Minutes of the meeting held on 15.01.2019 at 12.30 noon in the Conference Room of WB HIDCO office at HIDCO BHABAN, 35-1111, MAR, (Narkelbagan) New Town, Kolkata for EOI NO.25 of 2018-2019 of G.M (E)-IV, WB HIDCO in connection with “Monitoring Biswa Bangla Gate in New Town, Kolkata for a period of 3 (three) years.”

Officials present

WB HIDCO

1. Sri Ananda Ganguly, ED(E),WBHIDCO
2. Sri S.K Bagchi, CE, WBHIDCO
3. Sri S. Neogy, G. M.(Engg)-IV, HIDCO
4. Sri Habibur Rahaman, A. E, under GM (E)-IV, HIDCO

Participants:

1. Mr. P.R Mondal, Powergen Technical Services (P) Ltd.
   (Mob-8910170496) AD-189, Salt Lake, Kolkata-700 064
2. Thomas M.T Load Master, 57/1, 6th Cross, Sir Laxminaryan layout, near Scientific Enclave,
   (Mob-9036612900) Tharabanahalli, Chikkabanavara post, Hesaragatta Main Road, Bangalore-560090

The following matters are discussed along with the participants prior to participate in the EOI – 25 of 2018-2019:

A) Objective of this EOI is 1) Design, Engineering, Installation, Testing &Commissioning and 2) Operation and Maintenance by a competent agency for 3 years for on-site electronic measurement and data logging of Critical Structural Parameters for round the clock monitoring and assessment of Stability &Structural Integrity of Biswa Bangla gate.

Minimum Critical Parameters to be monitored are:

   a) Stresses at critical points
   b) Relative deflections in the gate arms
   c) Vibrations in the structure at various locations
   d) Wind speed, direction, temperature & humidity

Measurements of these parameters shall be done by highly sensitive and precision electronic devices & sensors as specified in Annexure I of this document. For measurement of Vibrations, Stresses and Deflections, Accelerometers, Strain Gauges and Laser Photometric technique shall be used respectively. By real time processing of logged data in correlation with the structural design factoring the external parameters and live load an Early Warning System shall give warning in times of distress in structural integrity of the Gate. The Early Warning shall make use of Machine Learning (ML) techniques to upgrade itself from previous events that are not normal. This Early Warnings system shall not only sound an alarm siren but also send Text Messages to select mobile phone numbers. Mobile App is a requirement for sending out Distress Warnings through SMS and email to pre-defined mobile phone numbers and email addresses.
The job is divided into two parts requires

1) Supply and installation.
2) Operation and maintenance. (O & M)

B) Scope of Work

1) Measurement of stresses at critical points of the structure by:
   (a) Triaxial strain gauges.
   (b) Biaxial strain gauges.
2) Measurement of deflection by Laser Photometry
3) Monitoring of vibration by Accelerometers
4) Early warning system for any distress including seismic induced hazards using machine learning (ML).
5) Alert SMS in limited nos. of mobile phones.
6) Data storage and monitoring of above in a control room located near the iconic structure.
7) System specifications are enclosed in Annexure no.1
8) Operation & Maintenance of the system for 12 months from the date of commissioning.
9) Monthly inspection report submission.
10) Periodical physical inspection of joints, welding, plates etc.

C) Enabling facilities to be provided by HIDCO

1) Provide covered and lockable space near the structure with air conditioning and single phase uninterrupted power supply.
2) 215 V, 50 Hz. power supply at 2 (two) locations at the Observation Deck.
3) Complete engineering design document and ‘As-built’ drawings of the Gate.
4) Forces and moments diagram of the structure.
5) Free access to the site.
6) Free supply of electric power for the system.

D) Payment Terms:

For System Supply & Installation:

1) 65% of the contract value after supply of all goods at site in good condition duly certified by the authority concern.
2) 35% of the contract value against successful commissioning and testing of the system duly verified by the authority concern.

For Operation & Maintenance (O&M)

1) Payment of O&M / AMC shall be paid in 4 quarters for 12 months.
E. Bid Documents:

The participant bidders must submit their bid /offer in 02 (two) separate sealed envelope covers.

1) One sealed cover should contain the credentials of similar type of Work along with valid PAN, Trade License / Address Proof, PF Registration, GST, Annual Turnover etc. as applicable to participate in the EOI.

2) Second sealed cover should contain financial bid of financial offer in the BOQ as a whole. Both the above sealed cover must be subscribed.

3) Proposal /Methodology of the agency how they intend to Check and Monitor the Structural Health along with offer price.

4) The bidders have to be technically & financially sound to participate in the financial bid. The financial bid of the bidders whose proposal will be rejected after opening of technical bid will not be opened.

The technical bid will be opened first. Only those bidders whose technical bids are found suitable to be allowed to participate in the Financial Bid.

And, any participant bidder not following the steps in submitting their bid/offer as described in this para shall be disqualified.

F. Eligibility to participate:

1) They should have experience in similar nature of such type of work in different steel structure during last 3 (three) years.

