



सीएसआईआर - केन्द्रीय काँच एवं सिरामिक अनुसंधान संस्थान

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## CORRIGENDUM

REFERENCE NO. : - P/NC/221/SP/SO(SB)/OTE/22-23

DATE: 04/07/2023

**NAME OF EQUIPMENT: "SUPPLY, INSTALLATION, COMMISSIONING, DEMONSTRATION & TRAINING OF SYSTEM FOR HEALTH MONITORING OF BRIDGES AND MINES"**

NOTE: The Bids must be submitted in the Central Public Procurement Portal (URL: <https://etenders.gov.in/eprocure/app>) only. Manual/Offline bids shall not be accepted under any circumstances. Bidders should quote in INR only.

CONSEQUENT TO THE PRE-BID MEETING HELD ON 27/06/2023, THE REVISED SPECIFICATION IS GIVEN BELOW:-

### SYSTEM FOR HEALTH MONITORING OF BRIDGES AND MINES

#### 1. System for Health Monitoring of Bridges and Mines

The sensor system comprising of the below listed sensors to measure various physical parameters such as displacement, strain, vibration, tilt, temperature, load etc. which are observed during the strata monitoring and health monitoring of Bridges and mines. The system also includes the data acquisition system which is required to be compatible to all the below listed sensors and can be connected as required using suitable electric cables.

#### Specifications: Detailed specifications of consisting sub-items

Sub-item Sr. No.	Item Name	Required Specification	Quantity (Nos)
A	Piezometers	Sensor element : Vibrating Wire Type Range : 2.0 kg/cm <sup>2</sup> ~ 35.0 kg/cm <sup>2</sup> Resolution: 0.025% FSR Accuracy : ±0.1% FSR Non-linearity: ±0.5% FSR Output: Frequency	2
B	Strain Gauge:, embedment strain gauge:	Sensor element: Vibrating Wire Type Range : +/-1500 microstrain Resolution : 0.1microstrain Accuracy : ±0.1% FSR Non-linearity:±0.5%FSR Gauge length: 153mm Gauge factor 3.304	2
C	Weldable strain gages	Sensor element: Vibrating Wire Type Range: +/-1500 microstrain Resolution : 0.1microstrain Accuracy : ±0.1% FSR Non-linearity: ±0.5% FSR Gauge length 150mm Gauge factor 4.062	2
D	Tilt Meter	Tilt Meter Specification: Range: ±5° to ±10° Output: Frequency Resolution: 5/10 arc seconds Accuracy: ±0.1% FSR Nonlinearity: ±0.5% FSR Tem Device accuracy: ±0.5 °C Built in Temp. Device: 3Kohm Material : Special stainless steel, O-Ring Sealing	2
E	Stress meter	(Ex: Total Length : 2m) - Sensor element : Vibrating Wire Type - Range : Total 3300 ( Extension 1650 .	1

