

**GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS**



सत्यमेव जयते

**SCHEDULE OF TECHNICAL REQUIREMENT (STR)
FOR MANUFACTURE & SUPPLY OF PASSENGER ELEVATORS**

STR No. RDSO/2017/ EM/STR/0001 (Rev '1')-2019

**ISSUED BY:
ENERGY AND ENVIRONMENT MANAGEMENT DIRECTORATE
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Amendment/ Revision history

SN	Amendment		Revision		Reason
	Number	Date	Number	Date	
1	1.0	12.12.17			Vigilance Directorate note no. Comp/1.55.07.01 dtd 04.06.17 and M/s LT Elevator's letter no. RDSO/Lift/44/2016-17 dtd 10.07.17
2			1.0	18.11.19	ED/Research/RDSO letter no. R2/142/ Vendor dated 07.01.19 and Rly Bd letter no. 2011/Elect(G)/150/3/Pt. E-Office: 3257440 dated 01.08.19.
3	1.0	-	-	-	-----

**SCHEDULE OF TECHNICAL REQUIREMENTS (STR) FOR
MANUFACTURE & SUPPLY OF PASSENGER ELEVATORS**

1.0 General:

- 1.1 Railway Board vide its letter no. 2015/Elect (G)/150/2 dated 07.04.2015 have directed RDSO to develop sources for passenger elevator customized to Indian Railways application. In this regard RDSO has finalized technical specification for passenger elevators and STR described in this document will set essential infrastructure required for manufacturing of passenger elevator as per RDSO specification.

The vendors willing to get enlisted as RDSO approved vendor should satisfy themselves about having complied with the technical requirement of specification & other infrastructure.

The firm should have currently valid ISO-9001:2015 certification for his works address, covering the items for which he seeks registration with RDSO. It shall be ensured that the certifying body which issues the ISO: 9001 certificate is accredited by an accreditation body that is a part of the International Accreditation Forum (IAF) under the Multilateral Recognition Arrangement (MLA). The list of all such accreditation bodies is available at the IAF website at: <http://www.iaf.nu>.

2.0 Credential:

- a) The Firm should have an experience of Design, Manufacture, Supply, Installation and Commissioning of minimum 50 nos. of passenger elevator to government agencies/PSUs including Indian Railway.
- b) The firm should have service centers with qualified technical engineers in at-least 20 cities in India. The firm should have maintained at least 50 nos. of elevator-years under annual maintenance contract with different government agencies/PSUs including Indian Railway in last three and current financial years.

3.0 Minimum Facilities:

The information shall be furnished as per details required in the following Annexure:

- 3.1 M & P required shall be as per **Annexure-I**. However, it does not specify the capacity and quantity of various items of equipment/components/ M&P which may vary according to the manufacturing capacity of the individual firm. The firm should also have the facility for storing the raw materials and finished product.

3.2 Measuring/Checking Instruments/Gauges:

List of facilities for measurement and gauges required in firm's premises shall be as per **Annexure-II**. The accuracy and capacity of the measuring equipment shall be adequate to meet the requirements. Records of calibration of all measuring instruments shall be maintained and made available, on demand.

- 3.3 **Exclusive R & D facility**, apart from normal manufacturing set-up shall be available. The firm shall indicate the organizational structure of their R&D wing along with qualification of the personnel. Firm should have following engineering manpower:

Mechanical Discipline: at-least one Engineering Graduate (Mechanical related) Design Engineer with experience of more than 5 years in the field of elevator, and at least three or more Diploma Engineers with experience of more than 5 years in the field of elevators.

Electrical and Electronics Discipline: At least one Engineering Graduate (Electrical /Electronic related) Design Engineer with an experience of more than 5 years in the field of elevator and at least three or more Diploma engineers with an experience of more than 5 years in the field of elevators.

- 3.4 Firm should have technically qualified personnel in the field of design, manufacturing & testing of passenger elevator.
- 3.5 Firm should also have trained welders with minimum qualification of ITI in welding.
- 3.6 Firm should have in-house training facility for installation and maintenance staff.
- 3.7 Necessary design and simulation software for electrical and mechanical design.
- 3.8 **Handling /Storage/Delivery:** The manufacturer shall have proper facilities for handling and storage of raw material and finished product. The supplier shall control packing presentation and marking process so as to ensure conformity to the Railway requirement.

ANNEXURE –I**Manufacturing Facilities:**

A. The following minimum Machinery and Plants to be available at Firm's manufacturing Premises:

- i. CNC Turret Punch Machine,
- ii. NC Bending machine,
- iii. Shearing machine,
- iv. Lathe machine,
- v. Drill machine,
- vi. Power Press machine,
- vii. MIG welding machine,
- viii. Grinding machine,
- ix. Riveting machine,
- x. Compressor,
- xi. Engraving M/c,

B. Following processes may be outsourced. If processes are outsourced, relevant Machinery and Plants are considered essential and they may be available with sub-vendors. If these processes are not outsourced these facilities should be available in-house.

S. No	Process	Facility
1.	Hot Dip Galvanizing	<ol style="list-style-type: none"> i) Hot Dip Galvanizing Plant. ii) Galvanization thickness meter.
2.	Powder Coating	<ol style="list-style-type: none"> i) Powder Coating M/c ii) Oven iii) Surface treatment facility. iv) Coating thickness meter.
3.	Manufacturing and Testing of PCB	<ol style="list-style-type: none"> i) Dust free environment for the assembly of PCBs. ii) Automatic/light beam guided component insertion machine for PCBs. iii) Temperature controlled wave-soldering machine with auto-fluxing facilities iv) *Dry heat and Damp heat test chamber for PCB v) Full Convection Reflow M/C vi) Automatic Coating M/C vii) Ultrasonic PCB cleaning M/C viii) ESD protection in line with IS: 10087-1981 ix) Ferruling Machine

Note:* If facility of Dry heat and Damp heat test chamber is not available, Dry heat and Damp heat test of PCB should be conducted in accordance with relevant IEC from third party labs.

C. The firm may procure motor, pulley, spring buffer, guide rail and their brackets etc. from open market. In such cases the material acceptance should be done based on test reports for compliance with RDSO specification.

Annexure-II**Inspection and measurement equipment:**

- A.** The following minimum Inspection and measurement equipment to be available at the Firm's own manufacturing Premise:
- (a) Elevator testing tower of sufficient height suitable to carry out all the tests on assembled elevator as per EN-81/ RDSO specification.
 - (b) Motor insulation testing facility
 - (c) Full function Controller test bench
 - (d) Other measuring instruments like:
 - i. Tacho Meter,
 - ii. Power analyzer,
 - iii. Elevator Vibration Analyzer and
 - iv. Other measuring instruments for physical verification of various parameters as per requirement of RDSO specification.
- B.** The following Inspection and measurement equipments are considered essential for manufacturing unit and could be made available either at firm's own premises or firm's approved sub-vendor's premises.
- Functional testing of PCBs.

****End of Document****