NATIONAL CENTRE FOR SEISMOLOGY

MINISTRY OF EARTH SCIENCES
NEW DELHI

BID DOCUMENT

FOR

"GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS UNDER THE PROJECT "SEISMIC MICROZONATION OF 30- CITIES IN INDIA"

Tender Notice No. **SFS-CS/EHRA/3/2013-2016/3(B)**

Tender Fee: RS.10000/- (price non-refundable)

Last date and Time of Bidding: 09.07.2017 at 15:00 Hrs.

NATIONAL CENTER FOR SEISMOLOGY
MINISTRY OF EARTH SCIENCES
NEW DELHI

[E- Procurement Tender Notice No. SFS-CS/EHRA/3/2013-2016/3 (B)]

IMPORTANT DATES FOR TENDER (BID DOCUMENT) FOR GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS UNDER THE PROJECT “SEISMIC MICROZONATION OF 30- CITIES IN INDIA"

S. NO.	NAME OF THE EVENT	DATE
1	DATE OF TENDER NOTICE APPEARED IN NEWS PAPERS	12.05.2017
2	DATE OF PUBLISHING OF RFP DOCUMENT ON WEBSITES OF CPP, MOES AND IMD	17.05.2017
3	START DATE OF DOWNLOADING THE RFP FOR THE BIDDERS	17.05.2017
4	START DATE FOR SEEKING CLARIFICATION BY THE BIDDERS	27.05.2017
5	END DATE OF SEEKING CLARIFICATION BY THE BIDDERS	15.06.2017 AT 17:30 Hrs.
6	DATE OF PRE-BID MEETING	19.06.2017
7	START DATE OF BIDDING	20.06.2017
8	END DATE OF BIDDING	09.07.2017 15:00 Hrs. IST
9	DATE OF BID OPENING	10.07.2017 11:00 Hrs. IST

Remarks:

i) Bid submission must be online through the prescribed E-portal [Central Public Procurement portal (CPP) http://eprocure.gov.in/eprocure/app]
ii) In addition to (i), a hard copy of the same completed Bid document in the prescribed format may please be sent to address given as under LOI: 6.3 (page 17) and LOI:16.5 (page 12) for record.
iii) The validity for accepting the completed bid would of the online document only.

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PART A

Bidding procedures

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Section -1 Letter of Invitation (LOI)

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NATIONAL CENTRE FOR SEISMOLOGY

MINISTRY OF EARTH SCIENCES

GOVERNMENT OF INDIA

NEW DELHI

SECTION – I

LETTER OF INVITATION (LOI)

Subject: GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS

FOR THE SEISMIC MICROZONATION OF 30 CITIES IN INDIA

1. Introduction

In the context of "Seismic Microzonation of 30 targeted cities in India" and on behalf of the President of India, National Centre for Seismology, Ministry of Earth Sciences, Government of India, (hereinafter called "NCS-MoES") invites sealed Bids for "Geotechnical and Geophysical investigations for the seismic microzonation of 30 cities in India" as per specifications given in this document. The list of cities is provided in the **Annexure-I.** Considering field situation as encountered, the actual number of location points, number & type of tests (field and laboratory) may vary and they will be intimated before actual under taking of the job. NCS-MoES authorities will decide on some specific field and laboratory tests after checking the sub-soil type and quality of undisturbed samples when the work component will be in progress. The offer should be made on the original specified Bid Performa only, contained in the Schedule of Bid document (Part C) as mentioned below. All offers should be made in English. The envelop should be addressed to "The Program Head, Seismic Hazard and Risk Assessment Division, National Centre for Seismology, Ministry of Earth Sciences, Prithvi Bhawan, New Delhi 110003" with a superscript, Bid offer for " Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India "

2. OBJECTIVES OF GEOTECHNICAL CHARACTERIZATION

The basic objectives of the "Geotechnical Characterization" are as under:

- To delineate engineering bedrock configuration,
- To map out soil stratigraphy and lateral variations in soft sediments to supplement geological observations,
- Determination of Shear wave velocity of soil layers,
- To ascertain Soil Stratigraphy and define Geotechnical attributes of layers; creation of database of mutually validated geotechnical properties obtained from in-situ field tests and attributes ascertained based on laboratory examination specially of undisturbed samples,
- To generate parameters for different site typologies of targeted cities required for ascertaining transfer function following numerical methods using SHAKE, DYNEQ software etc.

- In reference to prognosticate earthquake induced ground deformation assessment and evaluation of liquefaction susceptibility, generate validated data base in specified format.
- Generating multi thematic maps viz. soil classification map, N value maps for different depth zones, liquefaction susceptibility maps, Vs 30 map, etc.
- Generation of subsurface lithological distribution, different lithological cross section in cities etc in grid pattern on 1:25,000 / 1:50,000 scale; 1:10,000 scale for smaller cities (Area <150 Sq km).
- Integration of multi-thematic data in GIS base and preparation of ground Condition Map based on holistic Geotechnical Characterization.

3.0 ELIGIBILITY FOR PARTICIPATION IN BID

3.1 A Bidder may be a private entity, government-owned entity or any combination of such entities supported by a legal joint venture (JVA) with MoU.

3.2 In the case of a joint venture or association all partners shall be jointly and severally liable, and the JVA shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the partners of the JVA during the bidding process and, in the event the JVA is awarded the Contract, during contract execution.

3.3 A partner cannot submit, whether jointly or severally, more than one bid in this bidding process. Participation by a partner in more than one Bid will result in the disqualification of all Bids in which that partner is involved. However, two JVs, in which there is no common partner, may jointly submit a single Bid. There would not be any objection to the inclusion of the same subcontractor in more than one Bid.

3.4 The Qualification Criteria

3.4.1 The bidder can submit RFP for single city, a group of 5 cities or a group of 10 cities.

3.4.1.1 The bidder submitting interest for individual cities should have undertaken at least two individual projects in geotechnical studies of similar nature for geotechnical characterization (geological, geo-mechanical, geophysical, seismological etc. parameters) with a value of not less than Rs 25 Lakhs in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).

3.4.1.2 The bidder submitting interest for group of cities (up to 5) should have undertaken at least two individual projects covering group of cities, in geotechnical studies of similar nature for geotechnical characterization (geological, geo-mechanical, geophysical, seismological etc. parameters) with a value of not less than Rs 1 Crore in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).

3.4.1.3 The bidder submitting interest for 10 targeted cities, should have undertaken at least five such projects in geotechnical studies of similar nature for geotechnical characterization (geological, geo-mechanical, geophysical, seismological etc. parameters) spread over the country, with a value of not less than Rs 2 Crore of individual projects in the Government

Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).

The value should be exclusive of Hardware and Software license costs. Similar nature means work of drilling boreholes, collecting soil samples & testing and geophysical investigations for shallow sub-surface investigations.

3.4.2: The bidder should have been in existence in India for a minimum period of 3-years as on 31-03-2017 and registered as an Indian company. The bidder should be a profitable company for the last 3 years and should have
(i) The annual turnover for the company bidding for 10 cities, should not have been less than Rs 5-Crore in each of the last three financial years (namely for previous years FY 2014-15; 2015-16; and 2016-17, respectively.
(ii) The annual turnover for the company bidding for group of cities (up to 5), should not have been less than Rs 2.5 Crore in each of the last three financial years (namely for previous years FY 2014-15; 2015-16; and 2016-17, respectively.

(iii) The annual turnover for the company bidding for a particular city having base on that city, should not have been less than Rs 0.25 crores in each of the last three financial years (namely for previous years FY 2014-15; 2015-16; and 2016-17, respectively.
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The turnover shall be in terms of the works related to geotechnical investigations.

3.4.3 Minimum manpower for the related services viz civil engineer; geotechnical scientists, geologist and field and laboratory support should be at least 100, in case of interest expressed for all cities and 20 in case of other.

3.4.4 (a) The company should possess at least 3 standard drilling equipments, if quoting for single city; 15, if quoting for 5 cities; and 30, if quoting for 10 cities (b) The company should have well Equipped soil testing laboratory having NABL accredited laboratory or MoU with institution/organization having similar Laboratory.

3.4.5 The bidders should submit a programme of completing the studies in stipulated time frame.

3.4.6 The agency or any of the group companies / firms of the selected agency should not bid for work arising as an outcome of this project.

4. PROCEDURE TO OBTAIN BIDDING DOCUMENT

4.1 Bidding document containing requirements, terms, conditions and technical specifications etc. can be downloaded from Central Public Procurement Portal (CPP Portal) http://eprocure.gov.in/eprocure/app. The tender document can also be downloaded from the Ministry website http://www.moes.gov.in/.

4.2 Tender Fees Payment would be in Demand Draft/Banker's Cheque (non refundable) form of Rs. 10,000/- (Rupees ten thousand only) in favor of the DDO, National Centre for Seismology,

Ministry of Earth Sciences payable at New Delhi, from any of the Commercial Banks.
4.3 Bidder should prepare tender fee as per the above-specified instructions. The original should be posted/couriered/deposited in person to the tender processing section of the Ministry latest by the last date and time of bid submission. No delay on postal/courier etc. will be considered. Bid received without tender fee shall be rejected.

5.0 CONTENTS OF BIDDING DOCUMENT

5.1 The Bidding Documents consist of Parts A, B, C and D, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with para 4

PART A Bidding Procedures

- Section I. Letter of Invitation (LOI)
- Section II. Bid Data Sheet (BDS)
- Section III. Guidelines for Preparation of Bids
- Section IV. Bidding Forms

PART B Scope of work

- Section V Works component & guidelines
- Section VI. Technical specification

PART C Schedule of Bid document

- Section VII. Technical and Financial bidding Performa (1 to 7).

PART D Conditions of Contract and Contract Forms

- Section VIII. General Conditions (GC)
- Contract Forms

5.2 The Press Notice for Bids issued by the NCS-MoES is a part of the Bidding Document.

5.3 The NCS-MoES is not responsible for the completeness of the Bidding Documents and their addenda, if they were not obtained directly from the source stated by the NCS-MoES in the Press Notice for Bids.

5.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Documents may result in the rejection of the bid.

6.0 CLARIFICATION OF BIDDING DOCUMENT AND PRE-BID MEETING

6.1 If the Bidder requires any clarification on the Bidding Document, it should be asked in writing from the NCS-MoES at Email address indicated in the BDS (Bid Data Sheet). Alternatively,

the enquiries may be raised during the pre-bid meeting, if provided for in accordance with LOI 6.3 and 6.4 The NCS-MoES will respond in writing to any request for clarification, provided that such request is received latest by end date of seeking clarification. The response would include a description of the inquiry but not its source. If, as a result of such inquiry, it is considered necessary to amend the Bidding Document, it shall be done following the procedure under LOI 7 and LOI 23.2.

6.2 The permission or assistance to the Bidder and any of its personnel or agents to enter upon government land or land arranged by the government in connection with this work shall *inter alia* carry the express condition that the Bidder, its personnel, and agents will indemnify the NCS-MoES and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

6.3 The Bidders or their authorized representatives are welcome to attend a pre-bid meeting, as provided for in the BDS. The questions by the Bidders/representatives, as far as possible, shall be submitted in writing, to reach the NCS-MoES on or before last date of seeking clarification.

6.4 Minutes of the pre-bid meeting shall be uploaded by the NCS-MoES in the www.moes.gov.in, www.imd.gov.in & https://eprocure.gov.in/eprocure/app. The minutes shall contain the text of the questions raised, without mentioning their source, and the responses of the NCS-MoES hitherto including those prepared after the meeting. However, these shall not be constructed as being any modification to the Bidding Documents which, if becomes necessary as a result of the pre-bid meeting, shall be notified by the NCS-MoES separately through the issue of a Corrigendum in accordance with LOI 7.

7.0 AMENDMENT OF BIDDING DOCUMENT

7.1 At any time prior to the deadline for submission of bids, the NCS-MoES may amend the Bidding Documents by issuing corrigendum.

7.2 Any corrigendum/addendum thus issued shall be part of the Bidding Documents. The same shall be uploaded in the www.moes.gov.in, www.imd.gov.in & https://eprocure.gov.in/eprocure/app.

8.0 COST OF BIDDING

All costs related with the preparation and submission of Bid shall be borne by the Bidder. No responsibility or liability for those costs shall lie with the NCS-MoES in any case.

9.0 LANGUAGE OF BID

The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the NCS-MoES, shall be written in the language specified in the BDS.

10.0 DOCUMENTS COMPRISING THE BID

10.1 The Bid shall comprise the following:

(a) Letter of Transmittal (As per Annexure-I (A) & I (B))
(b) Pre Contract Integrity Pact as per Annexure – IV.
(c) Completed schedules as required, including priced Financial Bid, in accordance with LOI 11 and LOI 12
(d) Earnest Money, in accordance with LOI-15
(e) Power of Attorney authorizing the signatory of the Bid to sign on behalf of the partners.
(f) Documentary evidence in support of the Bidder's qualifications to perform the contract as specified in Bidding Document. Such as if the bids submitted through a Joint Venture Agreement (JVA) /MoU shall include a copy of Joint Venture /MoU agreement
(g) Technical Proposal in accordance with LOI 13
(h) Tender fee in accordance with LOI 4.
(i) Any other document required in the BDS.

11.0 LETTER OF TRANSMITTAL AND SCHEDULES

The Letter of Transmittal, and Schedules, including the Work Components, shall be submitted using the relevant forms furnished in Section IV Bidding Forms and Part 'C' (Schedule of Bid document). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

12.0 BID PRICES AND DISCOUNTS

12.1 The prices and discounts quoted by the Bidder in the Letter of Transmittal and in the Work Components shall conform to the requirements mentioned below.

12.2 The Bidder shall fill in rates and prices for all items of the Works included in the Work Components. If no rate or price is quoted by the Bidder against any item, it shall be assumed to have been covered by the rates for other items. The Bidder shall have to execute the same without any additional charges.

12.3 The price to be quoted in the Letter of Transmittal, in accordance with LOI 11, shall be the total price of the Bid, excluding any discounts offered.

12.4 Bids with conditional discounts shall be treated as invalid. The Bidder may, however, quote any unconditional discounts and the methodology for their application in the Letter of Transmittal, in accordance with LOI 11.

12.5 The rates and prices quoted by the Bidder shall not be subject to any adjustment due to escalation during the execution of the Contract. These will remain valid for the entire period of the work.

12.6 The rates and prices quoted by the Bidder shall be inclusive of all duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as on the date of submission of bids.

13.0 DOCUMENTS COMPRISING THE TECHNICAL PROPOSAL

13.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in different sections, in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

13.2 To establish its qualifications to perform the Contract in accordance with LoI 5.0, Eligibility for participation in the bid and Section III, Guidelines for Preparation Bids, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV**,** Bidding Forms.

13.3 Pre Contract Integrity Pacts as per Annexure – IV.

14.0 PERIOD OF VALIDITY OF BIDS

14.1 Bids shall remain valid for a period specified in the BDS after the last date of opening of bid. Bids with a shorter period of validity shall be liable to rejection.

14.2 Before the expiry of the validity, the NCS-MoES may request the Bidders in writing to extend the period of validity of their bids upon which request the Bidder may or may not accept the same. The acceptance, if any, shall be in writing and shall entail the necessary requirement of correspondingly extending the bid security for 30 (thirty) days beyond the extended validity period. In case a Bidder does not accept the request, it may do so without forfeiting its bid security.

15.0 EARNEST MONEY

15.1 The Bidder shall have to furnish an earnest money of the amount specified in the BDS in the form of demand draft/pay order of a scheduled bank issued in favour "The DDO, National Centre of Seismology, Ministry of Earth Sciences, Prithvi Bhawan, New Delhi"**.** Any bid submitted without earnest money will be rejected.

15.2 Any bid not accompanied by the earnest money in proper form and of appropriate amount shall be rejected outright.

15.3 The earnest money shall be refunded without any interest as below:

(i) In case of unsuccessful Bidders – as soon as possible after the successful Bidder furnishes the performance security.

(ii) In case of successful Bidder – as soon as possible after it signs the Contract and furnishes the required performance security.

15.4 The earnest money shall be forfeited

(i) If a Bidder withdraws the bid during the period of bid validity.

(ii) If the successful Bidder fails to sign the Contract within one month from the date of issuance of the letter of intent.

(iii) If the successful Bidder fails to furnish a performance security within 2 (Two) weeks of issue of Letter of Intent.

15.5 The earnest money of a JVA shall be in the name of the JVA that submits the bid.

16.0 SUBMISSION OF BIDS

16.1 The schedule of the Bid document (PART-C) contains, Covering Letter (Proforma-1), Technical Bid Questionnaire (Proforma-2), **Technical Bid**: Particulars of Bidder (Proforma-3-i), Warranty (Proforma-4), Data Security (Proforma-5), Compliance statement Table (Proforma-6) and **Financial Bid**: Particulars of Bidder (Proforma-3-ii), Financial bidding proforma-7, Response sheet. The Bid must be completed in all respects as per the response sheet.

16.2 The schedule to the Bid form (Financial Bid) should be returned intact after completion, in original, whether Bidder(s) are quoting for any item or not. The pages should not be detached from the Schedule of the Bid Document or omit any entry for any item(s) not Bided for and, in such cases the corresponding space for item(s) should be reflected by words 'not quoted'.

16.3 In case of insufficient space in the Performa for the required purpose, additional pages may be added. In such case, additional page(s) duly signed by the Bidder(s) must be numbered consecutively at the end with cross-reference of appropriate paras of the Bid document.

16.4 The Technical and Financial Bids supported by prescribed annexure, duly completed and signed shall be submitted in two sealed covers separately for technical bids as well as Financial bids, which are to be superscribed as "Technical Bid for Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India, Not to be opened before the due date" and "Financial Bid for Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India, Not to be opened before the due date", respectively. Both these covers should be sealed and kept in another sealed cover to be superscribed as "Bid for Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India".

16.5 Completed bid submission in every respect must be made online through prescribed E-portal of Central Public Procurement Portal (CPPP) [http://eprocure.gov.in/eprocure/app)]. Additionally, the same completed Bid documents is also to be sent by Registered Post or Courier/Speed Post to Room No. 402, SATMET Building, IMD Campus, Lodhi Road New Delhi 110003 so as to reach the Program Head, Seismic Hazard and Risk Assessment (SHRA) Division, National Centre for Seismology on or before the specified date and time. The Program Head, Seismic Hazard and Risk Assessment Division, National Centre for Seismology, Ministry of Earth Sciences, New Delhi shall not be responsible for any postal delay. The Bidder(s) may get confirmed in their own interest, the receipt or otherwise of their Bid from the Office of the The Program Head, Seismic Hazard and Risk Assessment Division, National Centre for Seismology, Ministry of Earth Sciences, Prithvi Bhawan, New Delhi 110003.

16.6 An instrument as mentioned in LOI 4.2 above of **Rs.10000/- (Rupees Ten thousand only)** payable at Delhi, drawn in favor of "DDO, National Centre for Seismology, MoES, Prithvi Bhawan, New Delhi, from any of the Commercial Banks, as Tender Fee.

16.7 The Bidder shall have to furnish an earnest money of the amount specified in the BDS in the form of demand draft/pay order of a scheduled bank issued in favour "The DDO, National Centre of Seismology, Ministry of Earth Sciences, Prithvi Bhawan, New Delhi"**.** Any bid submitted without earnest money will be rejected.

16.8 Bidder should prepare tender fee & EMD as per the above-specified instructions. The original should be posted/couriered/deposited in person to the tender processing section of the Ministry latest by the last date and time of bid submission. **No delay on postal/courier etc. will be considered.** The details of the Demand Draft / Banker's check, physically sent must tally with the details available in the scanned copy and data entered during bid submission time **otherwise the uploaded bid will be rejected. Bid received without tender fee shall be rejected.**

16.9 Ambiguous and Incomplete Bid(s) will be summarily rejected. Amendments and addition to Bid after opening the Bid will not be accepted.

16.10 For all purposes of the contract including arbitration there under, the address of the Bidder mentioned in the Bid shall be the address to which all communication addressed to the Bidder will be sent, unless the Bidder has notified a change in address by a separate letter and got it acknowledged by the "The Program Head, Seismic Hazard and Risk Assessment Division, National Centre for Seismology, Ministry of Earth Sciences, Prithvi Bhawan, New Delhi 110003".

16.11 Each page of the Bid should be signed by the Bidder or a person duly authorized by the Bidder(s). The Bid should be a complete document and should preferably be bound as a Volume.

16.12 Cost of preparation of Bid offers, attending the Bid opening, meetings of the Negotiation Committee, Prospective Bidder(s) meet and arrangements for demonstration/presentation will be the responsibility of the Bidder(s). NCS - MoES shall not be responsible for any such expenditure.

16.13 Signing of Bid: The individual signing the Bid or other documents in connection with the Bid must specify whether he signs as:

(i) A 'sole proprietor' of the firm or constituted attorney of such sole proprietor.
(ii) A representative of a firm, if it is a partnership firm,.
(iii) Appropriate authority with delegated powers', if it is a company.

17.0 LAST DATE FOR SUBMISSION OF BIDS

17.1 The last date and time for the submission of the Bids to the NCS-MoES shall be as indicated in the BDS.

17.2 The NCS-MoES may, at its discretion and before the last date of submission, extend the last date for the submission of bids by amending the Bidding Document.

18.0 BID OPENING

18.1 First, the technical bid contained in envelope superscripted "Technical Bid for Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India, Not to be opened before the due date" shall be opened on the date and time specified in BDS.

18.2 The financial bid contained in envelope superscribed "Financial Bid for Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India, Not to be opened before the due date" of only those Bidders shall be opened on the specified date and time (to be intimated later) whose technical bid has been found acceptable by the NCS-MoES .

19.0 EVALUATION AND COMPARISON OF BIDS

19.1 A two-stage procedure shall be adopted in evaluating the proposals from Bidders (i) a Technical Evaluation, which shall be carried out prior to opening any Financial Proposal and (ii) a financial evaluation.

19.2 For each city, the RFP primarily constitutes 3 components namely: Mobilization/Demobilization, Surveying, Geotechnical and Geophysical investigations. Out of these, the first two components are city-dependent. The 3rd one which is cost-wise a major component should be ideally uniform irrespective of the terrain, therefore

(a) The bidder shall quote separately for the 3 said components (including their sub-components as detailed in this Bid / RFP document, Table 1 to 5).