		<p>Compression 1650 microstrain)</p> <ul style="list-style-type: none"> <li>- Accuracy : <math>\pm 0.1\%</math> FSR</li> <li>- Nonlinearity : <math>\pm 0.5\%</math> FSR</li> <li>- Built in temperature device : Standard : Thermistor(3k<math>\Omega</math>)</li> <li>- Measuring Points : 4 points <ul style="list-style-type: none"> <li>- Minimum borehole diameter : More than <math>\Phi 38</math>mm (EX Drill)</li> <li>- Water Proof : 50mH<sub>2</sub>O</li> <li>- Effective load of strain gauge : 17 ton-f (ton-force)</li> <li>- Signal cable</li> <li>- <math>\Phi 10</math>mm ,0.37mm<sup>2</sup> * 8C shielded PVC sheath cable 3m</li> </ul> </li> </ul>	
F	Load cell	<p>Load Cell(Hollow Type)</p> <ul style="list-style-type: none"> <li>-Sensor : Vibrating wire sensor</li> <li>-Dimension : 38.5mm (ID)*72mm (OD)*80mm</li> <li>- Rated Capacity (ton-f) : 40 ton-f</li> <li>- Accuracy : <math>\pm 0.1\%</math> FSR</li> <li>- Material of Cell: SCM Series steel</li> <li>- Sensor Element : Standard 3 VW strain Gauges (Individual reading)</li> <li>- Built in temp. device : Standard Thermistor (3k<math>\Omega</math>)</li> <li>- Bearing Plate</li> </ul>	1
G	Surface Bore hole extensometer	<p>Surface Bore hole extensometer</p> <ul style="list-style-type: none"> <li>- Sensor element Vibrating Wire sensor</li> <li>- Range :50mm</li> <li>- Resolution :0.025 % FSR (0.01mm)</li> <li>- Operating temperature - 40 ~ 105°C</li> <li>- Built in temperature device : Thermistor(3k<math>\Omega</math>)</li> <li>- Water proof : 50mH<sub>2</sub>O</li> <li>- Signal cable</li> <li>- <math>\Phi 10</math>mm, 0.24 mm<sup>2</sup> * 8C shielded PVC Cable 3m</li> <li>- Extension Rod (1m)</li> <li>- Fiber glass anchor rod (<math>\Phi 6</math>mm)</li> <li>- Protection tube (1m)</li> <li>- PE / <math>\Phi 8</math>*10mm</li> <li>- Grouting Anchor for 1380</li> </ul>	1
H	Bore hole Stress Meter	<ul style="list-style-type: none"> <li>- Bore hole diameter: <math>\Phi 37</math>~<math>\Phi 39</math>mm</li> <li>- Sensor element : Vibrating Wire sensor</li> <li>- Range :Compression 700kg /cm<sup>2</sup>(70Mpa)</li> <li>- Resolution : 0.014~0.07kg/cm<sup>2</sup></li> <li>- Built in temperature device : Standard Thermistor(3k<math>\Omega</math>)</li> <li>- Maximum borehole depth : 30m</li> <li>- Waterproof :105H<sub>2</sub>O</li> <li>- Material : Stainless steel</li> <li>- Signal Cable</li> </ul>	4

		<ul style="list-style-type: none"> <li>- <math>\Phi 4.5\text{mm}</math>, <math>0.24\text{mm}^2</math> * 4C shielded PVC Cable 30m</li> <li>- <b>**Optional**</b></li> <li>- Signal Cable</li> <li>- <math>\Phi 4.5\text{mm}</math>, <math>0.24\text{mm}^2</math> * 4C shielded PVC Cable</li> <li>- Installation Kit (for 15m length for 1338EX)</li> <li>- Installation Kit (for 30m length for 1338EX)</li> </ul>	
I	Rod Extensometer	<ul style="list-style-type: none"> <li>- Sensor element : Vibrating Wire type</li> <li>- Range : 100mm</li> <li>- Resolution : 0.125% FSR</li> <li>- Accuracy : <math>\pm 0.1\%</math> FSR</li> <li>- Measuring Points : 4 Points (2m,4m,7m,10m)</li> <li>- Minimum borehole diameter More than <math>\Phi 38\text{mm}</math> (EX Drill)</li> <li>- Signal Cable</li> <li>- <math>\Phi 10\text{mm}</math>, <math>0.24\text{mm}^2</math> * 8C shielded PVC Cable 3m</li> <li>- Extension rod {(18 holes *(2m+4m+7m+10m))}</li> <li>- <math>\Phi 6\text{mm}</math> Filber glass rod</li> <li>- Protective Tube {18 holes *(2m+4m+7m+10m) }</li> <li>- <math>\Phi 10\text{mm}</math>*8mm/Nylon tube</li> <li>- Grouting Anchor for 1391</li> <li>- <b>**Optional**</b></li> <li>- Signal Cable</li> <li>- <math>\Phi 10\text{mm}</math>, <math>0.24\text{mm}^2</math> * 8C shielded PVC Cable</li> </ul>	4
J	Convergence meter	<ul style="list-style-type: none"> <li>- Sensor element : Vibrating Wire type</li> <li>- Range: 0~100mm</li> <li>- Resolution : 0.025% FSR(0.02mm)</li> <li>- Accuracy : <math>\pm 0.1\%</math> FSR</li> <li>- Operating Temperature : -40~80°C</li> <li>- Non Linearity : <math>\pm 0.5\%</math> FSR</li> <li>- Built in temperature device : Standard Thermistor(3k<math>\Omega</math>)</li> <li>- Materials : Special stainless steel ,High grade epoxy potting</li> <li>- Signal Cable</li> <li>- <math>\Phi 4.5\text{mm}</math>, <math>0.24\text{mm}^2</math> * 4C shielded PVC Cable 3m</li> <li>- <b>**Optional**</b></li> <li>- Signal Cable</li> <li>- <math>\Phi 4.5\text{mm}</math>, <math>0.24\text{mm}^2</math> * 4C shielded PVC Cable</li> <li>- Anchor Kit for 2 point</li> <li>- Extension Rod (for 1m)</li> <li>- Male coupler ( Stainless)</li> </ul>	3

