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Department of Civil Engineering

Indian Institute of Technology, Madras

I.I.T.P.O., MADRAS - 600 036.

Ref. No.

CIB/TRN	Abdul	2013	Rheo	SPL
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Date : 26.03.2014.

Dear Sirs,

DUE DATE : 17.04.2014.

1. Quotations are invited in duplicate for the various items shown below / overleaf / enclosed list. ✓
2. The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above. ✗
3. The Quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS & D Rate contract. Rate Contract Number and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers)
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. Local Firms : Quotations should be for free delivery to this Institute. If Quotations are for Ex-Godown, delivery charges should be indicated separately.
7. Firms Outside Chennai : Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If-Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of Sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificates will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

Details as per enclosed list. ✓

★ Two bid system
1. Commercial bid ② Technical bid

Yours faithfully

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For HEAD OF THE DEPT.

*Strike out whichever is not applicable.



Technical Specifications for Dynamic Shear Rheometer

General Specification:	
Design	<ul style="list-style-type: none"> - A research-grade dynamic shear rheometer - Modular design capable of working with standard viscometric geometries- parallel-plate, cone-and-plate and concentric cylinder
Measurement and Control	<ul style="list-style-type: none"> - Measurement and control of both torque and angular displacement in the rotary direction - Measurement and control of both normal force and axial displacement in the vertical direction
Capacity and Resolution:	
Maximum Torque	200 mNm or higher
Torque Resolution	0.1 nNm or lower
Maximum Normal Force	50 N or higher
Normal Force Resolution	0.5 mN or lower
Angular velocity range	10^{-7} to 300 rad/s
Angular frequency range	10^{-5} to 100 Hz
Time taken for step change in strain, strain rate	50 mSec or higher
Temperature Control:	
Type of temperature control	Peltier
Minimum temperature	0 ^o C or lower
Maximum temperature	200 ^o C or higher
Temperature accuracy	±0.1 ^o C or lower
Other requirements	<ul style="list-style-type: none"> - Controlling temperature dynamically during experiments - Conducting temperature sweep experiments
Included Geometries:	
Parallel-plate geometry	<ul style="list-style-type: none"> - 25 mm diameter upper and lower plates - 8 mm diameter upper and lower plates
Cone-and-plate geometry	- 25 mm diameter cone with 1 ^o cone-angle
Concentric cylinder	- 20-30 mm cup diameter with 1 mm gap
Control, Data Acquisition and Data Visualization:	
Basic Control	<ul style="list-style-type: none"> - Software for control of instrument from PC - Ability to control temperature, torque/angular velocity simultaneously
Experiment Templates	<ul style="list-style-type: none"> - Standard templates for steady-shear, creep-recovery, stress-relaxation, small-amplitude oscillatory shear (SAOS) and

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	<p>large-amplitude oscillatory shear (LAOS) experiments</p> <ul style="list-style-type: none"> - Templates for standardized testing of bitumens as per ASTM and AASHTO standards - Capability for creating custom test templates
Data Acquisition	<ul style="list-style-type: none"> - Capability to obtain raw data of torque exerted on the top plate, and angular deflection and angular velocity of the top plate along with the temperature at every measuring point - Capability to adjust time interval between subsequent measurements points
Data Visualization	<ul style="list-style-type: none"> - Sufficient features for visualization of experiment results - Features for conducting elementary data analysis
Capabilities for Advanced Material Characterization:	
Capability for testing large specimen within an environmental chamber	Required
Capability of uniaxial extension tests	Required
Capability of measuring viscosity within a pressure cell, preferably with a pressure of up to 1000 bar	Required
Capability of conducting Sentmanat extensional rheological tests	Required
Capability of optical visualization of internal structure and flow of materials	Required
Additional Requirements:	
Power Supply	220-240 V, 50-60Hz AC with single phase power supply
Technical Support:	
Round the clock technical support not only during the warranty period but beyond that upon the payment of annual maintenance contract	Required

Please include the following in the quotation:

- List of optional accessories available for the equipment
- Cost of essential utilities such as personal computer, compressor, filter, circulator, etc.
- Delivery and installation charges

In addition, please consider the following aspects while supplying the quotation

- We are an academic institution. If you have any special discount offers for such establishments, please state them explicitly in the quotation
- We would like to have your commitment in terms of maintenance. Please offer free annual maintenance contract (after warranty period) so that the instrument will be maintained for an

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additional 2 years at least.

- Please specify policy for the purchasing of the spares and additional attachments within 6 months of procurement
- Demonstration of having provided such satisfactory technical support to customers in India will be an added advantage.
- The vendor should supply a list of academic institutions/research laboratories wherein they have supplied similar equipment.

Requirements of the bidder:

- a. The Bidder should be capable of supply of all hardware/software
- b. The bidder company should be in existence for at least 15 years as on 1-1-2014
- c. Latest income tax clearance and sales tax clearance should be produced along with bid

The bidder should produce documentary support for the above. Only those who satisfy the above criteria are eligible to bid and will be considered for further participation.

Requirements of the bid:

- a. Documents to establish the meeting of the eligibility of the bidder should be submitted separately in a sealed envelope.
- b. Submit separate technical bid in sealed envelope.
- c. Submit separate commercial bid in sealed envelope.
- d. Bids that do not conform to the above requirements could be disqualified.

Important Dates:

Event	Date
• Release of Specifications to Bidders	March 28, 2014
• Response from Bidders	April 17, 2014

Response format:

All submissions in response to this request must conform to the format given at the end of this document. Failure to submit in the requested format will lead to rejection of the tender

Response submission:

Responses to this proposal must be submitted in sealed envelopes and delivered by either post, courier, or in person before 5.00 p.m. on 18-04-2012, to the Client at

Dr. S. P. Atul Narayan
Project Coordinator
Department of Civil Engineering
Indian Institute of Technology Madras
Chennai – 600 036, India

Proposals received after the due date and time will be rejected.

Right to reject:

The Client reserves the right to reject all the bids without assigning any reason. Responses should be submitted with the most favorable terms that the Vendor could offer.

Atul Narayan