Ref: BARC/IF3/04/2019/169594

Tender No.: BARC/IF3/04/2019/169594

Due Date: 20/09/2019

Subject: Inviting sealed quotations for and on behalf of the President of India for “Fabrication, testing, supply and guarantee of customized trolleys (2 nos.) for transportation of metal tubes” as per enclosed specifications, drawing and terms & conditions given in Annexure I.

The following should be superscribed on the top of envelope containing quotation.

- Tender due date
- Tender No.

Sealed offers should reach at the following address by SPEED POST (INDIA POST) on or before DUE DATE:

Address: To,
Head, IF3
Attn: Kumar Jaideep
South Site, BARC
Trombay, Mumbai-400085

(Kumar Jaideep)
SO/D, IF3
BARC
krjaideep@barc.gov.in
Contact no.: 022 2559 5641
(for and on behalf of the President of India)

Encl: Annexure I
TERMS AND CONDITIONS

Scope of Work: Fabrication, testing, supply and guarantee of customized trolleys (2 nos.) for transportation of metal tubes.

Fabrication specifications:
The fabricated trolley is required to securely support the load of 60 metallic tubes (weighing 300g each) in the specified configuration. The approximate dimension of the tube is 6.3 mm (OD) x 1.1 m. The final assembly should be of a sturdy & rigid build besides having a gross weight not exceeding 60 kg.

One of the primary purposes for the trolley is to dampen transfer of external vibrations and mechanical shocks to the transported tubes. All joints therefore, need to be properly machined and well-aligned to eliminate any vibrations due to eccentricity or impingement. It should travel steadily while being moved, manoeuvred and parked.

1. The final assembly is to consist of three major sub-assemblies as described below:
   - The rotary tube fixture
   - The pivot frame
   - The main carriage

Rotary tube fixture:
1. The rotary tube holding fixture is designed for holding and supporting the tubes once inserted into the grooves built into its rubber cladding. This is achieved in part by the constriction (neck) offered by the lobes flanking the lengthwise grooves and in part by the tube rests padding both ends of the fixture. The geometry of the grooves is to be reproduced accurately as per drawing.

2. The lobes are supposed to elastically deform to enable tube insertion and removal. Hence the material of the pallet must be of compliant/soft character. The material must not leave any residual marks upon contact with the tubes. Neoprene rubber is the preferred material for this application.

3. There are three handling slots provided across the grooves on each face to permit proper access to the tubes during unloading of the same.

4. This subassembly has to be rotated 360° about its central (longitudinal) axis during loading/unloading so as to facilitate equal access to all the faces. The rotation is to be carried out manually with the added functionality of positive locking of the angular positions at 90 degree intervals.
5. The interior latticework which provides the structural bracing and shape to the rubber cladding can be fabricated out of aluminium profiles to reduce weight.

6. The fixture has 60 available grooves. Each groove on the fixture is to be numbered 1-60 by permanent engraving.

7. The rubber cladding should be of removable type without necessitating any major dismantling of the key structural elements. This is required to replace the cladding, on demand, with another one of different groove geometry.

**Pivot frame:**

1. The pivot frame provides mounting for the rotary tube fixture. It should carry the tube fixture in any orientation of the pivot frame without restricting rotations of the former. The bearings suited for this role are tapered roller bearings housing the axles of the rotary tube fixture.

2. The pivot frame in turn, has 360° rotational freedom along the horizontal axis concentric with the bearings supporting it on the main carriage.

3. The pivoting mechanism must be compact, self-locking type with adequate mechanical advantage for smooth & controlled rotation with minimal effort. A worm & worm-wheel gearbox (G=20:1) furnished with a hand wheel is suitable for this purpose. The same can optionally, be mounted on the floor of the trolley and coupled to one of the bearing shafts of pivot frame.

4. End caps are provided on the central beam of the pivot frame subassembly where it connects to the tube fixture. These caps, when slid into place at both extremes of the tube fixture; serve to hold the inserted tubes firmly in place to avoid their accidental dislodgment during rotations.

**Main carriage:**

1. The main carriage forms the structural scaffold of the trolley and supports the pivot frame & tube fixture subassemblies. The main carriage is borne on caster wheel sets.

2. It is to be fabricated with aluminium profiles for rigidity & minimal weight penalty. It must be constructed to be well-balanced in terms of weight distribution in order to resist toppling during handling or static condition. Some weights may be distributed on the trolley floor for lowering the overall centre of gravity, without exceeding the total upper limit on trolley weight as specified earlier.
3. The caster wheel units must have the provision of swivelling for easy steering around corners and brake spikes for secure parking of the trolley. The wheels should have a durable rubber tread.

4. The caster wheel sets must not vibrate/rattle when the trolley is rolled. Minimizing radial clearances in the wheel bearings will serve to reduce backlash and rattling.

