

**Expression of Interest for conducting Ground Penetrating Radar(GPR) survey at CSIR-CMERI, Durgapur (WB) premise**

**A. Introduction:**

Central Mechanical Engineering Research Institute (CMERI), a Constituent Laboratory of CSIR is currently involved in development of AI/ML algorithm using Ground Penetrating Radar (GPR) data for automatic detection of buried metallic and non-metallic utilities/artifacts up-to a depth of 1 meter. The GPR survey will be carried out over test bed with known buried target locations prepared within CSIR-CMERI premises located at Mahatma Gandhi Avenue, City Center, Durgapur, West Bengal- 713209. The technical consultant should have expertise in the field of GPR data interpretation for predicting position, depth and size of the buried objects which is currently not available within our organization. In response to this Expression of Interest (EoI), only the technically qualified participants/ firms will be allowed/ requested to submit their budgetary offer in hardcopy in sealed envelope to Business Development Unit, CSIR-CMERI. The GPR surveyor cum consultant will be selected based on reasonable budgetary offer on L1 basis.

**B. Eligibility:**

The GPR surveyor-cum-consultant must have at least two year of experience in interpretation of GPR data to identify the signatures of buried objects in the background of subsurface environmental noise.

**C. Scope of Work:**

**C.1 CSIR-CMERI:**

- Preparation of the field prior to survey along with implantation of the metallic and non- metallic objects/utilities at different depths in different soil conditions
- Providing other necessary facilities such as operating power, water etc. necessary for field survey
- Overall supervision

**C.2 GPR Surveyor/Service Provider:**

- To provide technical manpower and suitable test equipment for conducting the survey as per serial no C.3 containing the details of survey scenario
- The service provider has to sign a NDA with CSIR-CMERI (as per attached Annexure-



8) to protect confidential information exchanged with them

- The raw GPR images need to be taken with and without buried objects/ utilities (tentative survey plan is attached herewith as per serial no C.4 - not to scale)
- The data interpretation and report generation should be done in presence of CSIR-CMERI scientists/ technical manpower and also share the necessary technical expertise for future endeavor, if required.
- To provide survey test report in hard copy along with all soft copies of raw and processed data as detailed in C.5

### C.3 Details of the Survey Scenario:

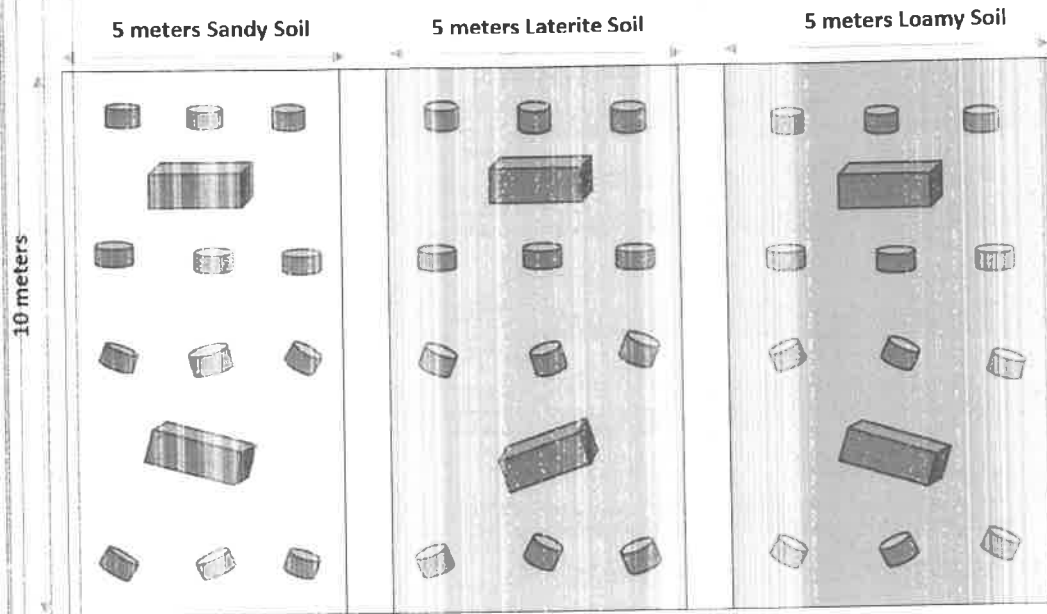
Sl. No.	Parameter	Specifications
1.	GPR centre frequency range	400 MHz – 2 GHz (Technical Brochure of the GPR to be provided)
2.	Data Format	.dzt/.sgy format raw data
3.	Data Acquisition	Facility to import the raw data in platforms like Matlab, Python for farther post processing
4.	Survey Type	Terrestrial (cart based) survey with in-built odometer (for accurate distance measurement) to be performed with and without buried utilities/objects
5.	GPS type	Integrated with internal data logger for GPS data storage with centimetre level accuracy geo-tagging
6.	Depth of Investigation	Up to 1 meter
7.	Buried objects dimension	5-50 cm in diameter and 4-15 cm thickness
8.	Buried objects orientation	Three (Horizontal, Vertical and 45 degree inclined)
9.	Buried objects shape	Cylindrical, Parallelepiped, Spherical etc.
10.	Types of object/utility	Metallic and Non-metallic, plastic objects/ utilities (circular, square, rectangular etc.) which may be surface buried or at different depths like 5 cm, 10cm, 20 cm, 30 cm, 50 cm,

