision of stirring.
• Adequate no. of measuring instruments (micrometers, dial gages, vernier calipers, Go-No-Go gauges).

• Automatic weighing system.

6.2.1 Material to be procured must meet the requirement of relevant specifications (current version). Generally following specifications are referred to and fabricator is required to have copies of these specifications:

- IS : 2062 for structural steel
- IRC : 83 for Elastomer

7. Facilities required for manufacturing and supply of Expansion Joints

7.1 Following machines/equipment shall be available with the manufacturer: Provide quantity, make, model no., S.No., capacity, year of manufacture/commissioning, Machine number etc. preferably in a chart form as applicable.

- Oxy acetylene gas profile cutting equipment of adequate size.
- Radial drilling machines of adequate capacity.
- Shaper machine.
- Welding rectifier/transformer.
- Suitable welding manipulators for assembly of expansion joints.
- Grinder.
- Adequate no. of measuring instruments (Vernier calipers, Go-No-Go gauges).
- Gauges for checking weld size, throat thickness and edge preparation etc.
- Wire brushes and de slagging hammers for all welders.
- Facilities for surface preparation/painting and metallising.
- Elecometer.

7.2 Material to be procured must meet the requirement of relevant specifications (current version). Generally following specifications are referred to and fabricator is required to have copies of these specifications:

- IS : 1079 for shuttering plates
- IS : 2062 for structural steel
- AISI : 304 for stainless steel
8. **Quality Assurance Aspect:**

8.1 System for testing of raw material to ensure that it confirms to relevant specification should exist. Submit the detail information and enclose copy of performas used.

8.2 The firm should have in-house steel testing facilities for chemical and mechanical properties given specification or should have a permanent arrangement with a recognized test laboratory for getting required test done. If the fabricator has not in-house facilities, he should identify the permanent arrangement he wishes to have for this purpose. This should be indicated in the application form.

**Note:** If facility is in house provide details of Equipment like, Make, Model Number, Capacity, Year of manufacture/ commissioning and copy of test certificates issued earlier. If outsourced, submit copy of MOU with NABL Lab and copy of some previous Test Certificate issued by NABL Lab. The MOU should have validity of minimum 30 months.

8.3 All equipment must meet the requirements of relevant BIS or other international specifications. It will be fabricators responsibility to satisfy the inspecting engineer that all the equipments/accessories confirm to BIS or any other standard in absence of marking on such equipment/accessories. All these equipment/accessories will be subjected to periodic tests and records maintained. System of periodic maintenance of M&P must be in vogue and proper record maintained. A brief on this aspect should be enclosed.

8.4 There should be a system to ensure the traceability of the product from raw material stage to finished stage.

8.5 Firm should have Quality Assurance Plan (QAP) for the product manufactured by them detailing various aspect –

- Organisation chart
- Flow inspection details
- Stage inspection details
- Various parameters and to ensure control over them for ensuring quality.

8.6 A system should be in force for analysis of non conformities noticed during internal and external inspections of the final product and sub-assemblies. A dynamic arrangement for a feedback to the source or non conformities and
8.7 Quality control records must be maintained as per requirements. Necessary performas followed to be enclosed.

8.8 Proper records should be maintained for complaints received from the customers and corrective action taken. Necessary performas followed to be enclosed.

8.9 A system of identifying and segregating the non-conforming products and their disposal should be in force to avoid unintended use of non-conforming product. Necessary performas followed to be enclosed.

8.10 The fabricator must have relevant specifications/Codes commonly referred in connection with fabrication of POT-PTFE bearings, Elastomeric Bearings and Expansion Joints.
9.0 RESPONSIBILITY AND AUTHORITY:

The following table indicate responsibility related to this document:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Responsible</th>
<th>Approver</th>
<th>Supporting</th>
<th>Consulted</th>
<th>Informed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation, maintenance of this document</td>
<td>DBS/T&amp;I</td>
<td>ED/B&amp;S</td>
<td>DD Insp., AE/Insp. and Staff of DD/Insp.</td>
<td>-</td>
<td>Through intranet/soft copy.</td>
</tr>
<tr>
<td>Compliance of Directive contained in this document</td>
<td>DD/B&amp;S/Insp.</td>
<td>DBS/T&amp;I</td>
<td>Directorate staff</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

10.0 ABBREVIATION:

ED = Executive Director/B&S
DBS = Director/Joint Director(B&S)/Insp.
DD/Insp. = Deputy Director/Inspection
AE = Assistant Engineer/Insp.
SE = Section Engineer/Insp.