(b) The averaging will be done separately for Geotechnical components, Micro-tremor, DHT and MASW.

(c) The normalized bidding amount of each bidder for each city will be calculated as follows, considering average number of investigations per city (Drilling at 50 sites, expecting 90% drilling in soils and 10% in rock at each borehole; Micro-tremor at 775 sites; DHT at 10 sites; MASW at 15 sites)

Mob/Demob charges + Survey cost + (50*(0.9*drilling average of soil + 0.1* drilling average of rocks) + 50*(sub-items of drilling work*expected number) + 775*micro-tremor average+10*DHT average+15*MASW average).

(d) To evaluate the financial bids, L1 for each city will be decided based on the lowest normalized bid amount for each city.

20.0 CONFIDENTIALITY OF BIDS

20.1 No information regarding evaluation of bids or recommendations for award of work shall be divulged to the Bidders until the contract is awarded to the selected Bidder.

20.2 Canvassing in any form, whether directly or indirectly, in connection with the bids shall be strictly prohibited and the bid submitted by any Bidder who resorts to canvassing shall be liable to rejection.

21.0 CLARIFICATION OF BIDS

21.1 The NCS-MoES may, if needed during the examination, evaluation, and comparison of the bids, ask any Bidder in writing for a clarification of its bid. The response of the Bidder shall also be in writing. However, no clarification submitted by a Bidder on its own without asking by the NCS-MoES shall be entertained.

21.2 If a Bidder does not provide clarifications of its bid by the date and time set in the NCS-MoES's request for clarification, its bid may be rejected.

22.0 CORRECTION OF ARITHMETICAL ERRORS

22.1 While examining the bids, the NCS-MoES shall correct arithmetical errors. If there is found a discrepancy, the rates which correspond to the amount worked out by the contractor shall, unless proved otherwise, be taken as correct. If the amount is not worked out by the Bidder or it does not correspond with the rates written either in figures or words, the rates written in words shall be taken as correct. Where the rates written in figures and words tally but the amount is not worked out correctly, the rates written by the Bidder shall, if not proved otherwise, be taken as correct and not the amount.

22.2 If any Bidder does not accept the correction of errors, its bid shall be disqualified.

23.0 NCS-MoES'S RIGHT TO ACCEPT ANY BID, PART BID AND TO REJECT ANY OR ALL BIDS

23.1 The NCS-MoES reserves the right to accept or reject any or all bids without assigning any reason and shall not be bound to accept the lowest or any other bid.

23.2 The NCS-MoES reserves the right to accept the whole or any part of the bid and the Bidder shall be bound to perform the same at its quoted rates for the corresponding part that is accepted.

24.0 PERFORMANCE SECURITY

Performance Security @of 5 % (Five percent) of the value of total work-order in the form of Bank Guarantee, valid for 12/24 months (12 months for 1 or 5-cities, and 24 months for 10-cities) from the date of work-order, with a provision of further extension/revalidation till the entire Soil investigation work is completed in all respects and finished product delivered in terms of job order, which will be given to successful Bidder(s), in terms of Indian Rupees, shall be submitted by the successful Bidder(s) on the Performa attached at Annexure -III before the acceptance of the job order. EMD will be returned after receipt of performance security.

25.0 PURCHASE PREFERENCE

The NCS-MoES may allow to the Institutes/Universities, Central Government Public Sector Enterprises, joint venture with CPSE holding 51% equity or more, a purchase preference as indicated in the BDS with reference to the lowest valid bid price, where the quoted price is within 10% of such lowest price in the bid, other things being equal.

26.0 AWARD OF CONTRACT

26.1 Upon successful completion of the evaluation process, the NCS-MoES shall promptly inform the successful Bidder of its intention to award the work through a Letter of Intent.

26.2 After issue of such letter of intent, the successful Bidder shall have to furnish a performance

security in accordance with **LOI 24** within 2 (Two) weeks of issue of Letter of Intent. The work shall be awarded after receipt of performance security. The other Bidders whose proposals have not qualified shall be informed accordingly.

26.3 The selected Bidder shall have to commence the work on or before the 30 th day of issue of letter of award and at identified sites.

26.4 Formal agreement will be drawn by the NCS-MoES within 10 days of issue of letter of award.

27.0 DESCRIPTION OF WORK

27.1 The work components have been divided in five independent categories and the rates for each item or group of items are to be quoted as per details given in Table-1 to 5 Part B scope of work inclusive of all taxes, if any. The prices must be firm and no escalation in prices during the period of validity of the offer will be accepted.

SECTION II

Bid Data Sheet

LOI 1	The NCS-MoES is : National Center for Seismology – Ministry of Earth Sciences
LOI 1	The name of the Project is: Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30- cities in India
LOI 6.1	For **clarification purposes** only, the NCS-MoES Email address is: sanjay.kp@nic.in The bidders may seek clarification by writing email from 27.05.2017 to 15.06.2017 from Dr. Sanjay K. Prajapati, Scientist D, National Centre for Seismology, Ministry of Earth Sciences (MoES). The clarification sought after 15.06.2017 at 17:30 Hrs. will not be considered. **Please see Page 2 for information about dates**
LOI 6.3	(i) A Pre-Bid meeting shall take place at the following date, time and place: Seismic Hazard and Risk Assessment (SHRA)- National Center for Seismology (Conference Room), Annex Building, India Meteorological Department Campus (IMD-Campus), Mausam Bhawan, Lodhi Road, New Delhi, Pin-110003, India, Tel. No. 01143824434 Date: 19.06.2017 Time: 11:30 Hr (IST) Place: New Delhi **(ii)** Tender box will be placed at Room No. 402, SATMET Building, IMD Campus , Lodhi Road, New Delhi , Pin-110003, India **(iii)** Bid opening venue Conference Room, SHRA, NCS Date10.07.2017 Time11:00 Hrs (IST) **Please see Page 2 for information about dates**
LOI 9	The language of the bid is: English
LOI 10.1 (g)	The Bidder shall submit with its bid the following additional documents: 1. Details of similar geotechnical/geophysical investigation works completed during the last 3 years 2. Details of Manpower to be associated with the project with contact numbers 3. Details of Equipment proposed to be deployed 4. Details of associates and partnership 5. Structure and Organization and its date of formation 6. Curriculum Vitae of "Key Personnel" 7. Audited financial Information for the last 3 years indicating annual turnover, profit/loss. 8. Any other relevant document
LOI 12.5	The prices quoted by the Bidder shall not be subject to any adjustment due to escalation during the execution of the Contract. These will remain valid for the entire period of the work.
LOI 14.1	The bid validity period shall be: 120 days.
LOI 15.1	An Earnest Money shall be equal to 2% (Two percent) of estimated cost Rs……..If Bidder quotes for single city, EMD amount is Rs.4 lakhs. If Bidder quote for more than one city, the EMD will be decided on Prorata basis.
LOI 16.11	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of Attorney executed on Stamp Paper of appropriate value.

LOI 17.1	The complete tender under 2-bid system to be submitted online through cpp portal i.e. https://eprocure.gov.in/eprocure/app. In addition that one hard copy of the same be sent to the following address: **Room No. 402,** **SATMET Building, IMD Campus ,** **Lodhi Road, New Delhi ,** **Pin-110003, India**
LOI 17.1	The last date and time for bid submission is: Date:09.07.2017 Time:15:00 Hrs (IST) **Pl see page 2.**
LOI 18.1	The bid opening shall take place at Seismic Hazard and Risk Assessment (SHRA)- National Center for Seismology (Conference Room), Annex Building, India Meteorological Department Campus (IMD-Campus), Mausam Bhawan, Lodhi Road, New Delhi, Pin-110003, India, Date:10.07.2017 Time:11.00 Hrs (IST) **Pl see page 2.**
LOI 24	The Performance Security shall be equal to 5% (Five percent) of the value of total work-order in the form of Bank Guarantee, valid for 12/24 months (12 months for 1 or 5 cities and 24 months for more than 5 cities) from the date of job-order, with a provision of further extension/revalidation till the entire geotechnical/geophysical investigation work is completed in all respects.
LOI 25	A purchase preference of 10% shall apply in case of academic and research Institutes.

Note:
The hard copy is only for referral purposes. The bids will be evaluated on the basis of online document only.

SECTION III.

GUIDELINES FOR PREPARATION OF BIDS

1. TECHNICAL BID

The Technical Bid must be prepared strictly in accordance with all the terms and instructions included in the Bid Documents. Failure to furnish all requested information may result in rejection of the Bid.

During preparation of the technical proposal, the bidder must give particular attention to the following:

i) If a part of the assignment is to be sub-contracted to another contractor it should be clearly indicated in the technical proposal including the name of the subcontractor and the role assigned to him/them. A sub-contractor may be involved in several bids.
ii) A working knowledge of the language specified in the BDS is essential for key professional staff on this Assignment. All reports shall be in the language specified in the BDS.
iii) Detailed MOU between the main consultant / joint venture / consortium must accompany the technical proposal.
iv) In case of JV / consortium, all payments shall be made in the name of the lead partner.

For evaluating the eligibility of the Bidder, supporting documents related to following must be submitted with the Technical Bid as per clause 3.0 of LoI (Section – I):

(i) The bidder submitting interest for individual cities should submit supporting document that shows that bidder has undertaken at least two individual projects in geotechnical studies of similar nature for geotechnical characterization with a value of not less than Rs 25 Lakhs in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).
The bidder submitting interest for group of cities (up to 5) should submit supporting document that shows that bidder has undertaken at least two individual projects covering group of cities, in geotechnical studies of similar nature for geotechnical characterization with a value of not less than Rs 1 Crore in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).
The bidder submitting interest for 10 targeted cities, should submit supporting document that shows that bidder has undertaken at least five such projects in geotechnical studies of similar nature for geotechnical characterization spread over the country, with a value of not less than Rs 2 Crore of individual projects in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).
The value should be exclusive of Hardware and Software license costs. Similar nature means work of drilling boreholes, collecting soil samples & testing and geophysical investigations for shallow sub-surface investigations.

(ii) Supporting document showing that the bidder have been in existence in India for a minimum period of 3 years as on 31-03-2017 and registered as an Indian company profitable for the last 3 years and should have

The annual turnover for the company bidding for 10 cities, should not have been less than Rs. 5-Crore (Indian Rupees Five Crore) in each of the last three financial years (namely for previous years FY 2014-15, 2015-16, and 2016-17 respectively.

The annual turnover for the company bidding for group of cities (up to 5), should not have been less than Rs 2.5 Crore in each of the last three financial years (namely for previous years FY 2014-15, 2015-16, and 2016-17 respectively.

The annual turnover for the company bidding for a particular city having base on that city, should not have been less than Rs 0.25 crores in each of the last three financial years (namely for previous years FY 2014-15, 2015-16, and 2016-17 respectively.

The turnover shall be in terms of the works related to geotechnical investigations.

(iii) Minimum manpower for the related services viz. civil engineer; geotechnical scientists, geologist and field and laboratory support should be at least 100, in case of interest expressed for all cities and 20 in case of other.

(iv) (a) The company should possess at least 3 standard drilling equipments, if quoting for single city; 15, if quoting for 5 cities; and 30, if quoting for 10 cities (b) The company should have well Equipped soil testing laboratory having NABL accredited laboratory or MoU with institution/organization having similar Laboratory.

(v) The bidders should submit a programme of completing the studies in stipulated time frame.

(vi) The agency or any of the group companies / firms of the selected agency should not bid for work arising as an outcome of this project.

The technical proposal must provide the following information, using, but not limited to, the formats attached in Annexure –II (Bidding forms).

i) A brief description of the Consultant's organization including name and address of the firm (along with telephone number, fax number and e-mail address of the firm) and particulars indicating registration number, Business license No., location of firm, ISO/NABL Certificate copy, and date established etc. Enclose copies of the said documents.)

ii) Bidder's responses must clearly address each technical requirement detailed in Part B, (Scope of Work), Section-V and include a detailed description of specific capabilities to be used to meet each requirement. In the response, include a brief narrative of key steps. Note specifically any operations included or excluded that may differentiate your technical procedure from others. Discuss the procedures that will be used for 3D feature extraction and all other significant steps in the plan of operations.

iii) The composition of the proposed staff team (Technical, & Supervisory/Team leader etc.) that would be deployed on this work. This must include the technical employees, their category and technical qualification. Also indicate the tasks which would be assigned to each.

iv)Curricula Vitae (C.V.) recently signed by the proposed key professional staff or an authorized manager in the home office. Key information should include years with the

firm, and responsibility held in various assignments.

v) Names of three prominent clients for whom the Bidder has rendered quality geotechnical and geophysical investigation services. Give their complete address and specify the services provided to each of them.

vi) Previous experience in Drilling, UDS, Rock drilling work content, size and nature of job and time taken and man days employed etc. (Attach sample of work done).

vii) List of Govt./IIT/NABL certified laboratories where the Bidder intend to carry out special laboratory tests such as Tri-axial, Cyclic tri-axial, Resonant column tests, etc (if asked to conduct such tests).

viii) If it is proposed to subcontract some of the proposed work to another firm, similar information must be provided for each sub-contractor, including MOU between the Bidder as contractor and the sub-contractor(s). New Sub-contracting will not be allowed after the award of contract.

ix) Potential impact of current work load on the proposed project. Cite specifically all major projects undertaken involving significant commitments of equipment and staff in last three years.

x) If the Bidder considers that it does not have the expertise for carrying out some specified field tests such as DCPT, and/or Laboratory tests such as Tri-axial, cyclic tri-axial, resonant column test and/or Geophysical tests like Micro-tremor, DHT, MASW, etc., it may have joint venture/consortium with other firms or entities including the other firms participating in this bidding process and/or local contractors subject to restrictions specified in the BDS, to enable a full range of expertise to be presented. The Bidder may give a viable plan for successful operations with expected time schedule in materializing the entire job.

xi) Based on Bidder's technical plan of operations, and previous project experience, it may explain when and where it will require support, if any, from NCS-MoES personnel and the extent of support required.

xii) Prepare a detailed scheme that describes time schedule for each activity included within the technical plan of operations, so as to complete the whole work within the time stipulated in the BDS.

The technical proposal must not include any financial information.

2. FINANCIAL BID

The Financial Bid must list all costs associated with the assignment. The costs must cover the remuneration for staff, accommodation, transportation, equipment, printing of documents, survey, preparation of reports etc. Nothing extra shall be paid by the MOES/NCS on such accounts.

The financial proposal must take into account the tax liability and cost of insurances etc.

The Financial Bid must be prepared keeping in view the LOI 12.

Section IV.

Bidding Forms

Annexure-I (A)

LETTER OF TRANSMITTAL

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Subject **:** Geotechnical and Geophysical Investigations under Seismic microzonation of 30 cities in India

Sir

I/We have read and examined the complete document including the Letter of Invitation, terms of reference and general conditions of the contract for execution of the above named work.

I/We hereby submit our application on prescribed formats for undertaking the work referred to in the aforesaid documents upon the terms and conditions contained referred to therein. I/We agree to abide by and fulfill all the terms, conditions and provisions of the aforesaid documents.

I/We undertake to commence the work within 30 (thirty) days of issue of the work order and to complete the work in the total period at 12/24 months.

The offer is submitted in separate sealed covers marked as ”Technical Bid” (Three copies), “Financial Bid” (One copy) and all these envelopes are then sealed in another single envelope with name of work super scribed on each envelope.

The “Technical Bid” contains the details as per the formats given in Annexure-II, & Performa of Part C and “Financial Bid” contains details as per the letter of transmittal for financial bid (Annexure I (B)) and given in Performa of Part C duly filled in and duly signed by authorized representative.

By virtue of my/our signature below, I/We confirm that to be the best of my/our knowledge and belief the information contained in the specified formats, sections thereof and any annexure thereto and all supporting and explanatory information is truthful and exact.

Signature

(Authorized Signatory of Bidder)

Name and Address of the Bidder:

Witness

Date:

Address:

Annexure 1(B)

LETTER OF TRANSMITTAL OF FINANCIAL PROPOSAL

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Subject: Geotechnical and Geophysical Investigations under Seismic microzonation of 30 cities in India

Sir,

Having examined the details given in **Press Notice Inviting Bids** and **BID document** for the above work, I/We hereby submit the Financial Proposal.

1. I/We hereby certify that all the statements made in the financial proposal and information supplied in the enclosed Performa (Financial bid) and accompanying statement are true and correct.

2. I/We have furnished all information and details necessary for Bid evaluation purpose and have no further pertinent information to supply as per requirement.

Enclosures:

Seal of applicant

Date of submission.

(SIGNATURE OF APPLICANT)

Annexure-II
Form"A"

DETAILS OF SIMILAR SOIL INVESTIGATION WORKS COMPLETED DURING THE LAST 3 YEARS

Bidder's name and address

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Dear Sir,

We hereby declare that the following are the details of similar works already completed or nearing completion by us during the last three years or so.

Sr.No.	Name of the work with brief description	Name of the client and location of the project	Value of the work and stipulated time of completion	Actual time of completion duly authenticated by the client

Note: Completion certificate issued by the respective client(s) of the work(s) may be enclosed separately.

Date
Place

Signature
Name
Designation
Common Seal

Form"B"

DETAILS OF MANPOWER DEPLOYMENT

Bidder's name and address

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Dear Sir,

We hereby declare that the following are the details of manpower to be deployed for carrying out the Seismic microzonation of _____ in accordance with clause _____ of General Information for Bidders.

Sr.No.	Name of the work with brief description	Name and Designation	Contact details	Total years of experience	Remarks

Note:

1) The above details are furnished/submitted along with the organizational setup of the company.
2) CV's of the proposed personnel are attached.
3) The above details are furnished both discipline wise & category wise.

Date
Place

Signature
Name
Designation
Common Seal

Note: Bidders may use continuation sheet as per this format, if required.

Form "C"

DETAILS OF EQUIPMENTS

Bidder's name and address

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Dear Sir,

We hereby declare that the following are the details of the equipments planned to be deployed for carrying out the Seismic microzonation of _____ in accordance with clause _____ of General Information for Bidders.

Sr.No.	Name of the equipment	Technical details of the equipment	Quantity to be deployed	Remarks

Note: The above details are furnished/ submitted separately for different investigations along with the organizational setup of the company.

Date
Place

Signature
Name
Designation
Common Seal

Note: Bidders may use continuation sheet as per this format, if required.

Form "D"

DETAILS OF ASSOCIATES AND PARTNERSHIP

Bidder's name and address

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Dear Sir,

We hereby declare that the following are the details of Associate ship/partnership for carrying out the Seismic microzonation of _____ in accordance with clause _____ of General Information for Bidders.

Sr.No.	Name of Associating/ Collaborating Institute/ Firm/ Organization	Contact Person	Responsibility and task to be undertaken	Remarks

Note: The MoU given by Associates/Collaborators are irrevocable till successful completion of the assignment. The necessary MoU from the Associates/Collaborators categorically agreeing to carry out the arrangements till completion of the work are enclosed with this schedule.

Date
Place

Signature
Name
Designation
Common Seal

Note: Bidders may use continuation sheet as per this format, if required

(SIGNATURE OF APPLICANT)

FORM –"E"

STRUCTURE AND ORGANISATION

1 Name & Address of the applicant.

2 Telephone No./Telex No./Fax No.

3 Legal status of the applicant (attach copies of original document defining the legal status) a) A proprietary firm b) A firm in partnership c) A limited company or Corporation d) Joint Venture/Consortium

4 Particulars of registration with various Government bodies (attach attested photo-copy).

Organisation/ Place of registration	**Registration No. & Date**
i).	
ii).	

5. Name and Titles of Directors & Officers with designation to be concerned with this work.

6. Designation of individuals authorized to act for the organisation.

7. Has the applicant or any constituent partner in case of partnership firm, ever abandoned the awarded work of similar nature before its completion? If so, give name of the project and reasons for abandonment.

8. Has the applicant or any constituent partner in case of partnership firm, ever been Debarred/black listed for Biding in any organization at any time? If so, give details.

9. Has the applicant, or any constituent partner in case of partnership firm, ever been convicted by a court of law? If so, give details.

10. In which field of engineering, the applicant has specialization and interest?

11. Any other information considered necessary but not included above.

SIGNATURE OF APPLICANT (S)

FORM "F"

CURRICULUM VITAE OF "KEY PERSONNEL"

Important:

1 The information in each column must be filled in.
2 In case of nil information, NIL should be filled in.
3 Additional sheets can attached, wherever space provided is not considered enough.

Sr.No.	Key Personnel	
1.	Name	
2.	Date of Birth	
3.	Qualification B.Tech/M.Tech/M.Sc./Other Mention subject and year of acquisition	
4.	Specialization	
5.	Length of General Professional Experience (Details of companies served, name of projects executed, details of experience in chronological sequence from latest to oldest assignments.)	
6.	Length of specialized experience in execution of similar work (Details of companies served, name of projects executed, details of experience in chronological sequence from latest to oldest assignments.)	
7.	Period of continuous employment with Applicant firm	

Certificate:
The information furnished above is true to my knowledge and belief. I am aware that any misinformation or its concealment, shall make it liable for any action against the firm, which would include termination of the agreement and/or blacklisting.

(Name and signature of the Key Personnel Key Personnel)

(Name & signature of or Alternate authorized Signatory of the Bidder Firm with seal)

FORM – "G"

FINANCIAL INFORMATION

I. Financial Analysis -Details to be furnished duly supported by figures in balance sheet/ profit & loss account for the last three years duly certified by the Chartered Accountant, as submitted by the applicant to the Income Tax Department (Copies to be attached).

YEARS

2014-15	2015-16	2016-17

(i) Gross annual turnover on similar projects:
(ii) Profit/Loss

II. Financial arrangements for carrying out the proposed work.

III. The following certificates are enclosed:

(a) Tax Deducted at Source certificates from the clients for last three years.
(b) Solvency Certificate from Bankers of Applicant.

SIGNATURE OF APPLICANT(S)

Signature of Chartered Accountant with seal.