K	Displacement Sensor(LVDT)	Stroke Measurement Range: $\pm 50\text{mm}$ or $\pm 100\text{mm}$ Electrical Signal Output : 0-5 V DC or 0-10V DC Excitation voltage: 12-30V DC Non linearity: $<0.5\%$ of full stroke range (Optional $<0.25\%$ of F.S.) Repeatability: $<0.10\%$ of full scale Resolution: Infinite Output bandwidth: 100Hz Output ripple: 30mV max. Operating Temp.: $-20^{\circ}\text{C}$ to $85^{\circ}\text{C}$ Environmental protection: IP55 Cable: 3m	4  Details: • Range: $\pm 50\text{mm}$ (2) • Range: $\pm 100\text{mm}$ (2)
L	Temperature Sensor(RTD)	Element type: PT100 and PT1000 RTD Temperature range: $-50^{\circ}\text{C}$ to $250^{\circ}\text{C}$ Standard probe lengths : 50mm to 200mm Wiring : 2, 3, and 4-wire lead wire styles Lead type: Leads covered with braided stainless steel Output: mV/0-5V DC Accuracy: $\pm 1\%$ Resolution: $0.25^{\circ}\text{C}$ Environmental protection: IP55 Cable length: 3m	4  Details: • PT100 (2) • PT1000 RTD (2)
M	Data Logger DT 85G	Power source: Not more than 12V DC with rechargeable battery along with standby so as to run uninterrupted for 3 days or more Analog channels: 16 Digital channels: 16 LCD display Analog range: 0 to 5 V; 4 mA to 20 mA Frequency: 500 Hz to 10,000 Hz Data acquisition interval: Programmable from 1 Mins to 1 day Compatible communication port  Data logger must be compatible with all the above listed sensors (A - L) and sensors must be connected through suitable electric cable connections.	2

Terms and Conditions apply:

- (i) AMC: Not required now.
- (ii) Expected Delivery period: 120-180 days
- (iii) Installation, commissioning, demonstration and training: required at CGCRI by company's own or authorized Engineer/Technician/Service Engineer.
- (iv) The vendor must have prior experience in integration and installation of similar type of sensing systems.
- (v) Duration of completion of Installation, commissioning, demonstration and training including all contractual obligation if any w.e.f. receipt of material at CGCRI: 45 Days
- (vi) Warranty period: 1 Year or more

Deadline for Submission of Bid and Opening of Bid is remain unchanged as given in CGCRI Tender No. P/NC/221/SP/SO(SB)/OTE/22-23 dated 19/06/2023 which is as follows:-

Bid Submission End Date & Time	20/07/2023 upto 03.30 PM(IST)
Bid Opening Date & Time	21/07/2023 upto 03.30 PM(IST)

The above amendments shall amount to amendments of the relevant terms of our Bid Document for CGCRI Tender No. P/NC/221/SP/SO(SB)/OTE/22-23 dated 19/06/2023.

All other Tender terms and conditions remain unchanged.

Bidders should quote only in INR. Bidding is open to only Class I /Class II Local Bidders.

20/07/2023

(A.K.Pandey)  
Stores & Purchase Officer  
FOR & ON BEHALF OF CSIR

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