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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS



SCHEDULE OF TECHNICAL REQUIREMENTS
for
MANUFACTURE AND TESTING
of
CROWN GEAR COUPLING
for
WAP-5 THREE PHASE ELECTRIC LOCOMOTIVE

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Issued By:

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**Schedule of Technical Requirements for Manufacture and Testing
of Crown Gear Coupling for WAP-5 Three Phase Electric Locomotive**

1.0 SCOPE

The Schedule of Technical Requirements (hereafter called STR) specifies the requirements to be met by vendors (hereafter called firm) who manufacture, test and supply Crowned Gear Coupling for WAP5 3-phase electric locomotives. This STR should be read in conjunction with the technical specification and drawings for this item (ADtranz's Specification No. AEB452478 Rev.1 and drawing no. IA01100234). The firm should satisfy themselves having complied with the requirements of the specification, drawings and this STR.

2.0 CREDENTIAL

The firm should have experience in manufacturing similar products (i.e., flexible coupling of similar torque) during last three years. The company profile and details of past orders of similar products should be furnished.

3.0 QUALITY SYSTEM

3.1 The firm should have valid ISO 9001:2000 certification covering the manufacturing and testing of the subject item.

3.2 The firm should possess a clearly laid down Quality Assurance Plan for the product covering the following aspects:-

- (a) Organisation Chart, clearly indicating the quality control set-up.
- (b) Qualification of key personnel and the officials deployed in quality control cell.
- (c) Process Flow Chart indicating process of manufacture for an individual product or for a family of products, if the process is same.
- (e) Quality Assurance System – Inspection and Testing Plan to cover:
 - Incoming material
 - Process control
 - Product control
 - System control
 - Gauging scheme
- (f) Stage inspection detailing inspection procedure, inspection parameters, method of testing / test procedure including sample sizes for destructive and non-destructive testing etc.
- (g) Calibration Scheme and status of calibration of test equipment.

3.3 The firm should ensure that proper record of complaints received from users (Railways) is being maintained & corrective action is taken.

- 3.4 The firm should be in possession of Digital Signature Certificate from valid licensing authority in order to be able to interact with the E-procurement website and submit tenders electronically.

4.0 RAW MATERIAL:

- 4.1 Raw Material shall be purchased from reputed suppliers. Documentary proof of purchase and test certificate of each component shall be maintained and produced.
- 4.2 A record of each sub-supplier clearly showing the quantity purchased and rejected as well as cases of late delivery, if any shall be kept.

5.0 MANUFACTURING

The firm should possess in-house all the machinery and plant required for manufacture of the subject item. In particular, it should include Lathe machine, Gear Generating machine, Gear Hobbing machine, Milling machine, Jig Drilling machine, Grinding machine and Balancing machine for balancing of the rotating parts. The machines should preferably be computerized numerically controlled (CNC) to ensure requisite accuracy. Appropriate meters and Gauges of requisite accuracy should be available.

6.0 TESTING

- 6.1 Testing machine setup should be available in the firm's own premises capable of generating axial & radial deflections / displacements, torques and variable rotational speeds as specified in the technical specification of the item.
- 6.2 The firm shall have a test laboratory having all facilities to carry out physical and chemical testing of raw materials and finishing products. The laboratory should be headed by a qualified technical personnel directly responsible for quality of testing.
- 6.3 The accuracy and capacity of the testing and measuring equipments shall be adequate to meet the requirements of the specification and drawing.
- 6.4 The testing and measuring equipment shall be duly calibrated and the validity of calibration should be verified by checking the calibration certificate issued by the calibration agency from where it was calibrated.
- 6.5 Meticulous record of testing for various stages (raw material / finished product) for each batch of production shall be maintained.

7.0 DRAWINGS

The firm should submit the manufacturing drawings of (i) the subject item manufactured by them and (ii) of the rubber membrane used in it for RDSO's approval before manufacture. Notwithstanding any approval to drawings / designs by RDSO, the firm shall be solely responsible for performance of the product.