Annexure - III

PROFORMA FOR
BANK GUARANTEE

In consideration of the President of India represented by Government of India, Ministry of Earth Sciences, through Director , National Center for Seismology (hereinafter called NCS-MoES which expression shall include his successors and assigns), having agreed to exempt M/S ……. with its offices at ……. (herein after referred as the contractor which expression shall include his successors and assigns), from the demand, under the terms and conditions of an Agreement dated …… made between the Director, NCS, MoES and M/S ……. hereinafter called the said agreement of Geotechnical and Geophysical Investigation for the Seismic Microzonation of ….. cities in India, under the project Seismic Microzonation of 30 cities , of security deposit for the due fulfillment by the said contractor of the terms and conditions maintained in the said Agreement, on production of a Bank Guarantee for Rs…… (in words …… …….. only) , (Name of the Bank) ……. (herein after referred to as the bank) at the request of the contractor do hereby undertake to pay to NCS-MoES an amount not exceeding Rs…… ……. (……only), against any loss or damage caused to or suffered or would be caused to suffer by MoES by reason of any breach by the said contractor of any of the terms or conditions contained in the said agreement.

We (Name of the bank)…… do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from NCS-MoES stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by NCS-MoES by reason of breach by the said contractor of any of the terms or conditions contained in the said Agreement or by the reason of the contractor's failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee where the decision of NCS-MoES in these counts shall be final and bindings on the Bank. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs……. (……..).

We (Name of the Bank) ……. undertake to pay to NCS-MoES any money so demanded not withstanding any dispute or disputes raised by the contractor if

any suit or proceeding pending before any court or tribunal relating thereto, liability under this guarantee being absolute and unequivocal. The payment so made by us under this guarantee shall be valid discharge of our liability for payment hereunder and the contractor shall have no claim against us for making such payment.

We (Name of the Bank) …….. further agree that guarantee herein contained shall remain in full force and effect during the period that should be taken for the ……..of the said agreement and that it shall continue to be forcible till all the dues of NCS-MoES under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till NCS-MoES certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the contractor and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before ……he (Bider(s) shall be discharged from all liability under this guarantee thereafter.

We (Name of the Bank) …….. further agree with NCS-MoES that NCS-MoES shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor from time to time or to postpone for any time or from time to time any of the powers exercisable by NCS-MoES against the said contractor and to forbear or enforce any of the terms and conditions relating to the said Agreement and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor for any forbearance, act or omission on the part of NCS-MoES or any indulgence by NCS-MoES to the said contractor or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us. This guarantee will not be discharged due to the change in the constitution of the Bank or the contractor. We (Name of the Bank) ……. lastly undertake not to revoke this guarantee during its currency except with the previous consent of NCS-MoES in writing.

Dated the …… Day of ……..
For …….

(Indicate the Name of the Bank).

Annexure - IV

PRE CONTRACT INTEGRITY PACT

National Centre for Seismology (NCS) here in after referred to as "The Principal".

And

……...hereinafter referred to as "The Bidder/Contractor"

Preamble

The Principal intends to award, under laid down organizational procedures, contract/s for *Geotechnical and Geophysical Investigations under Seismic microzonation of 30-cities in India.* The Principal values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/transparency in its relations with its Bidder(s) and /or Contractor(s).

In order to achieve these goals, the Principal will appoint an Independent External Monitor (IEM), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal.

1. The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

    a. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

    b. The Principal will during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/additional information through which the Bidder(s) could obtain an advantage in relation to the process or the contract execution.

    c. The Principal will exclude from the process all known prejudiced persons.

    2. If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or it there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.

Section2- Commitments of the Bidder(s)/ Contractor(s)

1. The Bidder(s)/Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

   a. The Bidder(s) / contractor(s) will not, directly or through any other persons or firm, offer promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage or during the execution of the contract.

   b. The Bidder(s)/Contractor(s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

   c. The Bidder(s)/Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s) /Contractors will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

   d. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/representatives in India, if any.

      Similarly, the bidder(s)/contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/Contractor(s). Further, as mentioned in the Guidelines all the payments made to the Indian agent/representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers' as annexed and marked as **Annexure-IV (A).**

   e. The Bidder(s)/Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2. The Bidder(s)/Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3: Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings". Copy of the "Guidelines on Banning of business dealings" is annexed and marked as Annexure-**IVB**

Section 4: Compensation for Damages

1. If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/Bid Security.
2. If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.

Section 5: Previous Transgression

1. The Bidder declares that no previous transgressions occurred in the last three years with any other company in any country conforming to the anti corruption approach or with any other public sector enterprise in India that could justify his exclusion from the tender process.
2. If the bidder makes incorrect statement on this subject, he can be disqualified from the tender process for action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6: Equal treatment of all Bidders/Contractors/Subcontractors.

1. The Bidder(s)/Contractor(s) undertake(s) to demand from all subcontractors a commitment in conformity with this Integrity Pact, and to submit it to the Principal before contract signing.
2. The Principal will enter into agreements with identical conditions as this one with all bidders, contractors and subcontractors.
3. The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7: Criminal charges against violation Bidder(s)/ Contractor(s)/Sub contractor(s).

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.

Section 8: Independent External Monitor/Monitors

(1) The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

(2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the Director, NCS.

(3) The Bidder(s)/Contractor(s) accepts that the Monitor has the right to access without restriction to all project documentation of the Principal including that provided by the Contractor. The Contractor will also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his project documentation. The same is applicable to Subcontractors. The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/Contractor(s)/Subcontractor(s) with confidentiality.

(4) The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

(5) As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

(6) The Monitor will submit a written report to the Director, NCS within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

(7) Monitor shall be entitle to compensation on the same terms as being extended to / provided to Director, NCS.

(8) If the Monitor has reported to the Director, NCS, a substantiated suspicion of an offence under relevant IPC/PC Act, and the Director, NCS has not, within the reasonable time taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

(9) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This pact begins when both parties have legally signed it. It expires for the Contractor 10 months after the last payment under the contract, and for all other Bidders & months
---- the contract has been awarded.

If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by Director, NCS.

Section 10 - Other provisions

- This agreement is subject to Indian Law, Place of performance and jurisdiction is the Registered Office of the Principal, i.e. New Delhi.
- Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

_____
_____
(For & on behalf of the Principal) (For & On behalf of Bidder/ Contractor)

(Office Seal) (Office Seal)

Place ----------
Date ----------

Witness 1 :
(Name & Address) _____
_____
_____
_____

Witness 2 :
(Name & Address) _____
_____
_____
_____

Annexure IV(A)

GUIDELINES FOR INDIAN AGENTS OF FOREIGN SUPPLIERS

1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with MoES and its departments/ Institutions shall apply for registration in the prescribed Application Form.

1.1 Registered agents will file an authenticated photo stat copy duly attested by a Notary Public/ Original certificate of the principal confirming the agency agreement the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/ salary/ retainer ship being paid by the principal to the agent before the placement of order by MoES and its departments/ Institutions.

1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.

2.0 DISCLOSURE OF PARTICULARS OF AGENTS/ REPRESENTATIVES IN INDIA. IF ANY.

2.1 Tenderers of Foreign nationality shall furnish the following details in their offer:

2.1.1 The name and address of the agents/ representatives in India, if any and the extent of authorization and authority given to commit the Principals. In case the agent/ r be a foreign Company, it shall be confirmed whether it is real substantial Company and details of the same shall be furnished.

2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.

2.1.3 Confirmation of the Tenderer that the commission/ remuneration if any, payable to his agents/ representatives in India, may be paid by NCS-MoES in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:

2.2.1 The name and address of the foreign principals indicating their nationality as well as their status, i.e., whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/ representatives.

2.2.2 The amount of commission/ remuneration included in the price(s) quoted by the Tenderer for himself.

2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/ remuneration, if any, reserved for the Tenderer in the quoted price(s), may be paid by NCS-MoES in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies

of Stores and Spares in case of operation items.

2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/ remuneration, if any payable to the agents/ representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.

2.4 Failure to furnish correct and detailed information as called for in paragraph-2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by NCS-MoES and its divisions / units. Besides this there would be a penalty of banning business dealings with NCS-MoES or damage or payment of a named sum.

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Annexure IV(B)

"GUIDELINES ON BANNING OF BUSINESS DEALINGS"

CONTENTS

Abbreviations used in Annexure IVA & IVB

NCS: National Centre for Seismology
MoES: Ministry of Earth Sciences
CVO: Chief Vigilance Officer
ACVO: Assistant Chief Vigilance Officer
NDC: NCS's Directorss' Committee
GCC: General Conditions of Contract
SHRA: Seismic Hazard Risk Assessment
ESSO: Earth System Science Organization

1. Introduction

1.1 The National Centre for Seismology (NCS) is established by Ministry of Earth Sciences as an attached office to address all earthquake related matters in the country under one umbrella of the Earth System Science Organization (ESSO). The Center is providing effective linkages / interface amongst various organizations / institutions working in the fields of Seismology and allied subjects for optimal use of infrastructure and resources. The broad and ultimate objective of the NCS is to provide earthquake (M 3.0 and above) related information to all user agencies in shortest possible time, earthquake hazard and risk related products of specific regions as mitigative measures for design and construction of earthquake resistant structures and land use planning towards minimizing damage to property and loss of lives due to earthquakes. NCS is also mandated to carry out research in pure and applied seismology and earthquake precursory phenomena, earthquake processes and modelling.

1.2 Since banning of business dealings involves civil consequences for an Agency concerned, it is incumbent that adequate opportunity of hearing is provided and the explanation, if tendered, is considered before passing any order in this regard keeping in view the facts and circumstances of the cause.

2. Scope

2.1 The General Conditions of Contract (GCC) of NCS-MoES generally provide that NCS-MoES reserves its rights to remove from list of approved suppliers/ contractors or to ban business dealings if any Agency has been found to have committed misconduct and also to suspend business dealings pending investigation. If such provision does not exist in any GCC, the same may be incorporated.

2.2 Similarly, in case of sale of material there is a clause to deal with the Agencies/ customers/ buyers, who indulge in lifting of material in unauthorized manner. If such a stipulation does not exist in any Sale Order, the same may be incorporated.

2.3 However, absence of such a clause does not in any way restrict the right of Company (NCS-MoES) to take action/ decision under these guidelines in appropriate cases.

2.4 The procedure of (i) Removal of Agency from the List of approved suppliers/ contractors; (ii) Suspension and (|iii) Banning of Business Dealing with Agencies, has been laid down in these guidelines.

2.5 These guidelines apply to all the Divisions/ Units of NCS-MoES.

2.6 It is clarified that these guidelines do not deal with the decision of the Management not to entertain any particular Agency due to its poor/ inadequate performance or any other reason.

2.7 The banning shall be with prospective effect, i.e. further business dealings.

3. Definitions

In these guidelines, unless the context otherwise requires:

i) '*Party / Contractor/ Supplier/ Purchaser/ Customer*' shall mean and include a public limited company or private limited company, a firm whether registered or not, an individual, a cooperative society or an association or a group of persons engaged in any commerce, trade, industry, etc. '*Party / Contractor/ Supplier/ Purchaser/ Customer*' in the context of these guidelines is indicated as 'Agency'.

ii) 'Inter-connected Agency' shall mean two or more companies having any of the following features:
   a) If one is a subsidiary or the other.
   b) If the Director(s), Partner(|s), Manager(s) or Representative(s) are common;
   c) If management is common;
   d) If one owns or controls the other in any manner;

iii) 'Competent Authority' and 'Appellate Authority' shall the following:
   a) For Company (entire NCS-MoES) Wide Banning
      The Director 'National Center for Seismology' shall be the 'Competent Authority' for the purpose of these guidelines. Secretary, MoES shall be the 'Appellate Authority' in respect of such cases except banning of business dealings with Foreign Suppliers of imported works.
   b) For banning of business dealings with Foreign Suppliers of imported works, NCS-MoES Directors' Committee (NDC) shall be the 'Competent Authority'. The Appeal against the Order passed by NDC, shall lie with Director, NCS, as first Appellate Authority.
   c) In case the foreign supplier is not satisfied by the decision of the First Appellate Authority, it may approach MoES Board as Second Appellate Authority.
   d) For Divisions/ Units and subsidiaries of NCS-MoES
      Any officer not below the rank of Scientist-D / Scientist-E appointed or nominated by the Head of the concerned Division / Unit of NCS-MoES shall be the 'Competent Authority' for the purpose of these guidelines. The Head of the Concerned Division (e.g., SHRA) / unit of NCS-MoES shall be the 'Appellate Authority' in all such cases.
   e) For NCS-MoES Office only
      For procurement of items/ award of contracts, to meet the requirement of NCS-MoES Office only, Head of the concerned Division / Unit be the "Competent Authority" and Director, NCS-MoES shall be the "Appellate Authority".
   f) Secretary, MoES shall have overall power to take suo-moto action on any information available or received by him and pass such order(s) as he may think appropriate, including modifying the order(s) passed by any authority under these guidelines.

iv) '*Investigating Department*' shall mean any Department or Unit investigating into the conduct of the Agency and shall include the Vigilance Department, Central Bureau of Investigation, the State Police or any other department set up by the Central or State Government having powers to investigate.

v) '*List of approved Agencies- Parties/ Contractors/ |Suppliers/ Purchasers/ Customers* shall mean and include list of approved/ registered Agencies- *List of approved Agencies- Parties/ Contractors/ |Suppliers/ Purchasers/ Customers* etc.

4. Initiation of Banning/ Suspension

Action for banning/ suspension business dealings with any Agency should be initiated by the SHRA having business dealings with them after noticing the irregularities or misconduct on their part. Besides the concerned division, Vigilance Division of NCS-MoES Vigilance may also be competent to initiate such action.

5. Suspension of Business Dealings

5.1 If the conduct of any Agency dealing with NCS-MoES or with any department/ institutes MoES is under investigation by any department (except Foreign Suppliers of imported works), the Competent Authority may consider whether the allegations under investigation are of a serious nature and whether pending investigation, it would be advisable to continue business dealing with the Agency. If the Competent Authority, after consideration of the matter including the recommendation of the Investigating Department, if any, decides that it would not be in the interest to continue business dealings pending investigation, it may suspend business dealings with the Agency. The order to this effect may indicate a brief of the charges under investigation. If it is decided that inter-connected Agencies would also come within the ambit of the order of suspension, the same should be specifically stated in the order. The order of suspension would operate for a period not more than six months and may be communicated to the Agency as also to the Investigating Department. The Investigating Department may ensure that their investigation is completed and whole process of final order is over within such period.

5.2 The order of suspension shall be communicated to all Departmental Heads within the Ministry of Earth Sciences and its Departments / Institutes / Centers, etc. during the period of suspension, no business dealing may be held with the Agency.

5.3 As far as possible, the existing contractor(s) with the Agency may continue unless the Competent Authority, having regard to the circumstances of the case, decides otherwise.

5.4 If the gravity of misconduct under the investigation is very serious and it would not be in the interest of NCS-MoES, as a whole, to deal with such an Agency pending investigation, the Competent Authority may send his recommendation to Chief Vigilance Officer (CVO), MoES / NCS-MoES along with the material available. If NCS-MoES considers that depending upon the gravity of the misconduct, it would not be desirable for all the Divisions/ Units and Subsidiaries of NCS-MoES to have any dealings with the Agency concerned, an order suspending business dealings may be issued to all the Divisions / Units by the Competent Authority of MoES, copy of which may be endorsed to the Agency concerned. Such an order would operate for a period of six months from the date of issue.

5.5 For suspension of business dealings with Foreign Suppliers of imported works, following shall be the procedure:-

i) Suspension of the foreign suppliers shall apply throughout the Company including

its Divisions / Subsidiaries / Units.

ii) Based on the complaint forwarded by Program Head of the concerned Division of NCS-MoES (e.g., SHRA) or received directly by the MoES Vigilance / NCS-MoES Vigilance, if gravity of the misconduct under investigation is found serious and it is felt that it would not be in the interest of NCS-MoES to continue to deal with such agency, pending investigation, MoES / NCS-MoES Vigilance may send such recommendation on the matter to Program Head of the concerned Division of NCS-MoES (e.g., SHRA) to place it before a Committee consisting of the following members, referred to as NCS's Directors' Committee (NDC):

1. Director, NCS-MoES
2. Director Finance, MoES
3. Program Head of the Concerned Division of NCS (e.g., SHRA) as convener of the Committee
4. Director (Vigilance), MoES
5. Director (Law / Parliamentary Affairs), MoES
6. Finance Officer, NCS-MoES
7. Vigilance Officer, NCS-MoES

The committee shall expeditiously examine the report, give its comments/ recommendations within 21 days of receipt of the reference by Program Head of the concerned Division of NCS-MoES (e.g., SHRA).

iii) The comments/ recommendations of the Committee shall then be placed by the Program Head of the concerned Division of NCS-MoES (e.g. SHRA) before NCS's DirectorS' Committee (NDC) constituted for the import of the works. If NDC opines that it is a fit case for suspension, NDC may pass necessary orders which shall be communicated to the foreign supplier by Program Head of the Concerned Division of NCS (e.g., SHRA).

5.6 If any Agency concerned asks for detailed reasons of suspension, the Agency may be informed that its conduct is under investigation. It is not necessary to enter into correspondence or argument with the Agency at this stage.

5.7 It is not necessary to give any show-cause notice or personal hearing to the Agency before issuing the order of suspension. However, if investigations are not complete in six months time, the Competent Authority may extend the period of suspension by another three months, during which period the investigations must be completed.

6. Ground on which Banning of Business Dealings can be initiated

6.1 If the security considerations, including questions of loyalty of the Agency to the State, or warrants;

6.2 If the Director/ Owner of the Agency, proprietor or partner of the firm, is convinced by a Court of Law for offences involving moral turpitude in relation to its business dealings

with the Government or any other public sector enterprises or any departments / Institutes / Centres of MoES or any divisions of NCS-MoES (e.g., SHRA), during the last five years;

6.3 If there is strong justification for believing that the Directors, Proprietors, Partners, owner of the Agency have been guilty of malpractices such as bribery, corruption, fraud, substitution of tenders, interpolations etc;

6.4 If the Agency continuously refuses to return/ refund the dues of MoES / NCS-MoES without showing adequate reason and this is not due to any reasonable dispute which would attract proceedings in arbitration or Court of Law;

6.5 If the Agency employs a public servant dismissed/ removed or employs a person convicted for an offence involving corruption or abetment of such offences;

6.6 If business dealings with the Agency have been banned by the Govt. or any other public sector enterprise;

6.7 If the Agency has resorted to corrupt, fraudulent practice including misrepresentation of facts;

6.8 If the Agency uses intimidation/ threatening or brings undue outside pressure on MoES / NCS-MoES or its official in acceptance/ performances of the job under the contract;

6.9 If the Agency indulge in repeated and/ or deliberate use of delay tactics in complying with contractual stipulations;

6.10 Willful indulgence by the Agency in supplying substandard material / works by violating the work specifications in the bid documents irrespective of whether pre-dispatch inspection was carried out by MoES / NCS-MoES or not;

6.11 Based on the findings of the investigations report of CBI / Police against the Agency for malafide / unlawful acts or improper conduct on his part in matters relating the concerned Divisions of NCS-MoES (e.g.,SHRA) or even otherwise;

6.12 Established litigant nature of the Agency to derive undue benefit;

6.13 Continued poor performance of the Agency in several contracts;

6.14 If the Agency misuses the premises or facilities of the NCS-MoES, forcefully occupies tampers or damages the NCS-MoES's properties including land, water resources, forests/ trees, etc.

[Note: The examples given above are only illustrative and not exhaustive. The Competent Authority may decide to ban business dealing for any good and sufficient reason].

7. Banning of Business Dealings

7.1 Normally, a decision to ban business dealings with any Agency should apply throughout the Company including Subsidiaries. However, the Competent Authority of NCS-MoES and its Division / units except MoES Office can impose such ban unit-wise only if in the particular case banning of business dealings by respective Divisions/ Units will serve the purpose and achieve its objective and banning throughout the Company is not required in view of the Local conditions and impact of the misconduct / default to beyond the Divisions / Units. Any ban imposed by MoES Office shall be applicable across all Divisions/ Units of the Company including subsidiaries.

7.2 For Company-wide banning, the proposal should be sent by ACVO / Vigilance Officer of NCS-MoES to the CVO through the Director of the Centre (NCS-MoES) via the Head of the concerned Division of NCS-MoES setting out the facts of the case and the justification of the action proposed along with all the relevant papers and documents except for banning of business dealings with Foreign Suppliers of imported works.

The MoES Vigilance shall process the proposal of the Divisions / Centres / Institutes / Units for a prima-facie view in the matter by the Competent Authority nominated for Company-wide banning.

The CVO shall get feedback about that agency from all other Divisions / Centres / Institutes / Units. Based on this feedback, a prima-facie decision for banning / or otherwise shall taken by the Competent Authority.

If the prima-facie decision for Company-wide banning has been taken, the MoES Vigilance shall issue a show-cause notice to the Agency conveying why it should not be banned throughout NCS-MoES.

After considering the reply of the Agency and other circumstances and facts of the case, a final decision for Company-wide banning shall be taken by the Competent Authority.

7.3 There will be a Standing Committee in each Divisions / Units to be appointed by the Director, NCS-MoES for processing the cases of “Banning of Business Dealings” except for banning of business dealings with foreign suppliers of works. However, for procurement of items / award of contracts, to meet the requirement of NCS-MoES Office only, the committee shall be consisting of Program Heads of all Divisions of NCS-MoES, Finance Officer of NCS-MoES, Officer from Law and Vigilance officer of NCS-MoES, Member for the Program Coordination Division shall be the convener of the committee. The functions of

the committee shall, inter-alia include:

i) To study the report of the Investigating Agency and decide if a prima-facie case for company-wide / Local unit wise banning exists, if not, send back the case to the Competent Authority.

ii) To recommend for issue of show-cause notice to the Agency by the concerned division of NCS-MoES.

iii) To examine the reply to show-cause notice and call the Agency for personal hearing, if required.

iv) To submit final recommendation to the Competent Authority for banning or otherwise.

7.4 If the Competent Authority is prima-facie of view that action for banning business dealings with the Agency is called for, a show-cause notice may be issued to the Agency as per paragraph 9.1 and an enquiry held accordingly.

