



# Indian Institute of Technology Madras

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

DEPARTMENT OF CIVIL ENGINEERING

SPEED POST

## Form for Inviting Quotations

Ref.No. CIE/RADH/2018/ Pilot installation of sacrificial anode cathodic protection (SACP) Date: 14/06 /2018

**DUE DATE: 29.06.2018**

**Pre-bid meeting 2 PM on June 22, 2018 (Friday)**

To

Dear Sirs,

Quotations are invited for the supply of an "Pilot installation of sacrificial anode cathodic protection (SACP) system to control low-to-severe corrosion in reinforced-lime-concrete sunshades " conforming to the specifications given in the enclosed list.

1. The quotation should be submitted under the two-bid system (i.e.) Technical Bid and Financial Bid in separate envelopes sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the **undersigned so as to reach on or before the due date stipulated above.**
2. The Quotations should be valid for (60) **Sixty days from the due date and the period of delivery** required should also be clearly indicated.
3. If the item is under DGS&D Rate contract No. 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 (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
4. 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.
5. Local Firms : Quotations should be for free delivery to this Institute. If Quotations for Ex-Godown delivery charges should be indicated separately.
6. Firms Outside Madras : Quotations should be for F.O.R. Madras. 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.
7. The rates of GST and 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 GST/General Taxes will be admitted at any stage and on any ground whatsoever. IIT Madras is eligible for concessional GST. Relevant certificate will be issued. In case of import supply the price should be quoted without custom duty. I.I.T. Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on **EX-WORXS** and **CIP** basis indicating the mode of shipment.
8. Goods should be supplied carriage paid and insured.
9. Goods shall not be supplied without an official supply order.
10. 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
11. A pre-bid meeting will be arranged at **2 PM on June 22, 2018 (Friday)** in BSB Room 205, Department of Civil Engineering, IIT Madras (contact pillai@iitm.ac.in for further details). Further details on the project site will be discussed/provided during the pre-bid meeting. Those who do not participate in the pre-bid meeting will not be considered further for this pilot project.

Details as per enclosed list.

  
Yours faithfully  
(Dr. Radhakrishna G Pillai)

Note: (i) Quotation should be sent by SPEED POST only or to be delivered directly concerned  
(ii) Firms are requested to submit the specifications of their product along with supporting technical Documentation/brochure instead of



**National Centre for Safety of Heritage Structures**  
**Department of Civil Engineering**  
Indian Institute of Technology Madras  
Chennai – 600 036, India

**Tender Ref. No:** CIE/RADH/2018/Pilot Installation --

**Dated: June 12, 2018**

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**Pilot installation of sacrificial anode cathodic protection (SACP) system to control low-to-severe corrosion in reinforced-lime-concrete sunshades**

GENERAL SCOPE: The pilot project involves the assessment of current corrosion conditions and trial installation of SACP system on a 10 m × 2 m portion of cantilever sunshade of an important historic building in New Delhi. The sunshades are at a height of about 40 m from ground. The sunshades are made of reinforced lime concrete and are experiencing significant corrosion of the embedded rebars. The degree of corrosion varies across the length of sunshade from very severe (complete spalling of cover) to mild (visible cracks and no spalling). The performance of the SACP system must be monitored for a period of 3 months after installation, in order to verify and ensure that further corrosion activity will be negligible for 20 years or more. Also, a detailed execution plan for further extending the life, after 20 years, must be provided. The installed system and the installation procedure should not cause structural damage to the existing sunshades, and should not alter its aesthetic appearance.

### Technical specifications-cum-compliance table

NOTE: For each specification, please enter "YES" or "NO" in the second column of this table. If any cell in the second column is left blank, then it will be assumed that the bidder does not comply with the respective specification or requirement. Provide catalogues, data sheets and/or other documentation to support the compliance of your equipment to the given specifications.

