

ISO9001: 2015	Doc No. BS-S-7.5.3.1-12	Vesrion No:xx	Date Effective:xx/xx/xxxx
Document Title: SPECIFICATION AND SCHEDULE OF TECHNICAL REQUIREMENT (STR) FOR MANUFACTURE AND SUPPLY OF POT-PTFE BEARING TO INDIAN RAILWAY FOR USE ON RAILWAY BRIDGES /ROB.			

RESEARCH DESIGNS & STANDARDS ORGANISATION, MANAK NAGAR, LUCKNOW-226011

Document No : **BS-S-7.5.3.1-12**

Document Title : **SPECIFICATION AND SCHEDULE OF TECHNICAL REQUIREMENT (STR) FOR MANUFACTURE AND SUPPLY OF POT-PTFE BEARING TO INDIAN RAILWAY FOR USE ON RAILWAY BRIDGES /ROB.**

AMENDMENT HISTORY:

S. No.	Amendment Date	Version	Reasons for Amendments
1.	14-09-2010	1.0	STR approved by Railway Board
2.	28.06.2021 (effective from 01.07.2022)	1.1	Separate STR of POT-PTFE bearings alonwith specification. Major changes have been made.
3.	dd-mm-yyyy	2.0	Major changes in Para 4.1, 6.8, 7.10, 8.1, 8.2, 8.4 and 9.0 & 9.1

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SPECIFICATION AND SCHEDULE OF TECHNICAL REQUIREMENT (STR) FOR MANUFACTURE AND SUPPLY OF POT- PTFE BEARING TO INDIAN RAILWAY FOR USE ON RAILWAY BRIDGES/ROB

1.0 Scope

This specification and STR covers the norms for objective evaluation of capability and capacity of any firm for manufacture and supply of POT-PTFE Bearing to Railways for use on Railway bridges/ROB.

2.0 Specification of manufacture and supply of POT-PTFE bearings:

The specification for manufacturing and supply of POT-PTFE Bearing for Railways for use on Railway bridges /ROB shall be IRC:83 (Part-III): Latest Edition.

3.0 Procedure for Registration of Firms for manufacture and supply of POT-PTFE Bearings:

3.1 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.

3.2 If manufacturer/fabricator is satisfied that its infrastructure and other facilities are commensurate with the infrastructural and other requirements as listed above and at and other place of this document, then firm shall apply for registration online through U-VAM on IREPS portal (<https://www.ireps.gov.in>) alongwith all relevant supporting documents regarding compliance of STR and undertakings in support of self compliance of this STR as well as RDSO's vendor registration guidelines. RDSO's vender registration guidelines as ISO Apex documents and Directorates documents are available at RDSO's website(<https://www.rdsi.indianrailways.gov.in>). The requisite charges are specified on the website could be deposited through the means as specified on the IREPS Portal.

4.0 Norms for Acceptance:

To qualify for manufacture and supply of **POT-PTFE Bearing**, a firm must satisfy the requirement as laid down in Para 4, 5, 6 & 7.

4.1 Qualifying Criteria

Firms must have certified "Satisfactory Performance" of POT-PTFE Bearings of at least one Bridge at the time of application. Performance certificate issued by Government organization/Semi government organization/Public Sector Undertakings will be accepted for this purpose.

Note: (i) Previous experience shall be considered only for the work completed successfully during the last five financial years and up to the date of application in the current financial year.

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(ii) Performance certificate from private firms can also be accepted provided the average annual turnover for last three financial years is more than 25 Crores. In support of this, the applicant has to submit necessary certificates e.g. audited balance sheets or CA certificate or Income tax returns.

5.0 General and Infrastructural Requirements: Provide Detailed Information on items given below and enclose necessary documents in support as applicable ONLINE:-

5.1 The fabricator must have adequate organization including supervisors, skilled worker and other categories of manpower to execute the manufacturing work in competent manner. Firm shall employ full time engineer staff qualified to manufacture bearings under quality control and as such have full time trained Chemist/Scientist/Engineer for chemical and physical testing. Necessary documents/Undertakings in this regard shall be submitted to RDSO. Necessary supporting documents (list of staff alongwith qualification & experience) shall be submitted along with application during registration.

5.2 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. Necessary supporting documents (list of staff alongwith qualification & experience) shall be submitted along with application during registration.

5.3 A proper procedure for maintenance of records for receipt and consumption of raw material should be in vogue or developed so as to allow verification by railway's representative. The firm shall maintain list of consumption of raw material including test records for a period of at least preceding five years. The record should be maintained in such a way that raw material traceability can be ensured with specific POT-PTFE Bearing manufactured and supplied by firm.