7.5 Procedure for Banning of Business Dealings with Foreign Suppliers of imported works.

i) Banning of the agencies shall apply throughout the NCS-MoES including Divisions / Units / Subsidiaries.

ii) Based on the complaint forwarded by the concerned Program Head of the concerened Division of NCS-MoES (e.g., SHRA) or received directly by MoES Vigilance, an investigation shall be carried out by MoES Vigilance. After investigation depending upon the gravity of the misconduct, MoES Vigilance may send their report to Director-NCS to be placed before a Committee consisting of the following:-

1. Director, NCS-MoES
2. Director (Finance), MoES
3. Director (Law / Vigilance), MoES
4. The Concerned Program Head, NCS-MoES (e.g., SHRA)
5. Finance Officer of NCS-MoES

The committee shall examine the report and give its comments/ recommendations within 21 days of receipt of the reference by the Program Head of the concerned Division of NCS-MoES (e.g., SHRA).

iii) The comments/ recommendations of the Committee shall be placed by the concerned Program Head of the concerned Division of NCS-MoES (e.g., SHRA) before Director, NCS' Committee (NDC) constituted for import of works. If NDC opines that it is a fit case for initiating banning action, it will direct Program Head of the concerned Division of NCS-MoES (e.g., SHRA) to issue show-cause notice to the

agency for replying within a reasonable period.

iv) On receipt of the reply or on expiry of the stipulated period, the case shall be submitted by the concerned Program Head of NCS- MoES (e.g., SHRA) to NDC for consideration & decision.

v) The decision of the NDC shall be communicated to the agency by the concerned Program Head of NCS-MoES (e.g., SHRA).

8. Removal from List of Approved Agencies- Suppliers/ Contractors, etc.

8.1 If the Competent Authority decides that the charge against the Agency is of a minor nature, it may issue a show-cause notice as to why the name of the Agency should not be removed from the list of approved Agencies - Suppliers / Contractors etc.

8.2 The effect of such an order would be that the Agency would not be disqualified from competing in Open Tender Enquiries but LTE may not be given to the Agency concerned.

8.3 Past performance of the Agency may be taken into account while processing for approval of the Competent Authority for awarding the contract.

9. Show-cause Notice

9.1 In case where the Competent Authority decides that action against an Agency is called for, a show-cause notice has to be issued to the Agency. Statement containing the imputation of misconduct or misbehavior may be appended to the show-cause notice and the Agency should be asked to submit within 15 days a written statement in its defense.

9.2 If the Agency requests for inspection of any relevant document in possession of NCS-MoES, necessary facility for inspection of documents may be provided.

9.3 The Competent Authority may consider and pass an appropriate speaking order:

a) For exonerating the Agency if the charges are not established;
b) For removing the Agency from the list of approved Suppliers/ Contractors etc.
c) For banning the business dealing with the Agency.

9.4 If it decides to ban business dealings, the period for which the ban would be operative may be mentioned. The order may also mention that the ban would extend to the interconnected Agencies of the Agency.

10. Appeal against the Decision of the Competent Authority

10.1 The Agency may file an appeal against the order of the Competent Authority banning business dealing, etc. The appeal shall lie to Appellate Authority. Such an appeal shall be preferred within one month date of receipt of the order banning business dealing etc.

10.2 Appellate Authority would consider the appeal and pass appropriate order which shall be communicated to the Agency as well as the Competent Authority.

11. Review of the Decision by the Competent Authority

Any petition/ application filed by the Agency concerning the review of the banning order passed originally by the Director, NCS-MoES / Competent Authority under the existing guidelines either before or after filing of appeal before the Appellate Authority or after disposal of appeal by the Appellate Authority, the review petition can be decided by the Director NCS / Competent Authority upon disclosure of new facts/ circumstances or subsequent development necessitating such review. The Competent Authority may refer the same petition to the Standing Committee for examination and recommendation.

12. Circulation of the names of Agencies with whom Business Dealings have been banned

12.1 Depending upon the gravity of misconduct established, the Competent Authority of the Corporate Office may circulate the names of Agency with whom business dealings have been banned, to the Government Departments, other Public Sector Enterprises. etc.for such action as they deem appropriate.

12.2 If Government Departments or a Public Sector Enterprise request for more information about the Agency with whom business dealings have been banned, a copy of the report of Inquiring Authority together with a copy of the order of the Competent Authority/ Appellate Authority may be supplied.

12.3 If business dealings with any Agency have been banned by the Central or State Government or any other Public Sector Enterprises, NCS-MoES may, without any further enquiry or investigation, issue an order banning business dealing with the Agency and its inter-connected Agencies.

12.4 Based upon the above, Departments/ Units may formulate their own procedure for implementation of the Guidelines.

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PART B

(Scope of work)
GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS FOR SEISMIC MICROZONATION OF 30 CITIES IN INDIA

Section- V Works component & guidelines
Section –VI Technical specification

SECTION V

Works component & guidelines

5.0 WORK COMPONENTS

Rapid urbanization is a factor that calls for construction of mega-structures, and the main reason for human loss and property damage is when due importance is not given for adequate preparation for possible hazard. Development of seismic hazard microzonation of major urban centers has been recognized as a priority area of seismic mitigation programme in India. Twenty seven cities in India have a population of one million or more. These cities contain 25.6% of the total urban population of the country. This is compounded by the fact that while geographically, 57.1% of the country area is under seismic zones III, IV and V of BIS Seismic Zonation Map of India (BIS, 2002), 66% of the population and 63% of the housing are located within these zones. Their existence in Seismic Zones III, IV and V places them in moderate damage risk (MSK VII) in zone III to intense damage risk (MSK IX) in zone V. The Ministry of Earth Sciences, Govt. of India has presently taken up Seismic Hazard Microzonation of Indian cities having population of more than half million, and strategic requirements through rigorous exercise for Geotechnical Characterization conducting High strain in-situ field tests including drilling and sampling, low strain field tests, shear wave velocity measurement & geotechnical investigation of disturbed (**DS**) and undisturbed (**UDS**) samples, Index and Dynamic Properties of Soil.

In reference to above, considering the requirements of precision level fixed for final map generation (1:25,000 Scale) and the problems and issues to be addressed, exploratory studies shall have to be conducted following state-of-the-art technology. The National Centre for Seismology, Ministry of Earth Sciences, plans to conduct geotechnical and geophysical studies exercising field-testing in 30 cities. According to the nature of work, the work components have been divided in five categories (I, II, III, IV, & V) as given below and detailed in Tables.1 –5.

Mobilization/Demobilization (Category-I): Mobilization/Demobilization of machinery, equipments, deployment of technical/non technical staff/personals, and expenditure on camping to the respective city for conducting geotechnical/geophysical investigations detailed in following categories. The rates are to be quoted city wise

Survey (Category-II) (optional): Survey related to identification of sites for geotechnical geophysical investigations, contact with local government officials, private land owners, collection of N.O.C for government/private land owners for conducting field investigation. The rates are to be quoted city wise.

Geotechnical investigation (Category III): boreholes at different specified sites spread over the city up to 30 m depth, conducting SPT, disturbed and undisturbed sampling and routine laboratory tests for Index Properties and SCPT/DCPT (10%). The drilling is to be carried out by Hydraulic rig only. In case hard rock is encountered before reaching 30 m depth, core drilling has to continue for 3 m more in the rock. The rates are to be quoted for per unit of specified components, which will be applicable for all the cities. However, final rates will be based on average as specified in LoI 16.0 (d), (e).

Geotechnical investigations (Category IV) (Optional) : Special laboratory test for dynamic soil property: Resonant Column test, Cyclic Triaxial tests on representative soil samples collected at selected locations of category I and II. The rates are to be quoted for per unit of specified components, which will be applicable for all the cities. However, final rates will be based on average as specified in LoI 16.0 (d), (e).

Geophysical investigations (Category V): At specified sites spread over the city, (i) Single station Microtremor survey for H/V analyses leading to predominant frequency distribution and evaluation of 1D shear wave velocity (ii) Shear wave velocity using Designated Multichannel Analysis of Surface Waves method (MASW), (iii) Shear wave velocity using Down Hole Test (DHT), up to 100 m depth along with conducting prescribed tests in same borehole as specified in Category III. The rates are to be quoted for per unit of specified components, which will be applicable for all the cities. However, final rates will be based on average as specified in LoI 16.0 (d), (e).

5.1 Quotes are invited for all the above work components including the work component marked as OPTIONAL. For categories III, IV, and V, rates are to be quoted for per unit of specified components, which will be applicable for all the cities.

5.2 To accomplish the task of geotechnical characterization in stipulated time period, it is proposed to conduct studies simultaneously. Details of tasks to be carried out and tentative quantum of work are indicated in Tables 1 to.5 in section 5.4.

5.3 Both the geotechnical and geophysical investigations are to be conducted by the same Bidder.

5.4 DETAILS OF TASKS AND TENTATIVE QUANTUM OF WORK

Table-1 (Category I): Mobilization of machinery, equipments, deployment of technical/non technical staff/personals, and expenditure on camping to the respective city for conducting geotechnical/geophysical investigations detailed in following categories. Consolidated rate are to be quoted city wise, based on tentative quantum of different types of work indicated for each city.

S.N.	Name of the city	Type of work	Indicative number of sites, which may increase/decrease by 10%	Rates to be quoted in Financial bid
1	Srinagar (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	it is under execution in Program mode of PAMC (Geosciences), MoES
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
2	Jammu (112 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
3	Amritsar (220 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	900	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	
4	Jallandhar	Geotechnical (Field and	40	

	(160 Sq km)	laboratory) investigation as per category III		
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
5	Patna (109 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
6	Agra (188 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	750	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
7	Varanasi (80 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	20	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	325	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
8	Bareilly (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and		

		laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
9	Lucknow (310 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1250	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
10	Kanpur (312 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
11	Meerut (178 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	43	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	700	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
12	Indore (530 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	125	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as	2100	

		category V (i)		
		Geophysical investigations as category V (ii)	15	
		Geophysical investigations as category V (iii)	25	
13	Bhavnagar (54 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	15	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	215	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
14	Surat (326 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1300	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
15	Vadodara (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
16	Bhiwandi (32 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	10	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	130	
		Geophysical investigations as category V (ii)	5	

		Geophysical investigations as category V (iii)	5	
17	Nashik (259 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1050	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
18	Pune (244 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	60	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	975	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	15	
19	Bhubaneshwar (393 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1575	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
20	Cuttack (192 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	775	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	

21	Asansol (127 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
22	Kolkata	Geotechnical (Field and laboratory) investigation as per category III		(Completed)
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)		
		Geophysical investigations as category V (ii)		
		Geophysical investigations as category V (iii)		
23	Chennai (426 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1700	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
24	Coimbatore (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	26	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	425	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
25	Vijayawada (261 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
26	Dhanbad (356 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
27	Mangalore (132 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	35	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	525	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
28	Kochi (95 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	25	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	400	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
29	Kozhikode (119 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		

		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
30	Thiruvanathapuram (216 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	850	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

Table-2 (Category II) Survey: On the basis of geological variability and urban area of the city number of sites will be identified for different type of investigations and tentative locations will be picked up from the topo-sheets and provided to the bidders. All these selected sites are to be visited by the officials of the qualified firm / bidder and to identify exact/suitable location matching with given geology and also to collect GPS locations, contact government/private land owners along with obtaining permission to undertake field work for specified period. NCS-MOES will request local administration to provide necessary support to the representatives of the firm.

S.N.	**Name of the city**	**Type of work**	**Indicative number of sites, which may increase/decrease by 10%**	**Rates to be quoted in Financial bid**
1	Srinagar (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	Under execution in Programme mode of PAMC (Geosciences), MoES
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
2	Jammu (112 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
3	Amritsar (220 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	900	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	
4	Jallandhar (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
5	Patna (109 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
6	Agra (188 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		

		Geophysical investigations as category V (i)	750	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
7	Varanasi (80 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	20	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	325	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
8	Bareilly (123 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
9	Lucknow (310 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1250	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
10	Kanpur (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as	10	

		category V (ii)		
		Geophysical investigations as category V (iii)	20	
11	Meerut (172 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	43	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	700	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
12	Indore (526 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	125	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	2100	
		Geophysical investigations as category V (ii)	15	
		Geophysical investigations as category V (iii)	25	
13	Bhavnagar (54 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	15	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	215	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
14	Surat (326 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1300	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	

15	Vadodara (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
16	Bhiwandi (32 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	10	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	130	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
17	Nashik (259 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1050	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
18	Pune (244 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	60	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	975	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	15	
19	Bhubaneshwar (393 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1575	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
20	Cuttack (192 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	775	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
21	Asansol (127 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
22	Kolkata	Geotechnical (Field and laboratory) investigation as per category III		(Completed)
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)		
		Geophysical investigations as category V (ii)		
		Geophysical investigations as category V (iii)		
23	Chennai (426 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		

		Geophysical investigations as category V (i)	1700	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
24	Coimbatore (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	26	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	425	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
25	Vijayawada (261 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
26	Dhanbad (258 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
27	Mangalore (132 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	35	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	525	
		Geophysical investigations as	5	

		category V (ii)		
		Geophysical investigations as category V (iii)	10	
28	Kochi (95 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	25	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	400	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
29	Kozhikode (128 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
30	Thiruvanathpuram (214 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	850	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

Table 3 (Category III): Details of tests to be conducted in all the 30 cities and per unit rates to be quoted by each Bidder.

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks
A	Field test – drilling, sampling and preparation of Litholog as per the template provided.		
1a	Drilling of boreholes (with Hydraulic rig only) - up to 30 m [IS:5313-1980] depth or up to 3 m in rock strata if encountered within 30 m depth	30 running meter depth considering varied site conditions likely to be encountered *Rates are to be quoted for per running meter.*	Water table is to be recorded if found within 30 m. If hard rock is encountered within 30 m then rock drilling has to continue at least 3 m within rock
1 b	Conducting Standard Penetration Test **[SPT]** (as per IS:2131-1981), alternatively at every 1.5m interval. Thus SPT will be conducted at every 3m interval. Samples obtained from SPT shall be treated as Disturbed Samples (DS)	Approximately 10 SPT in one bore hole). *Rates are to be quoted for per SPT*	
1c	Drilling (with Hydraulic rig only) and rock core sampling, Rock classification in terms of RQD, [IS:11315 pt. 11-1985] up to 3m of rock strata if encountered within 30 m depth	A very few running meter in some bore hole *Rates are to be quoted for Per running meter*	Subject to the field conditions wherever Rock is encountered within 30 m depth
2	Disturbed sampling [DS] at 3.0 m interval from SPT sampler	Collection of DS for each borehole up to 30 m depth with DS @ 3.0 m intervals => 10 nos) *Rates are to be quoted for Per DS*	
3	Undisturbed sampling [UDS] (IS:2132-1986, IS:763-1978, IS:9640-1980, IS:10108-1982) at 3 m interval or at the changes of soil strata (Using appropriate soil samplers)	Collection of UDS for each borehole up to 30 m depth with UDS @ 3 m intervals => 10 Nos) *Rates are to be quoted for Per UDS*	

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks
4	DCPT at or near to selected borehole locations up to depth of 30 m or refusal as per IS:4968 part-II (Dynamic Method using cone and Bentonite slurry)	20-25 running meter per borehole. DCPT is to be conducted around 10% of the total no. of drill-holes made under 1a. *Rates are to be quoted for Per Running Meter*	DCPT will be performed at or near to selected borehole locations
5	SCPT at or near to selected borehole locations up to depth of 30 m or refusal	20-25 running meter per borehole. SCPT is to be conducted around 10% of the total no. of drill-holes made under 1a. *Rates are to be quoted for Per Running Meter*	SCPT will be performed at or near to selected borehole locations
B	Routine Laboratory tests on sample collected boreholes		Routine laboratory tests on soil samples
1a	Complete Grain size analysis up to clay size by Sieve and Hydrometer/Pipette analysis (IS:2720 Part 4-1985)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*	Some laboratory tests to be conducted at designated laboratories for validation purposes will require collection of suitable samples and arrangements for delivery at the specified laboratories; therefore, separate rates are to be quoted for handling and testing charges.
2	Atterberg limits (LL, PL,SL) (IS:2720 Part 5 & 6 -1985)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*	
3	Specific gravity, G (IS:2720 Part 3-1980)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*	
4	Natural water content, w% (IS:2720 Part 2-1973)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*	

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks
5	Bulk density, □ (UDS)	5 number of samples per borehole (UDS collected in boreholes) *Rates are to be quoted for Per sample*	
6	Coefficient of consolidation, Cc (UDS) – for cohesive soils (IS:2720 Part XV-1965)	About 5 Nos. per borehole as decided by official of CS *Rates are to be quoted for Per sample*	
7	Direct Shear [DS/remolded] (IS:2720 Part 13-1986) on Sandy type soils	About 15 samples in each city (Min. 3 specimen per sample to be tested. Representative samples will be scrutinized by official, which are to be obtained from borehole drilled in each city. Exact. No. of samples are subject to the quality field sampling and their successful operation with the sophisticated	
8a	Tri-axial shear (UDS) [Unconsolidated Undrained] / UCC (For cohesive material or where UDS is possible)	About 50 samples in each city (A min. of 3 specimens per sample shall be tested. The type of Tri-axial test (UU, CU or CD) to be conducted on each sample shall be decided by Official based on type of soil encountered. *Bidder may quote per sample rates for each category of Tri-axial tes, UU, CU,CD)*	
8b	(UDS) [Consolidated Undrained] with pore water pressure measurement		
8c	(UDS) [Consolidated drained] (for sandy soil and some cohesive soil samples if considered necessary)		
8d	Tri-axial shear (DS) [Consolidated Undrained]		
8e	(DS) [Consolidated drained]		

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks
C	Tests on Rock samples from rock core at <30 m depth		
1	Unconfined Compressive strength of Rock sample [IS:9143-1979]	A very few samples *Bidders may quote rates per sample*	Subject to the site conditions found in borehole locations in cities
2	Laboratory determination of V_p (Primary wave velocity), V_s (Shear wave velocity) & dynamic modulus of Rock core specimen [IS:10782-1983]	A very few samples *Bidders may quote rates per sample*	----do----
3	Modulus of elasticity and Poisson's ratio in uni-axial compression [IS:9221-1979]	A very few samples *Bidders may quote rates per sample*	-----do----
4	Point load strength index [IS:8764-1978]	A very few samples *Bidders may quote rates per sample*	----do----
D	Reporting: Site details with Lat-Long/photograph/digital map, Physical Borelog, borelog chart containing equipment used, starting and completion date, N values, GL, GWT; laboratory and field test data, laboratory test results/plots/data interpretations, such as Plotting of grain size distribution, Dynamic Cone Penetration results, Preparation of Borelogs, Section/Fence Diagram along Boreholes, corrected SPT table alongwith the computation of average 'N' value, Analysis and Interpretation of test results of the sample tested		Requisite format for data presentation will be supplied by official. Report is to be presented in both soft and hard copy

Table 4 (Category IV): Special laboratory tests on representative samples

Item No.	Description of item	Quantum of Work	Remarks
1a	Cyclic Tri-axial test [UDS/DS] (standard sinusoidal pulse/ signature)	(Min. 3 specimens per sample and approx. 5 samples in each city) *Bidders may quote rates per sample and should be same as quoted in Table-3 (Category III work for the same item*	
1b	Cyclic Tri-axial test [UDS/DS] {using Bhuj (2001)/ Chamoli (1999) Earthquake signatures}	Same as above (Nos.)	
2	Resonant column test – RCT (OPTIONAL)	Same as above (Nos.)	

Table 5 (Category V): Geophysical tests at specific sites

Description of work	Quantum of work (Tentative)	Remarks
Microtremor Survey for H/V Analyses using Ambient noise	In a grid pattern of 500m x 500m preferably using Broadband Seismometer *Rates are to be quoted for per site*	Exact no., location, type and nature of test will be decided by officials
Down-hole Shear wave velocity test – DHT up to 100 m @ 1.5 m. along with SPT and collection of DS and UDS as per category of work III & IV. SPT is to be conducted till 3 consecutive refusals (N>50). The drilling is to be carried out with Hydraulic rig only.	10% of the total number of drill sites in Category III or 5. Rates of SPT, DS, UDS and laboratory investigations will be applicable as per category III of the work. In the present column rates are quoted for evaluation of Shear wave velocity at one depth level	
Multiple Spectral Analysis of Surface Waves – MASW	At about 25% total number of drill sites in category III	

5.5 GUIDELINES TO BE FOLLOWED DURING FIELD OPERATIONS

The present proposal is for geotechnical and geophysical investigations in various cities spread over the country (Annexure-I). It is mandatory that both types of investigations are to be carried out by same Bidder.

Under geotechnical investigations Borehole drilling city-wise down to 30 m depth from existing ground level and conducting Standard Penetration Test (SPT) at 1.5 m intervals or at the changes of strata (IS:2131-1981) are to be carried out. The standard penetration test (SPT) is to be performed during the advancement of a soil boring to obtain an approximate measure of the dynamic soil resistance, as well as a disturbed drive sample (split barrel type). DCPT and SCPT will also be performed in the close proximity of the selected borehole locations (i.e., 10% of total sites). The details of the field tests are given in Tables 1 to 5. The following conditions are to be noted while carrying out field investigations:

i. In the same borehole DS, UDS and SPT will have be conducted as per relevant IS code. Special care is to be taken for collecting UDS by deploying suitable machine preferably hydraulic type machine and using appropriate samplers.
ii. The Bidders will have to provide bore logs as per the template provided by NCS-MOES in both hard and soft copies. Data sheet for preparing bore logs are given in IS:2131-1985. NCS/MoES may make necessary changes in the bore log format suiting the same for incorporating in GIS format and other requirements.
iii. SPT equipment need to be calibrated before their use in the field and the calibration sheets should be submitted to the NCS/ MOES.
iv. Wherever rocky strata is encountered within 30 m depth, boring will have to be made at least 3 m within the rock strata along with rock core sampling followed by laboratory tests for Designated Scientific classification (IS:11315 pt. 11-1985).
v. Collecting disturbed (DS) and undisturbed (UDS) samples as per IS:2132-1972, which after relevant laboratory tests and visual examinations, will be used for the Designated Scientific classification of the soil.
vi. There may be some unavoidable or unforeseen circumstances in field works wherein operations such as SPT, DS, UDS, rock boring etc. might go beyond control. In some cases extraction of the samples from samples might go wrong in the laboratory. It may also happen that results may not be acceptable due to poor quality samples/samplers. Under such situations (if any) the total no. of field and laboratory tests in each or all the boreholes are subject to the site conditions encountered during actual operations. However, any vital operation/information if not provided or obtained by the Bidder during field operation, it will be considered as a lapse on the part of Bidder. The Bidder shall be required to repeat some of the vital field/laboratory tests wherever found necessary at Bidder's own cost.
vii. Due to various unforeseen situations met during field test it may not be possible to obtain undisturbed samples at all specified locations as per IS code. It may also happen that at some particular site only clayey (where sieve analysis is not required) or sandy soils (where hydrometer analysis is not required) are sampled. In such cases, no. of tests actually performed will be counted for payment as per unit rate. Failure to provide any reliable sample or tests data either in the field or laboratory will be considered as lapse on the Bidder's part. In vital cases, if relevant samples or information or data are missing or failed, then the Bidder will be held responsible. Repeating of some of the tests (field or laboratory) by Bidder will be at the discretion of MOES/NCS.
ix. Under geophysical investigation during down hole test, SPT, collection of soil samples (DS & UDS) should be carried out in same borehole.