		100 cm... up to 1 meter
11.	Types of soil	Sandy, Loamy, Laterite (both dry and wet/moist)
12.	Other Sensor Requirement	Soil moisture measurement at different position and depths of the test bed
13.	Total investigation area and GPR survey methodology	<p>600 square meter approximately</p> <ul style="list-style-type: none"> <li>• Three stretches of approximate 50 (10 * 5) square meter each approximately with 2 centimetres inter-grid/inter-line spacing</li> <li>• Three stretches will contain dry sandy, loamy and laterite soil. The same three stretches will be used for survey over moist sandy, loamy and laterite soil</li> <li>• Survey needs to be conducted multiple times, with and without buried objects on dry and wet soil conditions as per the following steps: <ul style="list-style-type: none"> <li><b>Step-I:</b> 3 stretches of dry soil(sandy, loamy and laterite) with all artifacts buried as shown in figure 1 below</li> <li><b>Step- II:</b> Same three stretches without the buried objects removed by CSIR-CMERI</li> <li><b>Step- III:</b> Same three stretches without the buried objects removed and water added by CSIR-CMERI</li> <li><b>Step IV:</b> Same three stretches in wet condition and same objects replanted by CSIR-CMERI at similar depths</li> </ul> </li> </ul>

**Important note:**

1. Spraying of water, plantation and removal of objects in the three stretches of soil-fields will be carried out by CSIR-CMERI in between above steps I - IV
2. CSIR-CMERI will not provide separate logistics and transportation arrangements for men and machines under any circumstances.

#### C.4 Tentative Survey Plan:



**Figure 1: Tentative survey plan at CSIR-CMERI premises**

Figure 1 shows a possible tentative plan for the test bed preparation with three different types of soil, namely sandy, laterite and loamy soil. The approximate dimension (Length x Width x Depth) of each type of soil layer will be approximately 10m x 5m x 4 feet. The final test bed preparation and burial position/ depth of the metallic and non-metallic utilities is subject to the discretion of CSIR-CMERI. The objects will be buried at different known depths starting from 0 cm up to maximum depth of 3 feet and in different orientations. The GPR scanning experiment needs to be done with an inter-column gap of 2 centimeters i.e. the distance between the adjacent B scans will be approximately 2 cm. After completion of the GPR scan over different dry soils, water will be added to change the moisture content of the three different kind of soils and similar experiments will be repeated with and without buried objects. Capturing baseline data without objects is critical for accurate interpretation. To ensure consistency, the moisture content of the soil should be recorded at different positions and depths of the test bed with a calibrated soil moisture sensor before performing the GPR survey (to be provided by the consultancy service provider). The ambience temperature also needs to be recorded during every experiment. The soft copy of the raw and processed GPR images along with the generated report containing the depth and positional information of the buried targets with centimeter level accuracy will be handed over to CSIR-CMERI.