5.4 Adequate power supply should be arranged through distribution agencies with back up through captive generation. Electricity bill not older than 6 months shall be submitted alongwith application at the time of registration.

5.5 Covered bay area with proper handling facilities should be available to handle day-to-day fabrication of POT-PTFE Bearings.

The premises should have covered storage area to store raw material, sub-assemblies and finished products. Necessary supporting documents shall be submitted along with application of registration.

5.6 Covered shed area protected from rain, dust etc. should be provided for manufacturing, inspection and testing of POT-PTFE Bearing. Adequate space for storing fabricated component in controlled environment like temperature and humidity shall be available. Necessary supporting documents shall be submitted along with application of registration.

5.7 The firm is required to have in-house capability for designing the bearings based on forces, movements and rotation etc. supplied by the clients. For this purpose an adequately equipped design office with full time design engineer shall be there. Necessary supporting documents (list of staff along with qualification & experience) shall be submitted along with application of registration.

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Note: Applicant has to submit neat copy of plan of works premises & show detail of each item mentioned above in Para 5.4 to Para 5.7.

5.8 Firm should submit the details of equipment/machinery i.e. Necessary supporting documents providing details like make, model, capacity, quantity and year of manufacture & commissioning etc. shall be submitted along with application of registration for Equipment and Machineries mentioned in Para 6 to 7 preferably in a chart form. (Machinery owned by sister concern will not be accepted).

5.9 It should be mandatory to inform the RDSO through E-mail/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.

5.10 Firm shall be required to give an undertaking at the time of seeking approval that if at any time after approval any machinery is found deficient without intimation to RDSO, suitable action will be taken as per RDSO's vender registration guidelines available as ISO Apex documents and Directorates documents on RDSO website.

6.0 Facilities required for manufacturing and testing of various component of POT-PTFE Bearing.

6.1 Raw material required for manufacturing of elastomer/rubber components.

The elastomer used for the components of bearing shall be made of Chloroprene rubber (CR) or Natural Rubber(NR).

6.2 Fabricator should have the in house manufacturing facilities. Details of Equipment like Necessary supporting documents providing details like make, model, capacity, quantity, serial number and year of manufacture & commissioning etc. shall be submitted along with application of registration.

- (i) Close Mixing mill/Open mixing mill.
- (ii) Automatic thermic heating moulding.
- (iii) Adequate number of dies and transfer moulds for the product.
- (iv) Minimum three numbers of portable pneumatic tools (grinders, drilling machines, chipping machines).
- (v) Cutting dies for steel plates.
- (vi) Buffing machine/Polishing Machine.
- (vii) Straight cutting Machine.
- (viii) Hydraulic press machine.
- (ix) Suitable spraying facilities for application of adhesive with in-built provision of stirring.
- (x) Minimum three nos. of measuring instruments (micrometers, dial gages, vernier calipers, Go-No-Go gauges).
- (xi) Shot/Grit Blasting Machine.
- (xii) Automatic weighing system.

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6.3 Following laboratory facilities for testing of elastomer must be available in-house/outsourced with fabricator/firm. If facility is in house provide details of Equipment like Make, Model Number, quantity, serial number, Capacity, Year of manufacture/ commissioning. 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 65 months.

- (i) Rubber/Elastomer testing facilities along with Spectrophotometer for ozone resistance testing as per ISO:1431-1.
- (ii) Polymer content testing facilities as per ASTM D-297.
- (iii) Polymer identification testing as per IS 3400:Part XXII.
- (iv) Pyrolysis testing facilities as per IS 3400:Part XXII.
- (v) Percentage polymer content as per IS 3400:Part XXII.
- (vi) Adhesion strength of elastomer to steel plate as per IS:3400 Part XIV Part A.

6.4 Test facilities for Mild Steel, Stainless steel, Brass sealing Ring, PTFE.

Following laboratory facilities for testing of elastomer must be available in-house/outsourced with fabricator/firm. If facility is in house provide details of Equipment like Make, Model Number, quantity, serial 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 65 months.

- (i) Compressive & Tensile strength testing facility.
- (ii) Bend Stress testing facilities.
- (iii) Impact Strength testing facilities.
- (iv) Hardness Testing facilities.
- (v) Chemical testing facilities for determination of chemical composition.
- (vi) Ultrasonic Testing facilities.
- (vii) Liquid penetration testing facilities.