5.6 GUIDELINES FOR THE BIDDER(S)

i. The specifications of any work, if not given or mentioned in this document the work shall be carried out in all respects in accordance with BIS specifications and/ or the instruction of NCS-MoES official in-charge from time to time. BIS reference has been given for each test, however, if it is found to be irrelevant for that particular test, it may be brought to the notice of NCS-MoES officials and correct BIS codes should be used.

ii. All equipments and machineries related to excavations, digging, preparing working platforms, boring, testing and collecting representative samples as per specifications are to be carried out by the Bidder. The Bidder shall ensure safe operation of the equipments subjected to the minimum disturbance/hazard to the neighborhood during entire period of working at all sites. After the work is completed proper replenishment of the site, e.g., filling of the pits/boreholes, has to be made to the full satisfaction of the site owner/agencies.

iii. NCS-MoES shall facilitate in arranging the necessary "no objection" from the site owner before actual drilling through intervention of local administration by issuing letters. The same has to be produced before the authorities for taking their assistance. All field and laboratory exercises would be documented in prescribed Performa and the documentation record would have to be submitted in both soft and hard copy.

iv. The Bidder has to ensure that all studies are conducted following prescribed BIS code/specifications. In case of some of the important field and laboratory equipments for which relevant BIS codal provisions may not be available, the Bidder has either to adopt specified guidelines given in respective Instrument manual or interpret salient geotechnical parameters as per relevant ASTM standards. Wherever, possible the Bidder has to indicate the guidelines being followed while interpreting test data derived from imported instruments. Relevant correlations/equations, if found, should be furnished in the report so that ground parameters obtained by using ASTM or other foreign standards can also be correlated with available Indian standards.

v. The Bidder is required to submit competency to all or substantial portion of the job/ items listed in tabular form indicating methods to be adopted and no. of instruments/units to be used for carrying out the work.

vi. A tentative schedule to complete the work at each city which should be further sub divided for each location is to be provided by the Bidder

vii. The Bidder is required to indicate the name of the NABL accredited laboratory (ies) along with certified document as mutual agreement, in which all or substantial part of the laboratory works will be carried out as per BIS specifications.

viii. The Bidder is required to submit unit cost (e.g. cost of borehole drilling per running meter, Undisturbed sampling etc) for each item

ix. After completion of boring and specified field test at each site, the Bidder is required to obtain a "certificate of completion" by the authorized officer. The Bidder is to submit technical and Financial Bids separately but for technical evaluation he may submit the same table without indicating prices in the technical bid. Bidder(s) must provide two separate bids. A technical bid without prices of the items and a Financial price bid identical to the technical bid with a column containing price for each item.

x. The Bidder may also submit a list of organizations for which it has performed similar works along with the necessary testimonials from respective organizations as proof of its competence to undertake the present work.

xi. NCS-MoES officials shall employ quality check during field and laboratory test in order to

ensure that the specifications are met with.

xii. The Bidder shall associate NCS official/experts or nominated by NCS throughout the field and laboratory works and provide with all details pertaining to the work including all data and analysis. The Bidder shall also make or assist in making all the reports and recommendations as may be contemplated by the terms of reference or as may be reasonably required by the Project Authority within the general scope of this work and shall be at all times co-operate with the NCS-MoES and/or client, its employees and the agents in the interest of the work.

xiii. All reports, notes, plans, design, estimation, data specifications, statistics and other documents and data prepared and compiled by the Bidder while performing the field and laboratory works shall be the property of NCS-MoES, Govt. of India.

xiv. The Bidder shall be responsible for the correctness and accuracy of the data, design, drawings, estimation, specifications, bill of quantity and all other documents under this contract, if any.

xv. The Bidder shall carry out the services with due diligence and efficiency in a professional manner and in accordance with sound practice designed to promote the purposes of safety and efficient operation of the system and with due regard to the environmental, climate conditions of the site and the obligation of the parties hereto.

xvi. The work shall be completed in all respects including site clearance within stipulated period of time. Upon completion, the Bidder shall intimate the NCS-MoES official in charge or officer nominated by them in writing about the date of completion of work. The NCS authority will arrange to get the work inspected and defects, omissions etc. will be pointed out till a satisfactory rectification of the work. The certificate of completion shall be issued only after the remedial operations are found up to the mark.

xvii. Bidders have to make necessary arrangement for water during drilling operations.

xviii. Bidder shall not use any of the field, laboratory data, graphs, tables, etc. from entire work in publishing articles/technical papers, etc. without written permission from NCS-MoES

xix. Bidder shall employ a qualified site Designated Scientist during Survey and field work.

5.7 SUBMISSION OF THE REPORT

Upon completion of the field investigation and laboratory-testing program, the Bidder, in consultation with NCS official will compile, evaluate, and interpret the data and represent all data in GIS platform. The specifications for the GIS applications will be made available by officials in due course of time. Additionally, the Bidder will be responsible for producing a report that presents the subsurface information obtained from the site investigations and provides specific technical recommendations. The need for multiple types of reports on a single project depends on the project size, phasing and complexity.

Report shall include:

(a) Borelogs, site plan along with Latitude, Longitude, lithological section of borehole, local site geology, field and lab test data in a prescribed tabular format along with all graphical interpretations, supporting calculations, figures, formula, practical and theoretical considerations/documents for the interpretation of tests results.

(b) All laboratory test results in a suitable digital format for checking and reproduction.

(c) On completion of all the field and laboratory work, the bidder shall submit a draft report containing all field and laboratory data and their useful interpretation, summarized test data, graphs, chart, conclusion and recommendations.

SECTION VI:
TECHNICAL SPECIFICATIONS:

6.1 BROAD OUTLINE OF GROUND INVESTIGATIONS IN 30 CITIES

National Centre for Seismology-Ministry of Earth Sciences has evolved a comprehensive ground investigation program in cities for the collection of seminal data set on:

I. Geotechnical characterization of sub-soil/rock up to 30 m depth (drilling with Hydraulic rig only) with an objective of identifying Liquefaction Potential/susceptibility, earthquake induced ground settlement and recommending mitigation measures for safe built environment and devising retrofitting measures for the important structures by resorting to:

1. **Field tests (SPT - Standard Penetration Test, DCPT and SCPT- Dynamic and Seismic Cone Penetration Test)**: to know the penetration resistance of the granular and silty soil depending on its consistency, density and cementing bond due to ageing effect, overburden pressure and depth of water table. These data will be used for obtaining liquefaction potential of sub-soil of respective cities , for which following parameters are also required:

   i. Earthquake catalog, source, PGA (Peak Ground Acceleration) at base rock and Spectral acceleration amplification factor in case bed rock is underlain by soft sediment cover etc. This data will be obtained separately.
   ii. Designated Scientific soil classification type.
   iii. Borelog data up to 30 m depth and identification of liquefying layer, if any.
   iv. In-situ Density and initial overburden pressure. These are either obtained from correlations with SPT-N or directly from the undisturbed samples collected at specific depth within the boreholes.
   v. Water table depth. The same will be checked with CGWB data wherever feasible (IS: 6935-1973).
   vi. Grain size distribution and amount of fines. These are obtained from routine laboratory tests on disturbed samples, which are usually collected at 1.5 m intervals or at the changes of strata.
   vii. SPT (IS: 2131-1985)/ DCPT (IS: 4968-1976 Pt. I & II)/ SCPT count number at different depth. Any one of SPT/DCPT/SCPT data is enough for liquefaction calculation. However, both these test will be conducted to avoid ambiguity in results and also to workout empirical relation, so that any one test can be used in future to cover more no. of locations for better representation of sub-soil profile.
   viii. Dynamic Cone Penetration Test (DCPT – IS: 4968-1976 Pt. I & II) and SCPT are quick tests and it gives a continuous record of the penetration resistance of the soil with depth. This tests uses same monkey weight and height of fall as used in SPT and test results helps to understand the uniformity or variability in the subsoil profile which very useful in the preliminary exploration for extensive sites. The blow count for 75 mm penetration is recorded.

Note: In all the cities, SPT/DCPT and proper sampling will have to be made as per relevant IS codes (IS: 8763-1978, IS: 9640-1980, IS: 10108-1982). At locations where rock strata will

be encountered within 30 m depths, rock coring shall be continued at least up to two runs or 3 m within the rock. Brief outline of major in-situ tests are given as under.

2. **Laboratory test** on disturbed (DS), undisturbed (UDS) and remolded (RM) samples: Grain size, plasticity, coefficient of consolidation, strength test such as Direct shear, Tri-axial shear test – Unconsolidated Undrained (UU), Consolidated Undrained (CU), Consolidated Drained (CD).

3. **Dynamic test**: **Resonant column -** To determine the shear modulus (G_{max} or G_0) and damping (D) characteristics of soils at small strains for cases where dynamic forces are involved, particularly seismic ground amplification and machinery foundations. Recent research has shown the results are also applicable to static loading at very small strains ($<10^{-6}$ percent).
4. **Cyclic tri-axial test** - To check shear strength of the soil under cyclic loading and also to check no. of cycles required causing liquefaction under recreated field condition, Cyclic tri-axial tests are used for projects with repeated and/or cyclic loading, resilient modulus determinations, and/or liquefaction analysis of soils. In each of these tests, the specimen is initially consolidated to the effective vertical overburden stress (σ_{vo}') prior to shear.

Note: With limitations in the sampling system and boring techniques used in our country it might not be possible to extract undisturbed sample at 3 m intervals from all of 500 locations as per IS code. Not all undisturbed samples are really undisturbed. There is every possibility that proper extraction of the sample for cyclic tri-axial test may fail. Under so many uncertainties, only few samples may be possible to be tested in cyclic tri-axial system. Therefore, exact no. of laboratory test will be decided after eliminating all errors encountered in the process.

II. Generate **geophysical parameters** by conducting Micro-Tremor, DHT – Down-hole Test and MASW – Multi-channel Analysis of Surface Waves (accelerated hammer type) to obtain base rock/soil profile and Shear wave velocity of subsoil. Salient features of some of the important geophysical tests are given below:

i. Down-hole surveys (**DHT**) can be performed using only one cased borehole. Here, S-waves are propagated down to the geophone from a stationary surface point. No inclinometer survey is needed as the vertical path distance (R) is calculated strongly on depth. In the DHT, a horizontal plank at the surface is statically loaded by a vehicle wheel (to increase normal stress) and struck lengthwise to provide an excellent shear wave source. The orientation of the axis of the down-hole geophone must be parallel with the horizontal plank (because shear waves are polarized and directional). The results are paired for successive events (generally at 1 m depth intervals) and the corresponding shear wave at mid-interval is calculated as $V_s = \Delta R/\Delta t$, where ΔR = the hypotenuse distance from plank to geophone and Δt = arrival time of the shear wave. A recent version of the down-hole method is the Seismic Cone Penetration Test (SCPT) with an accelerometer located within the cone of penetrometer. In this manner, no borehole is needed beforehand.

ii. The Multi-channel Analysis of Surface Waves (**MASW**) method is a nondestructive seismic method to evaluate linear elastic modulus of underground materials. It

analyzes dispersion properties of certain types of seismic surface waves (fundamental-mode Rayleigh waves) propagating horizontally along the surface of measurement directly from impact point to receivers. It gives this shear-wave velocity (V_s) (or stiffness) information in either 1D (depth) or 2D (depth and surface location) format in a cost-effective and time-efficient manner. The main advantage with the MASW method is to take a full account of the complicated nature of seismic waves that always contain harmful noise waves such as higher modes of surface waves, body waves, scattered waves, traffic waves etc. These noise waves may result in a significant portion of the recorded data being dubious if not properly accounted for. The fundamental framework of the MASW method is based on the multi-channel recording and analysis approach long used in seismic exploration surveys. These techniques can discriminate useful signal against all other types of noise by utilizing pattern-recognition techniques. Due to multi-channel recording and processing schemes employed, results (V_s information) of the survey are highly reliable even under the presence of higher modes of surface waves and various types of cultural noise. For the same reason, the processing steps can be fully automated. Therefore, the method is extremely easy and fast to implement.

iii. Microtremor Survey is a geophysical method to obtain underground structure consisting of S-wave velocity by means of the surface wave transmitting ground surface. Both of body wave (Primary wave and Secondary wave) and surface wave (Rayleigh wave and Love wave) becomes generating and transmitting as elastic wave, which is called microtremor due to their very weak vibration. The surface wave has dispersibility, of which velocity reflects underground S-wave structure from the deep crust up to the ground surface. Underground S wave structure can be obtained by the dispersion property of the surface wave that was extracted from observed microtremor. Microtremor Survey, although it is easy-to-apply and non-explosive way, enables to prospect from several meters up to thousands of meters. S wave velocity structure can be obtained as a result of Microtremor Survey, which offers very fundamental factor to evaluate geotechnical properties for the earthquake motion assessment. At least one measurement will be done in every grid in each city.

Note: Not all tests will be performed at same location. However, No. & type of tests and their strategic locations will be decided after or during field investigations. Some of these tests would be required to check SPT-N data and some will be performed at locations other than those of SPT boreholes. The reason for conducting several tests at specific locations; is to obtain complete mapping of sub-soil profile of different cities. There are several correlations in literatures, which help obtaining one parameter from different tests and vice-versa.

PART C Schedule of Bid document

GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS FOR SEISMIC MICROZONATION OF 30 CITIES IN INDIA

Section VII. Technical and Financial bidding Performa

National Centre for Seismology

MINISTRY OF EARTH SCIENCES

PART C

SCHEDULE OF BID DOCUMENT

FOR

GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS FOR THE SEISMIC MICROZONATION OF 30 CITIES IN INDIA

(To be detached by the Bidder and Submitted duly completed)

TENDER NO -. **SFS-CS/EHRA/3/2013-2016/3(B)**

Name of the Tenderer (s) :----------

Firm's Reference No. : ----------

Date of submission: ----------

Additional No. of pages (if any): ----------

CONTENTS

Proforma -1

To
The Program Head,
Seismic Hazard and Risk Assessment (SHRA) Division,
National Center for Seismology
Ministry of Earth Sciences, Lodi Road
New Delhi 110 003

Subject: Reference: Your Tender Document No. Dated----------

Sir,

I/We hereby offer to take up Geotechnical and Geophysical Investigations for the Seismic Microzonation of _____cities in India as per specifications and quality control measures given in Annexure I and II respectively, as detailed in Part 'A' of the tender document stated above. We agree to hold this offer open till …… I/We shall be bound by a communication of acceptance or rejection dispatched within the prescribed time.

I/We have understood the instruction to Bidder and conditions of contract attached to the invitation of tender and have thoroughly examined applications quoted in the schedules of the tender document and I/We am/are aware of the nature of the job required to be done and my/our offer is strictly in accordance with the requirements and conditions in the tender document.

The pages attached herewith form part of this tender.

Yours faithfully

Name of Bidder

Address
City
State
Pin
Tel (O)
Fax
E-mail
Website

Authorized Signature:
Name:
Title:
Date:

Signature of witness
Address:
Dated:

Proforma-2

TECHNICAL BID

QUESTIONNAIRE

(Attach separate sheets for any item where space is inadequate)

For evaluating the eligibility of the Bidder, supporting documents related to following must be submitted with the Technical Bid as per clause 3.0 of LoI (Section – I):

(i) The bidder submitting interest for individual cities should submit supporting document that shows that bidder has undertaken at least two individual projects in geotechnical studies of similar nature for geotechnical characterization with a value of not less than Rs 25 Lakhs in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).
The bidder submitting interest for group of cities (up to 5) should submit supporting document that shows that bidder has undertaken at least two individual projects covering group of cities, in geotechnical studies of similar nature for geotechnical characterization with a value of not less than Rs 1 crore in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).
The bidder submitting interest for 10 targeted cities, should submit supporting document that shows that bidder has undertaken at least five such projects in geotechnical studies of similar nature for geotechnical characterization spread over the country, with a value of not less than Rs 2 crore of individual projects in the Government Domain (international/foreign Govt. Organization(s) / Central Government and/or State Government).
The value should be exclusive of Hardware and Software license costs. Similar nature means work of drilling boreholes, collecting soil samples & testing and geophysical investigations for shallow sub-surface investigations.

(ii) Supporting document showing that the bidder have been in existence in India for a minimum period of 3 years as on 31-03-2017 and registered as an Indian company profitable for the last 3 years and should have
The annual turnover for the company bidding for 10 cities, should not have been less than Rs 5 crores in each of the last three financial years (namely for previous years FY 2014-15, 2015-16, and 2016-17 respectively.
The annual turnover for the company bidding for group of cities (up to 5), should not have been less than Rs 2.5 crores in each of the last three financial years (namely for previous years FY 2014-15, 2015-16, and 2016-17 respectively.
The annual turnover for the company bidding for a particular city having base on that city, should not have been less than Rs 0.25 crores in each of the last three financial years (namely for previous years FY 2014-15, 2015-16, and 2016-17 respectively.
The turnover shall be in terms of the works related to geotechnical investigations.

(iii) Minimum manpower for the related services viz civil engineer; geotechnical scientists, geologist and field and laboratory support should be at least 100, in case of interest expressed for all cities and 20 in case of other.
(iv) (a) The company should possess at least 3 standard drilling equipments, if quoting for single

city, 20, if quoting for 5 cities and 30, if quoting for 10 cities (b) The company should have well Equipped soil testing laboratory having NABL accredited laboratory or MoU with institution/organization having similar Laboratory.
(v) The bidders should submit a programme of completing the studies in stipulated time frame.
(vi) The agency or any of the group companies / firms of the selected agency should not bid for work arising as an outcome of this project.

Bidder must also give the comprehensive answer to each of the following questions:

1. Name of the firm and particulars (Indicate registration No., Business license No., location of firm, ISO/NABL Certificate copy, and date established etc. Enclose copies of the said documents.)
2. Full address of the firm including Fax and E-mail address.
3. Bidders responses must clearly address each technical requirement detailed in Scope of Services and include a detailed description of specific capabilities to be used to meet each requirement. In the response, include a brief narrative of key steps. Note specifically any operations included or excluded that may differentiate your technical procedure from others. Discuss the procedures that will be used for 3D feature extraction and all other significant steps in the plan of operations.
4. Number of technical employees, category and average technical qualification and their present employment. (Enclose brief resume of the key managerial/technical staff)
5. Please identify three prominent clients for whom you have rendered quality geotechnical and geophysical investigation services. Please give their complete address and specify the services provided to each of them.
6. Previous experience in Drilling, UDS, Rock drilling work content, size and nature of job and time taken and man days employed etc. (Attach sample of work done).
7. List of Govt./IIT/NABL certified laboratories where the Tender (s) intend to carry out special laboratory tests such as Tri-axial, Cyclic tri-axial, Resonant column tests, etc.
8. If you are proposing to subcontract some of the proposed work to another firm, similar information must be provided for each sub-contractor, including MOU between you as contractor and the sub contractors. The length of this section should be no more than one page per firm.
9. Potential impact of current work load on the proposed project. Cite specifically all major projects undertaken involving significant commitments of equipment and staff in last three years
10. Time required in taking up the job after firm order.
11. Expected minimum time required for completing the field and laboratory tests as per Tables1-5 (Tender Document-Part-B).
12. Number of employees proposed to be employed for the job (Technical & Supervisory/Team leader)
13. In case specified field tests such as SPT, DCPT, SCPT, and/or Laboratory tests (Tri-axial, cyclic tri-axial, resonant column test) and/or Geophysical tests (Micro-tremor, DHT and MASW) are not possible to be carryout by Bidder, then how they can be made possible either by outsourcing/subcontractor or by possible formation of a consortium with other reputed national/International companies/organizations. The Bidder (s) may give a viable plan for successful operations with expected time schedule in materializing the entire job.
14. Time assessment, in man-hours, per borehole, per locations. Based on your technical plan of operations, and previous project experience, explain when and where you will require support from MOES/NCS Official. Provide an indication of the number and duration of consultation and support you will require from MOES/NCS Official.

15. Prepare a detailed time schedule that describes the tasks included within the technical plan of operations.
16. Technical and Data interpretation support Requirement: Based on your technical plan of operations, and previous project experience, explain when and where you will require support from MOES/NCS personnel.
17. The financial turnover of the firm. (Please enclose IT returns of last three years)

Signature of Bidder(s) With Office Seal
Dated:

TECHNICAL BID

TENDER FOR

GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS FOR THE SEISMIC MICROZONATION OF 30 CITIES IN INDIA

COMPLIANCE STATEMENT FOR EACH WORK COMPONENT TO BE GIVEN BY INDIVIDUAL BIDDERS

1. Name of the Bidder

2. Address

3. Phone No.

4. Fax No.

5. E-mail Address

6. Website address, if any

Proforma – 3-(i)

PARTICULARS OF BIDDER

1 Name of the Bidder :

2 Address of the Bidder :

3 Bidder 's proposal number and date:

4 Name & postal address of the officer : to whom all reference shall be made regarding this tender enquiry including Fax/Telex/Telephone/E-mail.

Witness:

Signature

Name

Address

Date:

Signature of the Bidder (s)

Name _____

Designation _____

Company _____

Date: _____

Name of the firm with Company Seal

Proforma- 4

WARRANTY

I/We warrant that the output supplied by me/us shall be in full conformity of the specification/output required by NCS-MoES as detailed in Clause 5.7.

I/We also warrant that I/We shall handover all the data/records within 15 days of formal acceptance to NCS-MoES Official and no copies will be kept with us.