5. The handles must be encased in rubber grips.

2. **Material & Form:-**

1. Material for Structural members: Commercial Al (Min. specified $\sigma_y = 240$ MPa, Std. extruded profiles, 32x32 mm$^2$)
2. Material for rubber fixture: Neoprene rubber (solid or foam-type)
3. Material for wheels: Std. caster wheels with neoprene tread

3. While the pivot frame is in the horizontal position, the maximum permissible vertical deflection for the tube fixture at mid-span is **1mm**.

4. **Vendor evaluation procedure:** The 03 lowest vendors have to supply samples of the rubber material on non-returnable basis and work plan for the fabrication of the tube fixture within 10 days from the date of opening of quotation. The technical acceptability of the same shall be decisive for final bid acceptance.

5. The manufacturing drawing and BOM for construction of the trolley shall be submitted for approval prior to commencement of fabrication.

6. Purchaser shall inspect and test the finished product at vendor’s location. The product will only be cleared for delivery once the testing is satisfactory. Purchaser’s representatives may provide feedback for corrective actions reg. the fabrication to improve quality of the final product. Vendor shall adhere to such suggestion.

7. There may be minor changes in some dimensions in the drawing and these changes shall be informed by purchaser well in advance of fabrication. Vendor shall agree to accept those changes in drawings.

8. The final product should not have any foreign residues (grease, dirt, paint, detergent etc.) anywhere inside or outside the assemblies.

9. Care shall be taken by the supplier to ensure safe delivery of the material at site. The supplier shall be responsible for packing the material adequately so as to prevent damage of any kind during shipment to the purchaser’s site.
In their technical bid, vendors should address all the points as mentioned in our detailed technical specifications. No point should be kept blank or ambiguous; it may affect bid evaluation. Any terms & conditions which could not be met by vendor shall be clearly mentioned in the offer document.

**GSTIN & PAN** should be clearly mentioned in the quotation, without which the offers will not be considered.

**Warranty/guarantee:** Guarantee for material and workmanship for at least one year.

**Price:** Offered cost (with taxes as applicable indicated clearly) shall be valid for the entire scope of work (materials, fabrication, testing, supply, taxes, packing & forwarding, transportation etc). Maximum possible break-up price should be given in the offer.

**Validity:** Offer should be firm and valid for next three months from the date of opening of tenders.

**Income tax:** Income Tax @2% and 2% GST TDS shall be deducted from vendor’s bill.

**Completion period:** The work completion period shall be 6 weeks. The work completion schedule should be strictly adhered with. Any delay which is attributable to the contractor is liable for penalty @ 0.5% per week (max 5%) on total work order value. In case extension in work completion period is required, request for it with proper and valid justification is to be sent to us positively before the expiry of work completion period.

**Payment:** 100% payment including taxes will be made after delivery of the required no. of items and successful completion of work and submission of following documents:

a. Original bill  
b. Advance stamped receipt  
c. Guarantee Certificate  
d. Contractor shall fill up the option for payment through ECS/RTGS with pre-stamped receipt at the time of payment.  
e. Undertaking shall be submitted that the GST has been promptly deposited with the authorities.

No Advance payment is possible.

**Confidentiality clause:**

1. **Confidentiality:** No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as “Proprietary” in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any other third party without the prior consent of the original disclosing party.
2. "Restricted information" categories under section 18 of the Atomic Energy Act, 1962 and "Official Secrets" under section 5 of the Official Secrets Act 1923: Any contravention of the above mentioned provisions by any contractor, sub-contractor, consultant, advisor or the employees of a contractor will invite penal consequences under the aforesaid legislation.

3. **Prohibition against use of BARC’s name without permission for publicity Purposes**: The contractor, sub-contractor, consultant, advisor or the employees engaged by the contractor shall not use BARC’s name for any publicity purpose through any media like press, radio, TV or internet without prior written approval of BARC.

   /Kumar Jaldeep
   SO/D, IF3
   BARC
   (for and on behalf of the President of India)
Isometric view of the trolley with subassemblies labelled. The tube holding grooves have been hidden for visual clarity. The axes of rotation of the rotary tube fixture and the pivot frame have been shown by arrows. The caster wheel sets have been shown only as simplified wheel attachments.
Projected cross-sectional view of the tube holding fixture. It is to have at least 60 grooves arranged as shown (pitch: 9 mm). No tube can be placed at the four corners. The thickness of cladding below a groove must be at least 6 mm.
The tube holding fixture is shown in detail below. The tube rests have been sectioned off in (a) to reveal the expected appearance of the tube holding grooves. In (b) appearance of the fixture is shown with tube rest built in.

(a)

Rotary Tube fixture font view

(b)

Tube rests padding the end of the grooves.
Pivot frame locked in vertical orientation during tube loading and unloading.

Pivot frame locked in horizontal orientation during transportation.