6.5 Following laboratory facilities for testing of POT-PTFE bearing must be available in-house with fabricator/firm. Firm must provide details of Equipment like, Make, Model Number, quantity, serial number, Capacity, and Year of manufacture/ commissioning.

- (i) Proof load testing facilities as per Para 7.4.3.1 of IRC 83 :Part (III).
- (ii) Friction testing facilities as per Para 7.4.3.2 of IRC 83 :Part (III).
- (iii) Rotation testing facilities as per Para 7.4.3.3 of IRC 83 :Part (III).

6.6 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

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- Radial drilling machines of adequate capacity.
- Lathe machine.
- Planner or Shaper machine.
- Buffing machine.
- Welding rectifier/transformer.
- Adequate number of portable pneumatic tools (grinders, drilling machines, chipping machines).
- Facilities for surface preparation/painting/metalizing.
- Elcometer or dry film thickness gauge
- 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.

6.7 Any other test required from client should be done either in house facility, in case facility available or in NABL/ Approved Lab only.

6.8 Firm shall give an undertaking regarding various test method as given in IRC: 83 (Part III).

“Undersigned as an authorised signatory (as per Annexure 4) of M/s (Firm Name) give an undertaking that the entire in-house manufacturing and testing facilities can accomplish the manufacturing and testing of POT-PTFE Bearing as per IRC 83-2018 (Part-III). However outsourced testing facilities has been seen/checked by M/s..... (Firm Name) and found in order as per IRC:83-2018 (Part –III).

7.0 Quality Assurance Aspect:

7.1 System for testing of raw material to ensure that it conforms to relevant specification should exist. The traceability of material with supplied bridge bearing should be there.

7.2 All equipment must meet the requirements of relevant BIS or other international specifications. It will be fabricator's responsibility to satisfy the inspecting engineer that all the equipment/accessories conform to BIS or any other standard in absence of marking on such equipment/accessories. All these equipment/accessories will be subject to periodic tests and records maintained. System of periodic maintenance of M&P must be in vogue and proper record be maintained.

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

7.4 Firm should have Quality Assurance Plan (QAP as per ISO apex document) for the product manufactured by them detailing various aspect.

- Organization chart
- Flow inspection details
- Stage inspection details

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- Control measures for various parameters for ensuring quality.

7.5 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 of non-conformities and rectification thereof should be in vogue. Necessary proforma followed to be enclosed.

7.6 Quality control records must be maintained as per requirements. Necessary proforma followed to be enclosed.

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

7.8 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 Proforma followed to be enclosed.

7.9 The fabricator must have relevant specifications/Codes commonly referred in connection with fabrication of POT-PTFE Bearings.

7.10 Firm must have and maintain the ISO 9001 Certification, as per instructions issued by Ministry of Railway (Railway Board) vide letter No. 2014/CE-III/BR/Bridge workshop policy dated: 16/19.05.2025 and further circulated vide RDSO's letter No. CBS/G/Reg dated 26.05.2025. These letters can be accessed under B&S Directorate's Documents (Vendor registration guidelines) through Vendor interface on RDSO's website at following URL https://rdso.indianrailways.gov.in/view_section.jsp?lang=0&id=0,4,28,6551. To implement ISO 9001 Certification through Bureau of Indian Standard(BIS), RDSO has already signed an MOU with BIS.

8.0 Quality audit:

8.1 Quality Audit of the Registered Vendors will be done every five years. However, it may be planned by RDSO after completion of three years since registration or previous quality audit.

8.2 The firm shall satisfy the following requirements to continue as approved vendor:

(a) The firm must continue to maintain the infrastructure, facilities and Machineries & Plants as required at the time of Quality Audit as per prevailing STR.

(b) The firm must have manufactured and supplied the POT-PTFE Bearings for at least one Railway Bridge/ROB in Railway portion since registration or previous Quality Audit.

For the purpose of this clause, manufacturing and supply of POT-PTFE bearings for at least one span against a multiple span Railway Bridge/ROB of Railway portion will be considered/treated as completed work. The firm shall provide the Inspection/Passing Certificate by Zonal Railway/Third Party Inspection (TPI) Agencies authorised by Zonal Railways as applicable.

(c) The firm shall not have any adverse report from any of the Railways.

8.3. For Quality Audit, firm will be inspected for facilities provided under para 4 to 6 of this STR, which in turn will be verified, after inspection by the RDSO team. The firm should also give an undertaking that organizational and infrastructural requirement as required at the time of Quality Audit have been maintained.