G. Date & Time Schedule:

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<th>Details</th>
<th>Date/Time</th>
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<tr>
<td>2</td>
<td>Last date &amp; time for submission of Technical Bid with all necessary documents as applicable.</td>
<td>28.01.2019 up to 2.00P.M in the tender Box kept in the office of GM(E)-IV, WB HIDCO</td>
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<td>3</td>
<td>Opening of Technical Bid offer</td>
<td>01.02.2019 after 3.00P.M in the office of the G.M (E)-IV, WB HIDCO at New Town, Kolkata.</td>
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<td>4</td>
<td>Date &amp; time for publishing list of technically qualified bidders.</td>
<td>06.02.2019 after 3.00P.M</td>
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<td>5</td>
<td>Issue of B.O.Q for the technically qualified bidder</td>
<td>07.02.2019 upto 4.00P.M</td>
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<td>6</td>
<td>Date &amp; time for submission of Financial Bid</td>
<td>14.02.2019 upto 2.00P.M</td>
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<td>7</td>
<td>Last date &amp; time for Opening of Financial Bid/offer</td>
<td>14.02.2019 after 3.00P.M in the office of the G.M (E)-IV, WB HIDCO at New Town, Kolkata.</td>
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H. TERMS & CONDITIONS:

1) Before submitting any bid offer, the intending participants may make themselves acquainted thoroughly, with the site condition, where the work is to be executed. No claim whatsoever will be entertained on these accounts, afterwards.
2) Any bid / offer containing overwriting is liable to be rejected. All corrections are to be attested under the dated signature of the bidder without which the bid/offer may be informal.

3) Initial deposit money Rs.20,000/- (Refundable) in the form of Bank Draft/Pay Order in favour of WB HIDCO Ltd., payable at Kolkata at the time of submission of Technical & Financial Bid offer.

4) Agencies / Firms registered with MSME, Directorate of Micro Small & Medium Enterprises shall be exempted from giving Initial Deposit Money as per existing Govt. policy. Relevant copies of such certificates / registrations must be furnished with at the time of submission of the EOI by the agency.

5) Conditional E.O.I – Conditional E.O.I will not be accepted and shall be deemed as in formal.

6) Rate is to be quoted including all Taxes as well as GST.

7) Completion period for Supply is 4 months and Installation is 1 month.

8) Statutory deductions are to be followed the instruction as per LOI/Work Order.

9) The agency shall have to arrange all materials required for the job. No materials will be issued by HIDCO / Department.

10) WB HIDCO reserves the right to refuse permission to any participants without assigning a reason whatsoever. In case of cancellation, no liabilities will be incurred by the WB HIDCO.

11) Conditional EOI-Conditional E.O.I will not be accepted and shall be deemed as in formal.

12) No application will be entertained if Bid is sent by e-mail.

13) The lowest bidder will have to follow the instructions which will be mentioned in the LOI/Work Order regarding agreement etc.

14) For any other details please visit over website: [www.wbhidcoltd.com](http://www.wbhidcoltd.com) or in the office of the undersigned.

General Manager (Engg)-IV,
WB HIDCO

ANNEXURE – I

Specifications of Sensors & Computing Systems:

1. Bi-axial strain gauge
   a) Suitable for installation on steel members.
   b) Bi-axial strain gauge (0, 90°) to be used for pure bending or tensile or compressive members.
   c) Strain gauges have self temperature compensation.
   d) Minimum Strain resolution is 0.22 micro-strains.
   e) Strain range: Up to 25,000 micro strains
   f) Operating temperature: (-)50°C to 80°C
   g) 24-bit ADC will be used to convert the analogue signal to digital signal
   h) Wireless communication will be used to transmit data

2. Tri-axial strain gauge
   a) Suitable for installation on steel members to measure stress where principal planes of stress are not known.
   b) Tri-axial strain gauge (0, 45, 90°) to be used for assessment of complex stresses of a structure.
   c) Strain gauge has self temperature compensation.
   d) Minimum Strain resolution is 0.22 micro-strains.
   e) Strain range: Up to 25,000 micro strains
   f) Operating temperature: (-)50°C to 80°C
   g) 24-bit ADC will be used to convert the analogue signal to digital signal
   h) Wireless communication will be used to transmit data
2.1 Laser Photometric Measurement System (LPMS) with individual processing computers
   a) Range: ± 100 mm
   b) Low precision Resolution: ± 2.0 mm
   c) High precision Resolution: ± 0.1 mm
   d) Repeatability: <0.1 mm
   e) High precision data transmission only for events which occur beyond a threshold value after processing.

2.2 LPMS data processing computer:
   a) Processor: AMD Ryzen Thread ripper, (32-Threads min), 1950 x 3.4 GHz, 16-core STR4 Processor OR any other superior grade processor.
   b) RAM: 32 GB DDR4
   c) Memory: 2 TB (Min)
   d) OS: LINUX
   e) System pre-loaded with application tools
   f) Industrial rack type cabinet
   g) UPS for one year backup.

3. 3-D Accelerometer
   a) Linear Acceleration sensitivity: 0.061 mg/LSB (LSB = Least Significance Bit) for ± 2g range
   b) Acceleration Output Data Rate: 12.5 Hz to 6664 Hz
   c) Angular rate sensitivity: 4.375 mdps/LSB for Full scale ± 125° /second
   d) Gyro Output Data Rate: 12.5 Hz to 1666 Hz
   e) Note: ‘g’ stands for Gravity; ‘mdps’ stands for Milli Degree Per Second
   f) Wireless communication will be used to transmit all the strain data upto 100 m in line of site

4. Weather station
   To continuously monitor & record:
   a) Ambient temp.
   b) Relative Humidity
   c) Wind speed with direction
   d) Atmospheric pressure

General Manager (Engg)-IV
WB HIDCO