1 General Specifications	Yes / No	Remarks
1.1 The corroding rebars inside the sunshades should be located using a proven non-destructive technique (A ground penetrating radar: GPR may be used; Usual tools such as rebar locators may be good only for pristine rebars but, not for corroded rebars)		
1.2 Two different types of galvanic anodes system viz. mesh/flat anodes and hybrid fusion anodes should be used.		
1.3 The galvanic anodes shall be alkali-activated and shall contain no intentionally added chloride, bromide or other constituents that are corrosive to reinforcing steel, as per ACI 562 (2013).		
1.4 Anode units supplied should have long enough tie-wires to be able to tie to the rebars without splicing		
1.5 The anodes shall be pre-manufactured with designed nominal grams of zinc in compliance with ASTM B418 Type II cast around a pair of uncoated, non-galvanized steel tie-wires and encased in a highly alkaline cementitious shell with very high pH (about 13.5).		
1.6 The rebar connection should be established with special attachments, with provisions of connections for monitoring the performance of anode in the long-term.		
1.7 Lead inserts or other suitable and proven technique must be deployed to ensure proper electrical connection to the severely corroded rebars inside the sunshades.		
1.8 Proper connection between the anode and the rebars must be ensured. Resistance across each connection shall be less than 1 $\Omega$ .		
1.9 Existing spalled/delaminated overlay should be removed.		
1.10 The sunshade should be provided with a new 20 mm cementitious, waterproof overlay covering the installed SACP system.		
1.11 The new overlay should be bonded well to the existing sunshade and highly resistant to weathering action and UV exposure. Pull-off tests for bond and penetration tests for water-proofing may be conducted by the client.		
1.12 The new overlay should be pigmented to match the existing color.		
1.13 Provide a <b>detailed procedure for the proposed installation</b> . Noise pollution and disturbance to the inhabitants must be kept at minimal level during installation. Also, the sunshades should not experience additional damage due to the imposed loads and/or vibrations during the repair work. Considering the safety of the workers, they will not be allowed to stand on the sunshades and other elements of the building.		
1.14 Lattice boom crane with flat-bed will be provided during the repair and post-installation monitoring work. Total rental time for the crane must be mentioned in the proposal so that the client can make suitable arrangements for the crane, in advance.		



<b>2 Qualification criteria for the bidder/manufactur</b>		
2.1	The anode manufacturer should have at least 15 years of experience in the manufacturing of sacrificial anodes for “cathodic protection of reinforced concrete systems”. Document/Proof of this must be provided along with the technical bid.	
2.2	The bidder should have a minimum experience of 5 years in the “sacrificial anode cathodic protection (SACP) of reinforced concrete systems”. Provide a list of SACP projects undertaken.	
2.3	Bidder must be an authorized installer of approved manufacturer and shall be recommended by product manufacturer.	
2.4	The bidder should monitor the data from the installed system at 3, 6, 9, and 12 months.	
<b>3 Facilities to be provided by the client at the site</b>		
3.1	Approval will be provided for work at High Security Area including necessary permits and gate passes	
3.2	Sufficient access will be provided for the duration of the project, to allow the crew to continue working without delay, and access the areas required for working.	
3.3	Power supply of 230 V will be provided.	
3.4	Water, hose, etc. for drilling and other repair related work will be provided.	
3.5	Lattice boom crane with flat-bed will be provided at the location of project site for accessing the sunshade during the repair and post-installation monitoring work. All possible prior arrangements/assemblies shall be made on ground such that the usage of crane is minimal (in hours). Appropriate plans/schedules will be chalked out through discussion with the client.	
3.6	Free accommodation for 6 personnel may be provided (no guarantee; upon availability) at the project site.	
3.7	Storage facility and vehicles for the transportation of instruments within the site premises and other basic facilities will be provided.	
<b>4 Pre-bid meeting</b>		
4.1	A pre-bid meeting will be arranged at <b>2 PM on June 22, 2018 (Friday)</b> in BSB Room 205, Department of Civil Engineering, IIT Madras (contact pillai@iitm.ac.in for further details). Further details on the project site will be discussed/provided during the pre-bid meeting. Those who do not participate in the pre-bid meeting will not be considered further for this pilot project.	
<b>5 Tender opening</b>		
5.1	The bidder should make a detailed presentation of the proposed work at IIT Madras. This must include prior data on performance of the anodes, detailed installation procedures at site, and quality control and safety measures.	



Radhakrishna G. Pillai