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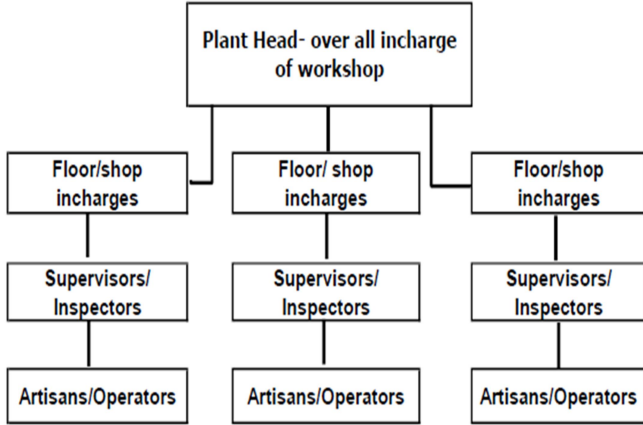
8.4. If the firm does not satisfy the criteria given in para 8.2 and 8.3 above, it will be delisted from approved list and firm shall have apply afresh in case it desires to registered again.

9.0 The firm shall display the following information/details to the customers at Home page under tab 'Vendor Approval RDSO' of their websites-

Item/Tab	Information/Sub-tab	Information/Sub-tab
Ownership details	Ownership Board of Director, Partners Registration / incorporation details, Memorandum and Article of association/ partnership deed/LLP agreement Registered address Contact information	
Manufacturing Units (for each unit)	Address	
	Facilities including details of Machinery & Plants as applicable (Brief description and photographs)	<ul style="list-style-type: none"> • Fabrication shop- Mixing, Extruding, Moulding & Vulcanization for rubber/elastomer & Cutting, Drilling, Welding, Shaping, Buffing etc. for Steel. • Blasting shop • Painting shop • Stacking area • Any other facility
	Details of RDSO approval (Item Name & Item No. for which approved)	<ul style="list-style-type: none"> • Registration ID • Annual Production capacity • Last quality audit done on---- • Next quality audit due on-----
	MSME registration/ ROC registration	
	Factory license	
	ISO 9001 Certification	<ul style="list-style-type: none"> • Certifying body • Date of certification • Last date of surveillance audit • Last date of internal audit with details of compliances

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Item/Tab	Information/Sub-tab	Information/Sub-tab
Organisation chart (as per given template) qualifications and experience details (in brief)	 <pre> graph TD PH[Plant Head- over all incharge of workshop] --> FSI1[Floor/shop incharges] PH --> FSI2[Floor/ shop incharges] PH --> FSI3[Floor/shop incharges] FSI1 --> SI1[Supervisors/ Inspectors] FSI2 --> SI2[Supervisors/ Inspectors] FSI3 --> SI3[Supervisors/ Inspectors] SI1 --> AO1[Artisans/Operators] SI2 --> AO2[Artisans/Operators] SI3 --> AO3[Artisans/Operators] </pre>	
Details of testing facilities as per Para 6.3, 6.3.1, 6.4 & 6.5 of STR	In-house as well as outsourced	
Mandatory approvals	NABL, AERB, ASNT etc.	
Artisans- involved in mixing, extruding, molding, cutting, drilling, welding, blasting and painting etc.	Qualification Certification/training/refreshers Experience	
Power demand & Installed power supply		
Details of executed works/supplies in last 5 years (in Nos. of spans/tonnage/Nos.)		
Works in hand (in Nos. of spans/tonnage /Nos.)		

9.1 It shall be mandatory to display the above details/information on the website within stipulated time. Displaying false information shall lead to outright delisting for two years as per Para 4.2.4 of RDSO ISO Apex Document No. QO-D-8.1-11 (as updated time to time).

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10.0 RESPONSIBILITY AND AUTHORITY:

The following table indicates responsibility related to this document:-

Activity	Responsib le	Approver	Supportin g	Consult ed	Informed
Creation, maintenance of this document	EDBS	PED/Infra-II	Directorate Officials	-	Through intranet/ RDSO's public website
Compliance of Directive contained in this document	EDBS	PED/Infra-II	Directorate Officials	-	-
Requirement of Deviation from Directive	EDBS	PED/Infra-II	Directorate Officials	-	Through intranet/ RDSO's public website

11.0 ABBREVIATION:

PED	=	Principal Executive Director
EDBS	=	Executive Director/B&S
DBS	=	Director/Joint Director (B&S) Concerned
ADE/B&S	=	Assistant Design Engineer (B&S)/ Assistant Engineer (Insp)/B&S concerned
SE	=	Section Engineer
JE/D	=	Junior Engineer (Design)

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