Signature of the witness **Signature of the Bidder**

Office Seal

Proforma - 5

DATA SECURITY

I/We hereby certify that the NCS-MoES shall have absolute right on the raw, processed & analytical Geotechnical and Geophysical investigation data of 30 cities in India. I/We shall be responsible for security/safe custody of data during collection/ Data processing. I/We also certify that all NCS documents, scanned/hard copy of 30 cities, photographs, microzonation map in GIS platform and/or control point's coordinates and/or digital topographical data given to me/us or generated by me/us in full or part will not be taken out of the SHRA building premises on any media, and will not be produced by me/us in any form. I/We understand that violation of above clause shall attract criminal prosecution under Government copy right act 1957 and the Official Secrets Act 1923.

Signature of the witness with date Signature of the Bidder with date

1.

2.

Name of the firm with Seal

Proforma-6

Bidder's Compliance Statement against items in Table- 1 to 5 for which price is quoted in the Financial bid

Table-1 (Category I): Mobilization of machinery, equipments, deployment of technical/non technical staff/personals, and expenditure on camping to the respective city for conducting geotechnical/geophysical investigations detailed in following categories. Consolidated rate are to be quoted city wise, based on tentative quantum of different types of work indicated for each city.

S.N.	Name of the city	Type of work	Indicative number of sites, which may increase/decrease by 10%	Bidder's Compliance Yes/No
1	Srinagar (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	Under execution in Programme mode of PAMC (Geosciences), MoES
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
2	Jammu (112 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
3	Amritsar (220 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	900	
		Geophysical investigations as category V (ii)	6	

		Geophysical investigations as category V (iii)	12	
4	Jallandhar (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
5	Patna (109 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
6	Agra (188 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	750	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
7	Varanasi (80 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	20	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	325	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	

8	Bareilly (123 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
9	Lucknow (310 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1250	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
10	Kanpur (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
11	Meerut (172 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	43	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	700	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
12	Indore (526 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	125	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	2100	
		Geophysical investigations as category V (ii)	15	
		Geophysical investigations as category V (iii)	25	
13	Bhavnagar (54 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	15	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	215	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
14	Surat (326 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1300	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
15	Vadodara (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
16	Bhiwandi (32 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	10	
		Geotechnical (Field and laboratory) investigation as per category IV		

		Geophysical investigations as category V (i)	130	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
17	Nashik (259 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1050	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
18	Pune (244 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	60	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	975	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	15	
19	Bhubaneshwar (393 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1575	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
20	Cuttack (192 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	775	
		Geophysical investigations as	5	

		category V (ii)		
		Geophysical investigations as category V (iii)	15	
21	Asansol (127 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
22	Kolkata	Geotechnical (Field and laboratory) investigation as per category III		(Completed)
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)		
		Geophysical investigations as category V (ii)		
		Geophysical investigations as category V (iii)		
23	Chennai (426 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1700	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
24	Coimbatore (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	26	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	425	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	

25	Vijayawada (261 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
26	Dhanbad (258 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
27	Mangalore (132 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	35	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	525	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
28	Kochi (95 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	25	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	400	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
29	Kozhikode (128 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
30	Thiruvanathpuram (214 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	850	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

Table-2 (Category II) Survey: On the basis of geological variability and urban area of the city number of sites will be identified for different type of investigations and tentative will be picked up from the topo-sheets and provided to the bidders. All these selected sites are to be visited by the officials of the firm and identify exact location matching with given geology and collect GPS locations, contact government/private land owners, obtained permission to undertake field work for specified period. National Centre for Seismology/MOES will request local administration to provide necessary support to the representatives of the firm

S.N.	**Name of the city**	**Type of work**	**Indicative number of sites, which may increase/decrease by 10%**	**Bidder's Compliance Yes/No**
1	Srinagar (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	Under execution in Programme mode of PAMC (Geosciences), MoES
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
2	Jammu	Geotechnical (Field and	30	

	(112 Sq km)	laboratory) investigation as per category III		
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
3	Amritsar (220 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	900	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	
4	Jallandhar (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
5	Patna (109 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
6	Agra (188 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and		

		laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	750	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
7	Varanasi (80 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	20	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	325	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
8	Bareilly (123 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
9	Lucknow (310 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1250	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
10	Kanpur (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as	1200	

		category V (i)		
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
11	Meerut (172 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	43	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	700	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
12	Indore (526 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	125	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	2100	
		Geophysical investigations as category V (ii)	15	
		Geophysical investigations as category V (iii)	25	
13	Bhavnagar (54 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	15	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	215	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
14	Surat (326 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1300	
		Geophysical investigations as category V (ii)	10	

		Geophysical investigations as category V (iii)	20	
15	Vadodara (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
16	Bhiwandi (32 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	10	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	130	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
17	Nashik (259 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1050	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
18	Pune (244 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	60	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	975	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	15	
19	Bhubaneshwar	Geotechnical (Field and	100	

	(393 Sq km)	laboratory) investigation as per category III		
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1575	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
20	Cuttack (192 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	775	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
21	Asansol (127 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
22	Kolkata	Geotechnical (Field and laboratory) investigation as per category III		**(**Completed)
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)		
		Geophysical investigations as category V (ii)		
		Geophysical investigations as category V (iii)		
23	Chennai (426 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and		

		laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1700	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
24	Coimbatore (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	26	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	425	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
25	Vijayawada (261 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
26	Dhanbad (258 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
27	Mangalore (132 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	35	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as	525	

		category V (i)		
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
28	Kochi (95 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	25	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	400	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
29	Kozhikode (128 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
30	Thiruvanathpuram (214 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	850	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

Table 3 (Category III): Details of tests to be conducted in all the 30 cities and per unit rates to be quoted by each Bidder.

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Bidder's Compliance Yes/No
A	Field test – drilling (with Hydraulic rig only), sampling and preparation of Litholog as per the template provided.			
1a	Drilling of boreholes (with Hydraulic rig only) - up to 30 m [IS:5313-1980] depth or up to 3 m in rock strata if encountered within 30 m depth	30 running meter depth considering varied site conditions likely to be encountered *Rates are to be quoted for per running meter.*	Water table is to be recorded if found within 30 m. If hard rock is encountered within 30 m then rock drilling has to continue at least 3 m within rock	
1 b	Conducting Standard Penetration Test **[SPT]** (as per IS:2131-1981), alternatively at every 1.5m interval. Thus SPT will be conducted at every 3m interval. Samples obtained from SPT shall be treated as Disturbed Samples (DS)	Approximately 10 SPT in one bore hole). *Rates are to be quoted for per SPT*		
1c	Drilling (with Hydraulic rig only) and rock core sampling, Rock classification in terms of RQD, [IS:11315 pt. 11-1985] up to 3m of rock strata if encountered within 30 m depth	A very few running meter in some bore hole *Rates are to be quoted for Per running meter*	Subject to the field conditions wherever Rock is encountered within 30 m depth	
2	Disturbed sampling [DS] at 3.0 m interval from SPT sampler	Collection of DS for each borehole up to 30 m depth with DS @ 3.0 m intervals => 10 nos) *Rates are to be quoted for Per DS*		

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Bidder's Compliance Yes/No
3	Undisturbed sampling [UDS] (IS:2132-1986, IS:763-1978, IS:9640-1980, IS:10108-1982) at 3 m interval or at the changes of soil strata (Using appropriate soil samplers)	Collection of UDS for each borehole up to 30 m depth with UDS @ 3 m intervals => 10 Nos) *Rates are to be quoted for Per UDS*		
4	DCPT at or near to selected borehole locations up to depth of 30 m or refusal as per IS:4968 part-II (Dynamic Method using cone and Bentonite slurry)	20-25 running meter per borehole. DCPT is to be conducted around 10% of the total no. of drill-holes made under 1a. *Rates are to be quoted for Per Running Meter*	DCPT will be performed at or near to selected borehole locations	
5	SCPT at or near to selected borehole locations up to depth of 30 m or refusal	20-25 running meter per borehole. ScPT is to be conducted around 10% of the total no. of drill-holes made under 1a.*Rates are to be quoted for Per Running Meter*	SCPT will be performed at or near to selected borehole locations	
B	Routine Laboratory tests on sample collected in boreholes		Routine laboratory tests on soil samples	
1a	Complete Grain size analysis up to clay size by Sieve and Hydrometer/Pipette analysis (IS:2720 Part 4-1985)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*	Some laboratory tests to be conducted at designated laboratories for validation purposes will require collection of suitable samples and arrangements for delivery at the specified laboratories;	

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Bidder's Compliance Yes/No
1b	Grain size by laser analyzer (IS:2720 Part 4-1985)	About 5 representative samples as decided by Centre for Seismology in each city) *Rates are to be quoted for Per sample*	therefore, separate rates are to be quoted for handling and testing charges.	
2	Atterberg limits (LL, PL,SL) (IS:2720 Part 5 & 6 -1985)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per*		
3	Specific gravity, G (IS:2720 Part 3-1980)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*		
4	Natural water content, w% (IS:2720 Part 2-1973)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*		
5	Bulk density, □ (UDS)	20 number of samples per borehole (DS and UDS collected in boreholes) ? *Rates are to be quoted for Per sample*		
6	Coefficient of consolidation, Cc (UDS) – for cohesive soils (IS:2720 Part XV-1965)	About 5 Nos. per borehole as decided by official of NCS *Rates are to be quoted for Per sample*		

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Bidder's Compliance Yes/No
7	Direct Shear [DS/remolded] (IS:2720 Part 13-1986) on Sandy type soils	About 15 samples in each city (Min. 3 specimen per sample to be tested. Representative samples will be scrutinized by official, which are to be obtained from borehole drilled in each city. Exact. No. of samples are		
8a	Tri-axial shear (UDS) [Unconsolidated Undrained] / UCC (For cohesive material or where UDS is possible)	About 50 samples in each city (A min. of 3 specimens per sample shall be tested. The type of Tri-axial test (UU, CU or CD) to be conducted on each sample shall be decided by Official based on type of soil encountered. *Bidder may quote per sample rates for each category of Tri-axial tes, UU, CU,CD)*		
8b	(UDS) [Consolidated Undrained] with pore water pressure measurement			
8c	(UDS) [Consolidated drained] (for sandy soil and some cohesive soil samples if considered necessary)			
8d	Tri-axial shear (DS) [Consolidated Undrained]			
8e	(DS) [Consolidated drained]			
C	Tests on Rock samples from rock core at <30 m depth			
1	Unconfined Compressive strength of Rock sample [IS:9143-1979]	A very few samples *Bidders may quote rates per sample*	Subject to the site conditions found in borehole locations in cities	

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Bidder's Compliance Yes/No
2	Laboratory determination of V_p (Primary wave velocity), V_s (Shear wave velocity) & dynamic modulus of Rock core specimen [IS:10782-1983]	A very few samples *Bidders may quote rates per sample*	----do----	
3	Modulus of elasticity and Poisson's ratio in uni-axial compression [IS:9221-1979]	A very few samples *Bidders may quote rates per sample*	-----do----	
4	Point load strength index [IS:8764-1978]	A very few samples *Bidders may quote rates per sample*	----do----	
D	Reporting: Site details with Lat-Long/photograph/digital map, Physical Borelog (1:10), borelog chart containing equipment used, starting and completion date, N values, GL, GWT; laboratory and field test data, laboratory test results/plots/data interpretations, such as Plotting of grain size distribution, Dynamic Cone Penetration results, Preparation of Borelogs, Section/Fence Diagram along Boreholes, corrected SPT table alongwith the computation of average 'N' value, Analysis and Interpretation of test results of the sample tested		Borelog (1:10) at 20 specific site as per directives. Requisite format for data presentation will be supplied by official. Report is to be presented in both soft and hard copy	

Table 4 (Category IV): Special laboratory tests on representative samples

Item No.	Description of item	Quantum of Work	Bidder's Compliance Yes/No
1a	Cyclic Tri-axial test [UDS/DS] (standard sinusoidal pulse/ signature)	(Min. 3 specimens per sample and approx. 5 samples in each city) *Bidders may quote rates per sample and should be same as quoted in Table-3 (Category III work for the same item*	
1b	Cyclic Tri-axial test [UDS/DS] {using Bhuj (2001)/ Chamoli (1999) Earthquake signatures}	Same as above (Nos.)	
2	Resonant column test – RCT (OPTIONAL)	Same as above (Nos.)	

Table 5 (Category V): Geophysical tests at specific sites

Description of work	Quantum of work (Tentative)	Remarks	Bidder's Compliance Yes/No
Microtremor Survey for H/V Analyses using Ambient noise	In a grid pattern of 500m x 500m preferably using Broadband Seismometer *Rates are to be quoted for per site*	Exact no., location, type and nature of test will be decided by officials	
Down-hole Shear wave velocity test – DHT up to 100 m @ 1.5 m. along with SPT and collection of DS and UDS as per category of work III & IV. SPT is to be conducted till 3 consecutive refusals (N>50). The drilling is to be carried out with Hydraulic rig only.	10% of the total number of drill sites in Category III or 5. Rates of SPT, DS, UDS and laboratory investigations will be applicable as per category III of the work. In the present column rates are quoted for evaluation of Shear wave velocity at one depth level		
Multiple Spectral Analysis of Surface Waves - MASW	At about 25% total number of drill sites in category III		

FINANCIAL BID

TENDER FOR

GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS FOR THE SEISMIC MICROZONATION OF 30 CITIES IN INDIA

DETAILS OF THE PRICE TO BE QUOTED BY INDIVIDUAL BIDDERS

1. **Name of the Bidder**
2. **Address**
3. **Phone No.**
4. **Fax No.**
5. **E-mail Address**
6. **Web site address, if any**

Proforma – 3-(ii)

PARTICULARS OF BIDDER

1 Name of the Bidder :

2 Address of the Bidder :

3 Bidder's proposal number and date :

5. Name & postal address of the officer : to whom all reference shall be made regarding this tender enquiry including Fax/Telex/Telephone/E-mail.

Witness:

Signature

Name

Address

Date:

Signature of the Bidder(s)

Name _____

Designation _____

Company _____

Date: _____

Name of the firm with Company Seal

Proforma-7

Financial bid

Table-1 (Category I): Mobilization of machinery, equipments, deployment of technical/non technical staff/personals, and expenditure on camping to the respective city for conducting geotechnical/geophysical investigations detailed in following categories. Consolidated rate are to be quoted city wise, based on tentative quantum of different types of work indicated for each city.

S.N.	Name of the city	Type of work	Indicative number of sites, which may increase/decrease by 10%	Rates to be quoted
1	Srinagar (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	Under execution in Programme mode of PAMC (Geosciences), MoES
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
2	Jammu (112 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
3	Amritsar (220 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	900	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

4	Jallandhar (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
5	Patna (109 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
6	Agra (188 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	750	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
7	Varanasi (80 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	20	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	325	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
8	Bareilly (123 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
9	Lucknow (310 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1250	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
10	Kanpur (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
11	Meerut (172 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	43	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	700	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
12	Indore (526 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	125	
		Geotechnical (Field and laboratory) investigation as per category IV		

		Geophysical investigations as category V (i)	2100	
		Geophysical investigations as category V (ii)	15	
		Geophysical investigations as category V (iii)	25	
13	Bhavnagar (54 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	15	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	215	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
14	Surat (326 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1300	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
15	Vadodara (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
16	Bhiwandi (32 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	10	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	130	
		Geophysical investigations as	5	

		category V (ii)		
		Geophysical investigations as category V (iii)	5	
17	Nashik (259 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1050	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
18	Pune (244 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	60	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	975	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	15	
19	Bhubaneshwar (393 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1575	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
20	Cuttack (192 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	775	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	

21	Asansol (127 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
22	Kolkata	Geotechnical (Field and laboratory) investigation as per category III		(Completed)
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)		
		Geophysical investigations as category V (ii)		
		Geophysical investigations as category V (iii)		
23	Chennai (426 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1700	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
24	Coimbatore (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	26	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	425	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
25	Vijayawada (261 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	

		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
26	Dhanbad (258 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
27	Mangalore (132 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	35	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	525	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
28	Kochi (95 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	25	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	400	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
29	Kozhikode (128 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		

		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
30	Thiruvanathpuram (214 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	850	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

Table-2 (Category II) Survey: On the basis of geological variability and urban area of the city number of sites will be identified for different type of investigations and tentative locations will be picked up from the topo-sheets and provided to bidders. All these selected sites are to be visited by the officials of the firm and identify exact location matching with given geology and collect GPS locations, contact government/private land owners, obtained permission to undertake field work for specified period. National Center for Seismology/MOES will request local administration to provide necessary support to the representatives of the firm

S.N.	**Name of the city**	**Type of work**	**Indicative number of sites, which may increase/decrease by 10%**	**Rates to be quoted**
1	Srinagar (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	Under execution in Programme mode of PAMC (Geosciences), MoES
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
2	Jammu (112 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per		

		category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
3	Amritsar (220 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	900	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	
4	Jallandhar (160 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	40	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
5	Patna (109 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	450	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
6	Agra (188 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	750	

		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
7	Varanasi (80 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	20	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	325	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
8	Bareilly (123 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
9	Lucknow (310 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1250	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
10	Kanpur (300 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	75	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1200	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as	20	

		category V (iii)		
11	Meerut (172 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	43	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	700	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
12	Indore (526 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	125	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	2100	
		Geophysical investigations as category V (ii)	15	
		Geophysical investigations as category V (iii)	25	
13	Bhavnagar (54 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	15	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	215	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
14	Surat (326 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	80	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1300	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	20	
15	Vadodara (160 Sq km)	Geotechnical (Field and laboratory) investigation as per	40	

		category III		
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	650	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
16	Bhiwandi (32 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	10	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	130	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	5	
17	Nashik (259 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1050	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
18	Pune (244 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	60	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	975	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	15	
19	Bhubaneshwar (393 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per		

		category IV		
		Geophysical investigations as category V (i)	1575	
		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
20	Cuttack (192 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	50	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	775	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	15	
21	Asansol (127 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
22	Kolkata	Geotechnical (Field and laboratory) investigation as per category III		(Completed)
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)		
		Geophysical investigations as category V (ii)		
		Geophysical investigations as category V (iii)		
23	Chennai (426 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	100	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	1700	

		Geophysical investigations as category V (ii)	10	
		Geophysical investigations as category V (iii)	25	
24	Coimbatore (106 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	26	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	425	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
25	Vijayawada (261 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
26	Dhanbad (258 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	65	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	260	
		Geophysical investigations as category V (ii)	7	
		Geophysical investigations as category V (iii)	15	
27	Mangalore (132 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	35	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	525	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as	10	

		category V (iii)		
28	Kochi (95 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	25	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	400	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
29	Kozhikode (128 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	30	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	500	
		Geophysical investigations as category V (ii)	5	
		Geophysical investigations as category V (iii)	10	
30	Thiruvanathpuram (214 Sq km)	Geotechnical (Field and laboratory) investigation as per category III	55	
		Geotechnical (Field and laboratory) investigation as per category IV		
		Geophysical investigations as category V (i)	850	
		Geophysical investigations as category V (ii)	6	
		Geophysical investigations as category V (iii)	12	

Table 3 (Category III): Detail of tests to be conducted in all the **30** cities (Kolkata completed) and per unit rates to be quoted by each Bidder.