### C.5 Deliverables

- Soft copies of all the raw and processed GPR data in .sgy/.dzt format generated during field trial
- Hard copy of the survey report indicating the precise location and depth of the buried metallic and non-metallic utilities with centimeter level accuracy
- Generation of annotated 3D subsurface models and signal intensity heat maps to enhance the interpretation of results (desirable)

### D. Qualification Criteria

Each eligible consultant should possess all the following pre-qualification criteria. Responses not meeting the minimum pre-qualification criteria will be rejected and will not be evaluated.

<b>Sl. No.</b>	<b>Pre-Qualification Criteria</b>	<b>Compliance Documents</b>
1.	The consultant(s) could be any group of specialists/experts in the domain of subsurface geophysics with expertise in GPR data interpretation, corporate entities such as Firms/ Companies/ Societies/ Trusts etc.	Certificate of Registration of the Firm/ Companies/ Societies/ Trusts, GST certificate, PAN certificate, Legal document whichever is applicable.
2.	The entity/ firm should be in the business of providing similar consultancy services in the area of GPR field survey for at least 02 years as on 01.01.2025.	Certificate by the Competent Authority/ Authorized Signatory of the participating entity, Copy of the previous work orders/ contracts to justify the experience.
3.	The entity/firm should not be blacklisted by any Central/ State body or Financial institution/ Bank.	Certificate signed by the authorized signatory.
4.	The entity/firm should certify no part of the survey data generated during the field survey will strictly not be shared/reproduced for any R & D or commercial activity	Certificate signed by the authorized signatory.

#### **E. Selection Criteria**

CSIR-CMERI will assign scores to the response of each qualified firm based on weightage assigned to each of the criteria are as under. CSIR-CMERI may request the shortlisted applicants for presentation before expert committee and qualifying marks are 60 out of 100 marks based on the evaluation of the submitted documents. The maximum marks will be given to the firm who has the highest value against the mentioned criteria/ parameters (experience, turn over etc.) in the below mentioned table and others will be awarded proportionately on percentile basis.

<b>Sl.</b>	<b>Criteria</b>	<b>Max. Marks (%)</b>
<b>1</b>	<b>Organization Details (Type of Organization &amp; Main Areas of Business) [Annexure 2]</b>	30
<b>2</b>	<b>Experience in related fields (Past Experience of the firm/entity)[Annexure-3]</b> Number of years' experience in the field of GPR survey (minimum 02 years or more experience is essential in the relevant field.)	30
<b>3</b>	<b>Experience and Qualifications of the Key Personnel who will be signing the NDA and responsible for all future actions[Format-4]</b> Academic Qualification and Activities carried out in last 3 years	20
<b>4.</b>	<b>Financial strength of the organization/ firm/entity[Annexure-</b>	20
<b>Total</b>		<b>100</b>

**F. EOI Processing Fee: NIL**

#### **G. Venue & Timeline for Submission of Proposal.**

Proposal complete in all respects as specified in the EOI must be submitted to:

**The Head,  
Business Development Unit (BDU),  
CSIR-CMERI Durgapur,  
M. G. Avenue, Durgapur-713209  
e-mail: [bdg@cmeri.res.in](mailto:bdg@cmeri.res.in)  
Phone: +91 9434330540**

The EOI shall be submitted to the following address on or before 5:00 PM of last date of

[bdg@cmeri.res.in](mailto:bdg@cmeri.res.in)

submission during the working days and working hours through E- mail / courier. In exceptional circumstances and at its discretion, CSIR-CMERI may extend the timeline for submission of proposals by issuing amendment to be made available on the website of the institute.