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Quoted Price/Unit (in Rs.)
A	Field test – drilling (with Hydraulic rig only), sampling and preparation of Litholog as per the template provided.			
1a	Drilling of boreholes (with Hydraulic rig only) - up to 30 m [IS:5313-1980] depth or up to 3 m in rock strata if encountered within 30 m depth	30 running meter depth considering varied site conditions likely to be encountered *Rates are to be quoted for per running meter*.	Water table is to be recorded if found within 30 m. If hard rock is encountered within 30 m then rock drilling has to continue at least 3 m within rock	
1 b	Conducting Standard Penetration Test **[SPT]** (as per IS:2131-1981), alternatively at every 1.5m interval. Thus SPT will be conducted at every 3m interval. Samples obtained from SPT shall be treated as Disturbed Samples (DS)	Approximately 10 SPT in one bore hole). *Rates are to be quoted for per SPT*		
1c	Drilling (with Hydraulic rig only) and rock core sampling, Rock classification in terms of RQD, [IS:11315 pt. 11-1985] up to 3m of rock strata if encountered within 30 m depth	A very few running meter in some bore hole *Rates are to be quoted for Per running meter*	Subject to the field conditions wherever Rock is encountered within 30 m depth	
2	Disturbed sampling [DS] at 3.0 m interval from SPT sampler	Collection of DS for each borehole up to 30 m depth with DS @ 3.0 m intervals => 10 nos) *Rates are to be quoted for Per DS*		
3	Undisturbed sampling [UDS] (IS:2132-1986, IS:763-1978, IS:9640-1980, IS:10108-1982) at 3 m interval or at the changes of soil strata (Using appropriate soil samplers)	Collection of UDS for each borehole up to 30 m depth with UDS @ 3 m intervals => 10 Nos) *Rates are to be quoted for Per UDS*		

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Quoted Price/Unit (in Rs.)
4	DCPT at or near to selected borehole locations up to depth of 30 m or refusal as per IS:4968 part-II (Dynamic Method using cone and Bentonite slurry)	20-25 running meter per borehole. DCPT is to be conducted around 10% of the total no. of drill-holes made under 1a. *Rates are to be quoted for Per Running Meter*	DCPT will be performed at or near to selected borehole locations	
5	SCPT at or near to selected borehole locations up to depth of 30 m or refusal	20-25 running meter per borehole. SCPT is to be conducted around 10% of the total no. of drill-holes made under 1a. *Rates are to be quoted for Per Running Meter*	SCPT will be performed at or near to selected borehole locations	
B	Routine Laboratory tests on sample collected in boreholes		Routine laboratory tests on soil samples	
1a	Complete Grain size analysis up to clay size by Sieve and Hydrometer/Pipette analysis (IS:2720 Part 4-1985)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*	Some laboratory tests to be conducted at designated laboratories for validation purposes will require collection of suitable samples and arrangements for delivery at the specified laboratories; therefore, separate rates are to be quoted for handling and testing charges.	
1b	Grain size by laser analyzer (IS:2720 Part 4-1985)	About 5 representative samples as decided by Centre for Seismology in each city) *Rates are to be quoted for Per sample*		
2	Atterberg limits (LL, PL,SL) (IS:2720 Part 5 & 6 -1985)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*		
3	Specific gravity, G (IS:2720 Part 3-1980)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*		

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Quoted Price/Unit (in Rs.)
4	Natural water content, w% (IS:2720 Part 2-1973)	20 number of samples per borehole (DS and UDS collected in boreholes) *Rates are to be quoted for Per sample*		
5	Bulk density, □ (UDS)	20 number of samples per borehole (DS and UDS collected in boreholes) ? *Rates are to be quoted for Per sample*		
6	Coefficient of consolidation, Cc (UDS) – for cohesive soils (IS:2720 Part XV-1965)	About 5 Nos. per borehole as decided by official of CS *Rates are to be quoted for Per sample*		
7	Direct Shear [DS/remolded] (IS:2720 Part 13-1986) on Sandy type soils	About 15 samples in each city (Min. 3 specimen per sample to be tested. Representative samples will be scrutinized by official, which are to be obtained from borehole drilled in each city. Exact. No. of samples are subject to the quality field sampling and their successful operation with the sophisticated laboratory equipment)		
8a	Tri-axial shear (UDS) [Unconsolidated Undrained] / UCC (For cohesive material or where UDS is possible)	About 50 samples in each city (A min. of 3 specimens per sample shall be tested. The type of Tri-axial test (UU, CU or CD) to be conducted on each sample shall be decided by Official based on type of soil encountered. *Bidder may quote per sample rates for each category of Tri-axial tes, UU, CU,CD)*		
8b	(UDS) [Consolidated Undrained] with pore water pressure measurement			
8c	(UDS) [Consolidated drained] (for sandy soil and some cohesive soil samples if considered necessary)			
8d	Tri-axial shear (DS) [Consolidated Undrained]			

Item No.	Description of the items	Indicative quantum of Work per bore hole. Rates are to be quoted per unit of items	Remarks	Quoted Price/Unit (in Rs.)
8e	(DS) [Consolidated drained]			
C	Tests on Rock samples from rock core at <30 m depth			
1	Unconfined Compressive strength of Rock sample [IS:9143-1979]	A very few samples *Bidders may quote rates per sample*	Subject to the site conditions found in borehole locations in cities	
2	Laboratory determination of V_p (Primary wave velocity), V_s (Shear wave velocity) & dynamic modulus of Rock core specimen [IS:10782-1983]	A very few samples *Bidders may quote rates per sample*	----do----	
3	Modulus of elasticity and Poisson's ratio in uni-axial compression [IS:9221-1979]	A very few samples *Bidders may quote rates per sample*	-----do----	
4	Point load strength index [IS:8764-1978]	A very few samples *Bidders may quote rates per sample*	----do----	
D	Reporting: Site details with Lat-Long/photograph/digital map, Physical Borelog (1:10), borelog chart containing equipment used, starting and completion date, N values, GL, GWT; laboratory and field test data, laboratory test results/plots/data interpretations, such as Plotting of grain size distribution, Dynamic Cone Penetration results, Preparation of Borelogs, Section/Fence Diagram along Boreholes, corrected SPT table alongwith the computation of average 'N' value, Analysis and Interpretation of test results of the sample tested		Borelog (1:10) at 20 specific site as per directives. Requisite format for data presentation will be supplied by official. Report is to be presented in both soft and hard copy	

Table 4 (Category IV): Special laboratory tests on representative samples

Item No.	Description of item	Quantum of Work	Quoted Price/Unit (in Rs.)
1a	Cyclic Tri-axial test [UDS/DS] (standard sinusoidal pulse/ signature)	(Min. 3 specimens per sample and approx. 5 samples in each city) *Bidders may quote rates per sample and should be same as quoted in Table-3 (Category III work for the same item*	
1b	Cyclic Tri-axial test [UDS/DS] {using Bhuj (2001)/ Chamoli (1999) Earthquake signatures}	Same as above (Nos.)	
2	Resonant column test – RCT (OPTIONAL)	Same as above (Nos.)	

Table 5 (Category V): Geophysical tests at specific sites

Description of work	Quantum of work (Tentative)	Remarks	Quoted Price/Unit (in Rs.)
Microtremor Survey for H/V Analyses using Ambient noise	In a grid pattern of 500m x 500m preferably using Broadband Seismometer *Rates are to be quoted for per site*	Exact no., location, type and nature of test will be decided by officials	
Down-hole Shear wave velocity test – DHT up to 100 m @ 1.5 m. along with SPT and collection of DS and UDS as per category of work III & IV. SPT is to be conducted till 3 consecutive refusals (N>50). The drilling is to be carried out with Hydraulic rig only.	10% of the total number of drill sites in Category III or 5. Rates of SPT, DS, UDS and laboratory investigations will be applicable as per category III of the work. In the present column rates are quoted for evaluation of Shear wave velocity at one depth level		
Multiple Spectral Analysis of Surface Waves - MASW	At about 25% total number of drill sites in category III		

NOTE:

(a) The bidder shall separately quote for the 3 said components (including their sub-components as detailed in RFP document, Table 1 to 5).

(b) The averaging will be done separately for Geotechnical Investigations, Micro-tremor, DHT and MASW.

(c) The normalized bidding amount of each bidder for each city will be calculated as follows, considering average number of investigations per city (Drilling at 50 sites, expecting 90% drilling in soils and 10% in rock at each borehole; Micro-tremor at 775 sites; DHT at 10 sites; MASW at 15 sites)

Mob/Demob charges + Survey cost + (50*(0.9*drilling average of soil +0.1* drilling average of rocks)+ 50*(sub-items of drilling work*expected number)+775*micro-tremor average+10*DHT average+15*MASW average).

(d) To evaluate the financial bids, L1 for each city will be decided based on the lowest normalized bid amount for each city.

(e) Only the finished report as per specifications will be accepted. No cost, full or part, will be borne by NCS-MoES in case of rejection/failure leading to repetition of any field or laboratory tests or failure of collecting representative sample during field operations or extraction of the laboratory samples from Sampling tube or failure of the laboratory equipments/test.

(f) The above cost figures will not be subject to escalation and the price shall remain valid for the period for which the work is allotted to a Bidder.

(g) Tests results/data/report should be supplied in phases as per scheduled progress of the work.

(h) Geotechnical & Geophysical Investigations (Table-3 to Table-5) is to be undertaken as turnkey basis.

Signature of the Bidder(s)
Name of the Firm with Seal

Notes:

1. Rates quoted should be in the above format, failing which the bid may be rejected.
2. Rate should be quoted for supply of all the deliverables conforming to the required specifications.
3. Rate should be inclusive of all Sales Tax, Central Sales Tax and Service Tax etc.
4. If any other charges are applicable, it should be clearly specified.

RESPONSE SHEET (This page is to be returned along with the bid)

Please check boxes to verify inclusion in response:

1	Executive Summary	[ ]
2	Company Profile, Structure, Employee resume	[ ]
	Bid forms .(Annexure II, Form A to G)	
3	Response to Financial Questions	[ ]
4	Response to Technical Specifications	[ ]
5	Proposed timeline (Field and laboratory work schedule)	[ ]
6	Technical bid (Table-1 to 4 Part C Proforma 1,2,3(i),4,5, and 6)	[ ]
7	Cost Bid (Table – 1 to 4 , Part –C profarma 3(ii) and 7 Financial bid)	[ ]
8	Signature Page	[ ]
9	Registration of the Company	[ ]
10	Authorization for signatory	[ ]
11	IT Returns for last three years	[ ]
12	EMD (Amount to be mentioned**)**	[ ]
13	Response Sheet (this page)	[ ]

PART D

General Conditions of Contract and Contract Forms

GEOTECHNICAL AND GEOPHYSICAL INVESTIGATIONS FOR SEISMIC MICROZONATION OF 30-CITIES IN INDIA

Section VIII. General Conditions of Contract (GCC) & Contract Forms

SECTION VIII

General Conditions of Contract (GCC)

General Conditions

1. General Provisions

1.1 Definitions The following definitions shall carry the meaning assigned to them hereunder for the purpose of this contract:

A. "Contract" means the Contract Agreement, the Letter of Acceptance, the Letter of Bid, General Conditions, the Specifications, the Drawings, the Schedules, and the further documents (if any) which are listed in the Contract Agreement or in the Letter of Acceptance.

B. "Letter of Acceptance" means the letter of formal acceptance, signed by the NCS-MoES, including any annexure comprising agreements between and signed by both Parties.

C. "NCS-MoES" means the National Centre for Seismology, Ministry of Earth Sciences, and the successors in the office.

D. "Contractor" means the person(s) named as contractor in the Letter of Bid accepted by the NCS-MoES and the legal successors in title to this person(s).

E. "Designated Scientist" means the Program Head, SHRA, NCS, MoES /person appointed by the NCS-MoES to act as his representative for the purpose of the Contract.

F. "Performance Security" means the security under Sub-Clause 4.2 [Performance Security].

G. "Force Majeure" means an exceptional event or circumstance:
(i) Which is beyond a Party's control.
(ii) Which such Party could not reasonably have provided against before entering into the Contract,
(iii) Which, having arisen, such Party could not reasonably have avoided or overcome, and
(iv) Which is not substantially attributable to the other party.

1.2 Priority of Documents

1.2.1 The documents forming the Contract are to be taken as mutually explanatory of one another. However, in case of any discrepancy between any two or more documents, for the purpose of interpretation, the following order of preference shall be observed:
(a) The Work Component.
(b) The specification and special conditions, if any.
(c) These General Conditions.
(d) Indian Standard Specifications of BIS

1.2.2 If there are varying or conflicting provisions made in any one document forming part of the contract, the Program Head, Seismic Hazard and Risk Assessment, National Centre for Seismology, Ministry of Earth Sciences shall be the deciding authority with regard to the intention of the document whose decision shall be binding on the contractor.

1.2.3 Any error in description, quantity or rate in Schedule of Quantities or any omission there from shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works comprised therein according to drawings and specifications or from any of his obligations under the contract.

1.3 Delayed Instructions

If the Contractor feels that the Work is likely to be delayed or disrupted due to non-issue of some or any instruction within a particular reasonable time, he shall give notice to the Designated Scientist specifying details of the necessary instruction, details of its necessity when it should be issued. He shall also give details of the nature and amount of the delay or disruption likely to be suffered if it is late.
If the Contractor suffers delay and/or incurs Cost as a result of Designated Scientist failing to issue the notified instruction within the said reasonable time specified in the notice, the Contractor shall give a further notice to the Designated Scientist and shall be entitled:

(a) An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 7.4 [Extension of Time for Completion], and
(b) Payment of any such Cost plus profit, which shall be determined by the Director, National Center for Seismology, MoES and shall be final and binding on the contractor.

However, if and to the extent that the Designated Scientist's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit

2. The NCS-MoES

2.1 Right of Access to the Site

The NCS-MoES shall provide the Contractor right of access to a particular site within 5 days of contractors' notice of his intension to execute work at that site. However, the NCS-MoES may withhold any such right until the Performance Security has been received. If contractor suffers delay and/or incurs cost as a result of late permission of access to any site, he shall be suitably compensated following a procedure similar to that mentioned in **clause 1.3** for delayed instructions.

2.2 Permits, Licenses or Approvals

The NCS-MoES shall, to the extent possible, provide reasonable assistance to the Contractor at the request of the Contractor such as assistance in Contractor's applications for any permits, licenses or approvals required by the Laws of the Country, which the Contractor is required to obtain for the delivery of Goods, carrying out investigations.

2.3 NCS/MOES Claims

If the NCS-MoES considers itself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the NCS-MoES shall give notice to the Contractor specifying the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the NCS-MoES considers himself to be entitled

This amount may be included as a deduction in the Contract Price and Payment Certificates. The NCS-MoES shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

3. The Designated Scientist/Officer

3.1 Designated Scientist's Duties and Authority

The NCS-MoES shall appoint the Designated Scientist who shall carry out the duties assigned to him in the Contract. Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Designated Scientist shall be deemed to act for the NCS-MoES.

The Designated Scientist shall obtain the specific approval of the NCS-MoES while acting under the-following Sub-Clauses of these Conditions:
(a) Sub-Clause 7.4: Extension of time and/or additional cost.
(b) Sub-Clause 9.1: Instructing a Variation, except; (i) in an emergency situation as determined by the Designated Scientist, or (ii) if such a Variation would result in increases the Contract Amount.

3.2 Instructions of the Designated Scientist

The Contractor shall abide by the instructions of the Designated Scientist given to him or to his authorized representative on any matter related to the contract. The Contractor shall only take instructions from the NCS-MoES, Designated Scientist, or from an assistant to whom the authority has been delegated. Whenever practicable, such instructions shall be given in writing. If the contractor has any objection in carrying out the instruction, he shall give it to the Designated Scientist in writing within two working days of receiving the instruction. If the Designated Scientist rejects the objection or does not reply within two working days of receiving the objection, the instruction shall be deemed to be confirmed and the contractor would be under obligation to carry out the same.

4. The Contractor

4.1 Contractor's General Obligations

The Contractor shall execute and complete the Works in accordance with the Contract and with the Designated Scientist's instructions, and shall remedy any defects in the Works. The Contractor shall provide the Plant and machinery, Personnel, Goods, consumables and other things and services as required at site for the execution of the work. The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of execution. Except where stated otherwise, the Contractor shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract. Whenever required by the Designated Scientist, the Contractor shall submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. Any change in these arrangements and methods shall be made only with the prior approval of the Designated Scientist.

4.2 Performance Security

The contractor shall submit an irrevocable Performance Guarantee of 5% (Five percent) of the contract amount in addition to other deposits mentioned elsewhere in the contract for his proper performance of the contract agreement (not withstanding and/or without prejudice to any other provisions in the contract), within two weeks from the date of issue of letter of acceptance. This period can be further extended by the NCS-MoES up to a maximum of seven days on written request of the contractor stating the reason for delay in procuring the Bank Guarantee, to the satisfaction of the NCS-MoES. This guarantee shall be in the form of Deposit at Call receipt of any scheduled bank/Banker's Cheque of any scheduled bank/Demand Draft of any scheduled/Pay Order of any scheduled bank or Government Securities or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the form annexed hereto. In case a fixed deposit receipt of any Bank is furnished by the contractor to the Government as part of the performance guarantee and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the Government to make good the deficit.

The Performance Guarantee shall be initially valid up to the stipulated date of completion plus 60 days beyond that. In case the time for completion of work gets enlarged, the contractor shall get the validity of Performance Guarantee extended to cover such enlarged time for completion of work. After recording of the completion certificate for the work by the competent authority, the performance guarantee shall be returned to the contractor, without any interest.

The NCS-MoES shall not make a claim under the performance guarantee except for amounts to which the

President of India is entitled under the contract (not withstanding and/or without prejudice to any other provision in the contract agreement) in the event of:

(a) Failure by the contractor to extend the validity of the Performance Guarantee as described above, in which event the NCS-MoES may claim the full amount of the Performance Guarantee.
(b) Failure by the contractor to pay President of India any amount due, either as agreed by the contractor or determined under any of the Clauses/Conditions of the agreement

In the event of the contract being determined or rescinded under provision of any of the Clause/Condition of the agreement, the performance guarantee shall stand forfeited in full and shall be absolutely at the disposal of the NCS-MoES.
Government papers tendered as security will be taken at 5% (five percent) below its market price or at its face value, whichever is less. The market price of Government paper would be ascertained by the NCS-MoES at the time of collection of interest and the amount of interest to the extent of deficiency in value of the Government paper will be withheld if necessary.

Government Securities will include all forms of Securities mentioned in rule No. 274 of the G.F. Rules except fidelity bond. This will be subject to the observance of the condition mentioned under the rule against each form of security.

4.3 Security Deposit

The contractor shall permit Government at the time of making any payment to him for work done under the contract to deduct a sum at the rate of 10% of the gross amount of each running bill till the sum along with the sum already deposited as earnest money, will amount to security deposit of 5% of the contract value of the work. Such deductions will be made and held by the NCS-MoES by way of Security Deposit unless he/they has/have deposited the amount of Security at the rate mentioned above in the form of Government Securities or fixed deposit receipts. In case a fixed deposit receipt of any Bank is furnished by the contractor to the NCS-MoES as part of the security deposit and the Bank is unable to make payment against the said fixed deposit receipt, the loss caused thereby shall fall on the contractor and the contractor shall forthwith on demand furnish additional security to the NCS-MoES to make good the deficit.

All compensations or the other sums of money payable by the contractor under the terms of this contract may be deducted from, or paid by the sale of a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due to or may become due to the contractor by the NCS-MoES on any account whatsoever and in the event of his Security Deposit being reduced by reason of any such deductions or sale as aforesaid, the contractor shall within 10 days make good in cash or fixed deposit receipt Bided by the State Bank of India or by Scheduled Banks or Government Securities (if deposited for more than 12 months) endorsed in favour of the NCS-MoES, any sum or sums which may have been deducted from, or raised by sale of his security deposit or any part thereof. The security deposit shall be collected from the running bills of the contractor at the rates mentioned above and the Earnest money if deposited in cash at the time of bids will be treated a part of the Security Deposit.

Government papers Bided as security will be taken at 5% (five per cent) below its market price or at its face value, whichever is less. The market price of Government paper would be ascertained by the NCS-MoES at the time of collection of interest and the amount of interest to the extent of deficiency in value of the Government paper will be withheld if necessary.

Government Securities will include all forms of Securities mentioned in rule No. 274 of the G.F. Rules except fidelity bond. This will be subject to the observance of the condition mentioned under the rule against each form of security.

4.4 Contractor's Representative

The Contractor shall appoint the Contractor's Representative(s) and shall give him all authority necessary to act

on the Contractor's behalf under the Contract. The contractor's representative(s) shall, at all times, be available at the site to supervise the work and to receive instructions from The NCS-MoES, the Designated Scientist or his authorized subordinate. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed with the prior approval of the NCS-MoES or the Designated Scientist.

4.5 Subcontractors

The Contractor shall not subcontract the whole or any part of the Works. Any part of the work shall be assigned or sublet to the subcontractor with the prior approval of the NCS-MoES. The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor.

4.6 Co-operation

The Contractor shall, as specified in the Contract or as instructed by the Designated Scientist, allow appropriate opportunities for carrying out work to:
(a) The NCS-MoES's Personnel,
(b) Any other contractors employed by the NCS-MoES, and
(c) The personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract.

4.7 Safety Procedures

The Contractor shall:
(a) Comply with all applicable safety regulations,
(b) Take care for the safety of all persons entitled to be on the Site,
(c) Use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
(d) Provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.
(e) All the boreholes drilled for investigations need to be properly closed / capped using adequate and environmentally friendly measure to avoid human hazards. In absence of this compliance the entire responsibility shall be of bidders and will be dealt accordingly.

4.8 Quality Assurance

The Contractor shall institute a quality assurance in accordance with the details stated in the Contract. The Designated Scientist shall be entitled to audit any aspect of the system. Details of all procedures and compliance documents shall be submitted to the Designated Scientist for information before each execution stage is commenced. Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

4.9 Avoidance of Interference

The Contractor shall not interfere unnecessarily or improperly with the convenience of the public; or the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the NCS-MoES or of others. The Contractor shall indemnify the NCS-MoES against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. He shall be responsible for any maintenance which may be required for his use of access routes;

4.10 Contractor's Equipment

The Contractor shall be responsible for all his Equipment, which shall be brought on to the Site exclusively for

the execution of the Works. The Contractor shall not remove from the Site any major items of his Equipment without the consent of the Designated Scientist except the vehicles transporting goods or contractor's personnel.

4.11 Protection of the Environment

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

4.12 Electricity, Water and Gas

The Contractor shall make his own arrangements for power, water and other services he may require.

4.13 Progress Reports

Monthly progress reports in prescribed pro forma shall be prepared by the Contractor and submitted to the Designated Scientist in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates. Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

4.14 Security of the Site

Unless otherwise stated in the Contract Conditions, the Contractor shall make arrangement for keeping unauthorized persons off the Site. For the purpose of this sub-clause any person other than the Contractor's Personnel or the NCS-MoES's Personnel or other personnel notified to the Contractor by the NCS-MoES /Designated Scientist as authorized personnel of the NCS-MoES's other contractors on the Site, shall be treated as unauthorized person.

4.15 Contractor's Operations on Site

During the execution of the Work, the Contractor shall keep the Site free from all unnecessary obstruction. The contractor shall either properly keep in store or dispose off any Contractor's Equipment, surplus materials, wreckage, rubbish and Temporary Works that are no longer required on the work.

On completion of operations on a particular site, which may form a part of the total work, the Contractor shall clear away and remove, from that Site or part of site, all his Equipment, surplus material, wreckage, rubbish and Temporary Works, if any. The Contractor shall leave that part of the Site in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfill obligations under the Contract.

4.16 Fossils

All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be the government property and shall be placed under the care and authority of the NCS-MoES. The Contractor shall prevent Contractor's Personnel or other persons from removing or damaging any of these findings. Upon discovery of any such finding, the Contractor shall, promptly give notice to the Designated Scientist, and shall abide by his instructions for dealing with it.

5. Staff and Labour

5.1 Engagement of Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, housing, feeding and transport.

5.2 Labour Laws

The Contractor shall comply with all the relevant labour Laws such as the Contract Labour (R&A) Act 1970, the Contract Labour (Regulation and Abolition) Central Rules 1971, and Child Labour (Prohibition and Regulation) Act, 1986. No labour below the age of 14 years shall be employed on the work.

Any failure to fulfil these requirements shall attract the penal provisions of this contract arising out of the resultant non-execution of the work.

5.3 Rates of Wages and Conditions of Labour

The contractor shall pay to laborers employed by him either directly or through sub-contractor, wages not less than fair wages as per provisions of the Contract Labour (Regulation and Abolition) Act 1970 Contract Labour (Regulation and Abolition) Central Rules 1971, wherever applicable.
The contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act 1948, Employees liability Act, 1938, Workmen's Compensation Act, 1923, Industrial Disputes Act, 1947, Maternity Benefits Act, 1961, and the Contract Labour (Regulation and Abolition) Act 1970, as amended from time to time and any other laws relating thereto and the rules made thereafter from time to time.

The NCS-MoES shall have the right to deduct from the amount due to the contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfillment of the conditions of the contract for the benefit of the workers, non-payment of wages or of deductions made from his or their wages which are not justified by their terms of the contract or non-observance of the Regulations.