**H. Last Date of Submission: 09<sup>th</sup> February, 2025**

**FORMATS FOR SUBMISSION.**

**Annexure-1**

**APPLICANT'S EXPRESSION OF INTEREST**

To,

**The Head,  
Business Development Unit (BDU),  
CSIR-CMERI Durgapur,  
M. G. Avenue, Durgapur-713209**

**Date:**

**Reg. Submission of Expression of Interest for Technical &  
Business Development Consultant**

Dear Sir,

In response to the Invitation for Expression of Interest (EOI) published on \_\_\_\_\_ for the above purpose, we would like to express interest to carry out the above proposed task. As instructed, we have attached the following documents in a sealed envelope:

7. Organizational Details: Annexure-2;
- ii. Experience in related fields: Annexure-3;
- iii. Experience of Key Personnel: Annexure-4
- iii. Financial strength of the organization/ firm/ entity: Annexure-5;
- iv. Additional Information, if applicable: Annexure-6;
- v. Declaration: Annexure-7.

Yours Truly,

Signature of the Applicant  
{Full Name of the Applicant}  
Stamp.

Encl. As above

Note: The application is to be submitted on the letter head of the organization/firm/entity.



**Annexure-2**

<b><u>S. No.</u></b>	<b><u>Organizational Details</u></b>	
1.	Name of the Organization	
2.	Main areas of Business	
3.	Type of Organization: Company/partnership/ LLP	
4.	Whether the entity/firm has been blacklisted by any Central Government/ State Government/ PSU / Bank/ Financial Institution/ others. If yes, details thereof.	
5.	Address of registered office with contact numbers and contact persons and email address/es	
6.	Address of Office/s in India	
7.	GST No	

Signature of the Applicant

{Full Name of the Applicant}

Stamp.

**Enclosures:**

- i) Copy of the Certificate of Incorporation
- ii) Copy of Articles & Memorandum of Association

**Annexure-3**

<b>Experience in the Related Fields</b>			
Overview of the past experience of the Organization in respects of similar Consultancy Services			
<b>S. No.</b>	<b>Items</b>	<b>Particulars: Number of Assignments/ work-contracts handled/ completed at least during last 03 (two years), Order value of each assigned work contract, Mention the Name of the Customer/ Organization {Enclose copy of each order}</b>	<b>Remarks, if any</b>
1.	Experience & details of work done for providing similar technical and business development consultancy services/ assignments		
2.	Other relevant experiences		
<p>Decision of Evaluating Committee in ascertaining "similar nature" and "similar assignments" will be final.</p> <p align="center">Signature of the Applicant {Full Name of the Applicant} Stamp &amp; Date.</p>			

#### Annexure-4

##### Experience of Key Personnel

Overview of the qualification and past experience of the key personnel

Name: Designation: Date of Birth: Qualifications: Experience:

(Activities carried out in last 3 years)

**Note:** Information regarding more than one key personnel may be provided. They should be on the pay roll of the applicant. Separate sheet may be used for each individual. Each individual will be evaluated separately and then average of the all personnel will be taken for final evaluation.

Signature of the applicant

[Full name of applicant] Stamp & date

**Annexure-5**

<b><u>Financial Strength of the Organization</u></b>						
<b><u>S. No.</u></b>	<b><u>Financial Year</u></b>	<b><u>Whether Profitable: Yes/ No</u></b>	<b><u>Annual Net Profit</u></b> (Rs. in lacs)	<b><u>Overall Annual Turnover</u></b> (Rs.in lacs)	<b><u>Annual Turnover from Consultancy Services</u></b> (Rs. in lacs)	<b><u>Annual Turn over from Other Sources/Services/ Business Segments</u></b> (Rs. in lacs)
1.	2023-24					
2.	2022-23					
3.	2021-22					

Note. Please enclose auditors' certificate in support of your claim.

**Annexure-6**

**Additional Information**

1. List all attachments related to the previous sections.

Sl.No.	Description	No. of pages (From-to)

2. Additional information to support the eligibility. (Not more than 2 pages).

Signature of the applicant

[Full name of applicant] Stamp & date

Note: Separate sheet may be used if necessary.

**Annexure-7**

**Declaration**

We here by confirm that we are interested to work with CSIR-CMERI as a Technical Consultant of GPR Survey under all categories of scope of work and all the information provided herewith is genuine and accurate to the best of our knowledge.

We also confirm that our firm has not been blacklisted or has any litigation or any conflict of interest that may impact on the delivery of the services.

Authorized Person's Signature

Name& Designation

Date:

Note: The declaration is to be furnished on the letter head of the organization.