The contractor shall indemnify and keep indemnified the NCS-MoES against payments to be made under and for the observance of the laws aforesaid without prejudice to his right to claim indemnity from his sub-contractors.

5.4 Facilities for Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the NCS-MoES's Personnel as stated in the Specification.

5.5 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and NCS-MoES's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements including adequate supply of drinking and other water, and for the prevention of epidemics.

The Contractor shall send, to the Designated Scientist, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Designated Scientist may reasonably require.

5.6 Contractor's Personnel

The Designated Scientist or the NCS-MoES may require the contractor to dismiss or remove from the site of the work any person or persons in the contractor's employ who may be incompetent, misconduct himself, lacks in

care or persists in any conduct which is prejudicial to safety, health, or the protection of the environment. The contractor shall have to forthwith comply with such requirement.

5.7 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

6. Plant, Materials and Workmanship

6.1 Inspection

The NCS-MoES's Personnel or any person authorised by him shall at all reasonable times have full access to all parts of the Site and be entitled to examine, inspect, measure and test the materials, procedures and workmanship. The Contractor shall give the NCS-MoES's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility. The Contractor shall give notice to the Designated Scientist whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport so that the Designated Scientist may carry out the examination, inspection, measurement or testing within a reasonable time, or promptly intimate the Contractor that the Designated Scientist does not require to do so.

6.2 Remedial Work

Notwithstanding any previous test or certification, the Designated Scientist may instruct the Contractor to remove from the Site and replace any Plant or Materials which is not in accordance with the Contract or re-execute any work which is not in accordance with the Contract. The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction. If the Contractor fails to comply with the instruction, the NCS-MoES shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.3 [NCS-MoES 's Claims] pay to the NCS-MoES all costs arising from this failure.

7. Commencement, Delays and Suspension

7.1 Commencement of Works

Unless otherwise stated in the Contract Conditions, the Commencement Date shall be as mentioned in the letter of award of contract or if no date is mentioned then 10 (Ten) days after the date of issue of the Letter of Award of Contract. The execution of work shall commence from such time period or from the date of handing over the site whichever is later. If the contractor fails to commence the work as aforesaid, the NCS-MoES shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money and performance guarantee absolutely.

7.2 Time for Completion

The Contractor shall complete the whole of the Works within the 12/24 months and maintain proportionate progress at all times. Failure to complete the work (if any) may attract the provisions for compensation for delays.

7.3 Work Schedule

The Contractor shall submit a detailed work schedule to the NCS-MoES within 15 days of the award of the contract. The Contractor shall also submit a revised programme whenever the previous programme is

inconsistent with actual progress or with the Contractor's obligations.

7.4 Extension of Time for Completion

If the work(s) be delayed by any of the following:

(a) A variation or other substantial change in the quantity of an item of work included in the Contract,
(b) A cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
(c) Exceptionally adverse climatic conditions,
(d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or
(e) Any delay, impediment or prevention caused by or attributable to the NCS-MoES, the NCS-MoES's Personnel, or the NCS-MoES's other contractors,
(f) Any other cause which, in the absolute discretion of the NCS-MoES, is beyond the control of the contractor,
then the Contractor shall be entitled to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 7.2 will likely to be delayed. Upon happening of any of such event causing delay, the Contractor shall immediately give notice thereof in writing to the Designated Scientist but nevertheless use constantly his best endeavor to prevent or make good the delay. In any such case the NCS-MoES may give a fair and reasonable extension of time and reschedule various stages of the work for completion of the work. Such extension of time shall be communicated to the contractor by the NCS-MoES in writing within two months of the receipt of request from the contractor. Non application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the NCS-MoES and this shall be binding on the contractor.

7.5 Rate of Progress

If, at any time (a) actual progress is too slow to complete the work within the Time for Completion, and/or (b) progress has fallen (or will fall) behind the current programme under Sub-Clause 7.3 [Work Schedule], other than as a result of a cause listed in Sub-Clause 7.4 [Extension of Time for Completion], then the Designated Scientist may instruct the Contractor to submit, under Sub-Clause 7.3 [Work Schedule], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion. Unless the Designated Scientist notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the NCS-MoES to incur additional costs, the Contractor shall subject to Sub-Clause 2.3 [NCS-MoES's Claims] pay these costs to the NCS-MoES, in addition to delay damages (if any) under Sub-Clause 7.6 below.

7.6 Compensation for Delay

If the Contractor fails to comply with Sub-Clause 7.2 [Time for Completion], he shall be liable, subject to Sub-Clause 2.3 [NCS-MoES's Claims] to pay compensation to the NCS-MoES for this default. The compensation shall be paid as below:

1% of the contract value for every week the work remains incomplete beyond specified time of completion, subject to a maximum of 10% of the contract value. The compensation shall not relieve the contractor of his obligation to complete the Work or from any other duties, obligations or responsibilities which he may have under the contract.

7.7 Completion Certificate

Immediate on completion of the work at particular site the contractor shall give notice to the Designated Scientist of such completion and after inspection and satisfaction Designated Scientist shall issue the Completion Certificate if he finds that the work has been completed satisfactorily in all respects. If the work is not to the satisfaction of the Designated Scientist, he shall indicate in writing to the contractor the defects/shortcomings in the work and ask the contractor to remove them. Upon removal of such

defects/shortcomings alone the Designated Scientist shall issue the completion certificate. Performance of the Contractor's obligations shall not be considered to have been completed until the Designated Scientist has issued the Completion Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.)

7.8 Unfulfilled Obligations

After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

7.9 Clearance of Site

The Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site immediately. The contractor shall also close all the boreholes properly drilled for geotechnical investigations and geophysical investigations. If all these items have not been removed within 48 hours after the NCS-MoES receives a copy of the Performance Certificate, the NCS-MoES may sell or otherwise dispose of any remaining items. The NCS-MoES shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site. Any balance of the amount from the sale shall be paid to the Contractor. If these amounts are less than the NCS-MoES's costs, the Contractor shall pay the outstanding balance to the NCS-MoES.)

8. Measurement and Evaluation

The Works shall be measured and valued for payment.

9. Variations and adjustments

9.1 Right to Vary

The NCS-MoES /Designated Scientist may at any time prior to issuing the Completion Certificate for the works require variation in the quantity or method of any item of work to the extent of 25% either by an instruction or by a request for the Contractor to submit a proposal, which shall be binding on the contractor. The Contractor may, however, promptly give notice to the Designated Scientist stating (with supporting particulars) his difficulty, if any, in carrying out the variation. Upon receiving this notice, the Designated Scientist shall cancel, confirm or vary the instruction.

9.2 Adjustments for Changes in Legislation

All rates quoted by the contractor shall be inclusive of all taxes and levies payable under respective statues. However, pursuant to the Constitution (46th Amendment) Act, 1982, if any further tax or levy is imposed by Statute after the last stipulated date for the receipt of bids including extensions, if any, and thereupon necessarily and properly pays such taxes/ levies, the contractor shall be reimbursed the amount so paid, provided such payment is not, in the opinion of the NCS-MoES (whose decision shall be final and binding on the contractor) attributable to delay in execution of the work within the control of the contractor. The contractor shall, within a period of 30 days of the imposition of any such tax or levy, pursuant to the Constitution (46th Amendment) Act 1982, give a written notice to the Designated Scientist along with all necessary information related thereto.

10. Contract Price and Payment

10.1 Mobilization Advance

The NCS-MoES may give a mobilization advance not exceeding 10% of the contract amount, if requested by the contractor in writing within one month of the order to commence the work. In such a case the contractor

shall execute a Bank Guarantee Bond from a Scheduled Nationalized bank, which shall be 110% of the advance valid for the contract period and shall be kept renewed from time to time to cover the balance amount and likely period of complete recovery together with interest. The Mobilization Advance will not be paid in less than two installments. The total advance payment, the number and timing of installments (if more than one) shall be decided by NCS-MoES. The first installment shall be released on receiving a request from the contractor and the second and subsequent installments, if any, shall be released only after the contractor furnishes a proof of the satisfactory utilization of the earlier installments to the entire satisfaction of the NCS-MoES. The mobilization advance as above shall bear a simple interest at the rate of 18 percent per annum calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by deduction from contractor's bills commencing after the first ten percent of the gross value of the work is executed and paid, on pro rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time eighty percent of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment.

10.2 Payment of Interim or Running Account Bills

The contractor shall submit the interim or running account bills for the work executed on the basis of recorded measurements in triplicate on or before the 10th day of every quarter. The contractor shall not be entitled to be paid interim or running account bill if the gross work done together with net payment adjustment of advances, if any, since the last such payment is less than 25% of the contract value in case of contract for 12 months and 12.5 % in case of contract for 24 months, in which case the interim bill shall be prepared on the appointed date of the next month after the requisite progress is achieved. The amount admissible to the contractor shall be paid by NCS-MoES after due verification of the measurements. In the event of failure of the contractor to submit the bill, no claim of the contractor whatsoever due to delay in payment including that of interest shall be payable to the contractor.
All interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskillful work to be rejected, removed, replaced or redone.

10.3 Final Payment

The contractor shall present the final bill within 60 days of issuance of the Completion ~ Certificate by the NCS-MoES. The NCS-MoES shall pay to the Contractor the final payment within 90 days of receiving the final bill from the contractor.

10.4 Release of Security Deposit

The due amount of security deposit shall be released after six months of the issuance of the completion certificate by the NCS-MoES.

11. Termination by NCS-MoES

11.1 Termination

11.1.1 Subject to other provisions contained in this clause, the designated Scientist may, without prejudice to his any other rights or remedy against the contractor in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this contract or otherwise, and whether the date of completion has or has not elapsed, by notice in writing absolutely determine the contract in any of the following cases:

i. If the contractor having been given by the designated scientist a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un-workman like manner shall omit to comply with the requirement of such notice for a period of seven days thereafter.

ii. If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or manager on behalf of a creditor shall be appointed or if

circumstances shall arise which entitle the court or the creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.

iii. If the contractor has, without reasonable cause, suspended the progress of the work or has failed to proceed with the work with due diligence so that in the opinion of the designated scientist (which shall be final and binding) he will be unable to secure completion of the work by the date for completion and continues to do so after a notice in writing of seven days from the designated scientist.

iv. If the contractor fails to complete the work within the stipulated date or items of work with individual date of completion, if any stipulated, on or before such date(s) of completion and does not complete them within the period specified in a notice given in writing in that behalf by the designated scientist.

v. If the contractor persistently neglects to carry out his obligations under the contact and /or commits default in complying with any of terms and conditions of the contract and does not remedy it or take effective steps to remedy it within 7days after a notice in writing is given to him in that behalf by the designated scientist.

vi. If the work is not started by the contractor within 2 months of the stipulated time.

when the contractor has made himself liable for action under any of the cases aforesaid the designated scientist on behalf of the President of India shall have powers:

a) To determine or rescind the contract as aforesaid (of which termination or rescission notice in writing to the contractor under the hand of the designated Scientist shall be conclusive evidence). Upon such determination or rescission, the Earnest Money Deposit, Security Deposit already recovered and performance Guarantee under the contract shall be liable to be forfeited and shall be absolutely at the disposal of the Government.

b) After giving notice to the contractor to measure up the work of the contractor and to take such whole, or the balance or part thereof, shall be un-executed out of his hands and to give it to another contractor to complete the work. The contractor, whose contract is determined or rescinded as above, shall not be allowed to participate in the tendering process for the balance work.

In the event of above courses being adopted by the designated Scientist, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials entered into any engagements or made any advances on account or with a view to the execution of the work or the performance of the contract. And in case action is taken under any of the provision aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contact unless and until the designated Scientist has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

11.1.2 In case, the work cannot be started due to reasons not within the control of the contractor within 2 months of the allocation of work, either party may close the contract. In such eventuality, the Earnest Money Deposit and the Performance Guarantee of the contractor shall be refunded, but no payment on account of interest, loss of profit or damages etc. shall be payable at all.

11.2 Valuation at Date of Termination

As soon as practicable after a notice of termination under Sub-Clause 11.1 [Termination**]** has taken effect, the Designated Scientist shall proceed to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.

11.3 Payment after Termination

After a notice of termination under Sub-Clause 11.1 [Termination] has taken effect, the NCS-MoES may:
(a) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the NCS-MoES, have been established, and/or
(b) recover from the Contractor any losses and damages incurred by the NCS-MoES and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 11.2 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the NCS-MoES shall pay any balance to the Contractor.

11.4 Foreclosure of contract by NCS-MoES

The NCS /MOES shall be entitled to terminate the Contract at any time for the NCS-MoES's convenience, by giving a 30 days' notice to the Contractor. The NCS/ SHRA shall, however, not terminate the Contract under this Sub-Clause in order to execute the Works itself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 12.1 [Termination by Contractor]. In the event of such termination, the NCS-MoES shall promptly return the Performance Security to the contractor. The termination shall take effect 30 days after the later of the dates on which the Contractor receives this notice or the NCS-MoES returns the Performance Security. After this termination, the Contractor shall proceed in accordance with Sub-Clause 12.2 [Cessation of Work and Removal of Contractor's Equipment.

12. Termination by Contractor

12.1 Termination by Contractor

The Contractor shall be entitled to terminate the Contract if:
(a) The Contractor does not receive the amount due under an interim bill within 60 days of submitting the bill.
(b) In the event of Contractor not receiving the sums due to him upon expiration of the 60 days as above for payments under interim bill, the Contractor may, without prejudice to the Contractor's entitlement to interest on delayed payments under Sub-Clause 10.4, immediately take one or both of the following actions, namely (i) suspend work or reduce the rate of work, and (ii) terminate the Contract by giving notice to the NCS-MoES. Such termination shall take effect 14 days after the giving of the notice. The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.

12.2 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination or foreclosure under Sub-Clause 11.1 or 11.4 [NCS-MoES 's Entitlement to Termination] or Sub-Clause 12.1 [Termination by Contractor] has taken effect, the Contractor shall promptly:
(a) Cease all further work, except for such work as may have been instructed by the Designated Scientist for the protection of life or property or for the safety of the Works,
(b) Hand over Contractor's Documents, geotechnical and geophysical data (raw and Digital format) for which the Contractor has received payment, and
(c) Remove all other Goods from the Site, except as necessary for safety, and leave the Site.

12.3 Payment on Termination

After a notice of termination under Sub-Clause 12.1 [Termination by Contractor] has taken effect, the NCS-MoES shall promptly:
(a) Return the Performance Security to the Contractor,
(b) Pay the Contractor in accordance with Sub-Clause 11.3

13. Risk and Responsibility

Indemnities

The Contractor shall indemnify and hold harmless the NCS-MoES, the NCS-MoES 's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of the following:
(a) Bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of the execution and completion of the Works unless attributable to any negligence, willful act or breach of the Contract by the NCS-MoES, the NCS-MoES 's Personnel, or any of their respective agents, and
(b) Damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of the execution and completion of the Works unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the NCS-MoES,

the NCS-MoES 's Personnel, their respective agents. The NCS-MoES shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of bodily injury, sickness, disease or death, which is attributable to any negligence, willful act or breach of the Contract by the NCS-MoES, the NCS-MoES 's Personnel, or any of their respective agents.

14. Force Majeure

14.1 Definition of Force Majeure

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) mentioned in the Definitions are satisfied:
(i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
(ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
(iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,
(iv) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
(v) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

14.2 Notice of Force Majeure

If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure. The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them. Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

14.3 Consequences of Force Majeure

If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 14.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled to an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 7.4 [Extension of Time for Completion].

15. Claims, Disputes and Arbitration

If any dispute or difference arises between the parties hereto as to the construction, interpretation, effect and implication of any provision of this contract, including the rights or liabilities or any claim or demand of any party (or its extent) against the other party or its sub-contractor or in regard to any matter under these presents but excluding any matters, decisions or determination of which is expressly provided in this contract, such disputes or differences shall be referred to an arbitrator to be appointed by the mutual consent of both parties. If the parties cannot agree on the appointment of the arbitrator within a period of one month from the notification by one party to the other of existence of such dispute, then the arbitrator shall be nominated by the Secretary to the Government of India, Department of Legal Affairs, Ministry of Law & Justice (Law Secretary). A reference to the arbitration under this clause shall be deemed to be submission with the meaning of the Arbitration and Conciliation Act 1996 and any modification or re-enactment thereof and the rules framed there under for the time being in force.
Any dispute arising out of the contract should be within the jurisdiction of New Delhi only. Minor cases of redressal, if any, can be referred to the NCS-MoES, New Delhi.

16.0 Intellectual Property Rights

All the field, laboratory test data and their hard/soft copy, interpretations/illustrations, recommendations and related technical and administrative reports for sites would be the intellectual properties of NCS-MoES under Intellectual Property Right Act, 2005.

Annexure - IV
(Proforma for Contract Agreement)

This Agreement is made and entered into on the.....day of.....,2014.

Between

National Centre for Seismology (NCS)
Ministry of Earth Sciences

President of India, acting through Director, National Centre for Seismology, Ministry of Earth Sciences (MoES) Lodi Road, New Delhi 110 003; hereinafter referred to as NCS-MoES, (which expression shall, unless excluded by or repugnant to the context, be deemed to include his successors in office and assigns) of the First Part.

And

M/S……. having its Registered Office at …… hereinafter referred to as "The Contractor", (which expression shall unless excluded by or repugnant to the context, be deemed to include its administrators, executors, liquidators, successors in interest and permitted assigns) of the Second Part.

NCS is the National Center attached to MoES engaged in monitoring earthquakes of the country and Seismic Hazard Risk Assessment of Indian region.

AND WHEREAS NCS:SHRA is desirous for Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India and monitoring earthquake and earthquake/Seismic risk assessment of Indian subcontinent **AND WHEREAS** SHRA desires that the work be carried out as per the Bid document No……..…

……. And whereas the contractor is willing and has accepted to render the services to carry out Geotechnical and Geophysical investigations for the seismic microzonation of 30 cities in India. And whereas the contractor has submitted an offer and NCS-MoES has accepted the same for the Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India.

NOW, THEREFORE, THESE PRESENTS WITNESS and it is hereby agreed and declared by between the parties hereto as follows:

1. In this Agreement the words and expressions shall have the same meanings as are respectively assigned to them in the General Conditions of Contract for Geotechnical and geophysical investigations in **Part-D of the Bid Document**.

2. The following documents shall be deemed to form and be read and construct as part of the Agreement viz:

i. The letter No…….. of NCS-MoES inviting technical and financial offers:

ii. The Bid Documents dated…… issued to the Contractor by NCS-MoES;

iii. The Technical and Financial Offer of the Contractor to carry out the works;

iv. The Letter of Acceptance from NCS-MoES;

v. The General Conditions of Contract for geotechnical and Geophysical Investigations included in the Bid Documents.

3. In consideration of payments to be made by the Client to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Client to perform the Services in conformity in all respects with the provisions of this Agreement.

4. The contractor Agrees to execute the whole work namely geotechnical and geophysical investigation for seismic microzonation of 30 cities in India for an amount of Rs. (amount in word) and NCS-MoES agree to pay for the same in accordance with conditions specified in the Bid document.

IN WITNESS whereof the parties hereto have hereunder set their respective hands and seals on the day, month and year first above written.

Signed by the Job allotter

with date

(for and on behalf of the President of India)

1. Name of Witness with signature and address

……

……

2. Name of Witness with signature and address

…….

…….

Signed by the Said Contractor or his representative with date

(for and on behalf of the Contractor)

1. Name of Witness with signature and address Legal

……

……

2. Name of Witness with signature and address

…….

…….

(Proforma for Appendix 'A' to the Contract Agreement)

The contract made between M/S ……. hereinafter called the 'Contractor' which expression shall include their legal representative on the one part and Director, National Centre for Seismology, Ministry of Earth Sciences Lodi Road, New Delhi 110 003on behalf of the President of India hereinafter called the "Job allotter", on the other.

Custody of Data and Records

The Contractor shall perform the contract in all respects in accordance with the terms and conditions as mentioned in the Bid Document/Job Order. All Data and Records pertaining to Geotechnical and Geophysical Investigations for the Seismic Microzonation of 30 cities in India shall remain in every respect at the safe custody of the contractor until completion of the soil investigation and report making as mentioned in the Job Order and until their delivery to the NCS-MoES, New Delhi. The Contractor shall be held responsible for all loss, destruction, damage or deterioration or perforation of data/information during the complete period of the fulfillment of the job.

Rights of Rejection of data/Report

(a) Not withstanding any approval which the Purchaser may have given in contract of the letter of award or any part thereof which shall be lawful for the Government on behalf of the job allotter to reject the whole or any part of the work within 18 weeks from the submission of the completion report if not found in conformity with the specifications and terms and conditions of the contract on account of accuracy, omission of details etc. as referred in the Part B of the Bid Document.

(b) That if the Contractor fails to observe or perform any condition of this contract or become insolvent or he or his representative tries to unduly influence any official or offers any bribe in connection with contract then, notwithstanding any previous waiver of such default or action, the NCS-MoES will have the power on behalf of the Government to terminate the contract forthwith and without prejudice to other rights and remedies of the Government to forfeit the said Security Deposit of Rs…… …… in the form of Bank Guarantee at its discretion and also recover from the contractor any loss suffered by the Government on account of the Contract being so terminated prematurely.

(c) Time and date of completion of the work essence of the contract

The time and date stipulated in the letter of award for the completion of the allotted work shall be deemed to be the essence of the contract. In case of delay the Contractor shall in agreement to other liabilities mentioned in the General conditions of Contract be liable for losses of inspection which may be incurred after the date on which the work ought to have been completed and in the event of the Contractor's failure to complete the work within the period prescribed for such completion, the NCS-MoES shall be entitled to withhold any payments until the whole of the work has been completed and take action under clause 7.6 of General condition of contract in part 'D' of the Bid document. The NCS-MoES will allow such additional time, as he may prefer to have been required by the circumstances of the case.

(d) That in case of any dispute or difference, that may arise in connection with contract the settlement of which is not hereinbefore provided for, the same shall be referred for the Arbitration in accordance with clause 15 of General Conditions of Contract.

1. Name of Witness with signature

Signed by the Said Contractor or his

Legal representative with date

…….

……

2. Name of Witness with signature

Signed by representative of Director, NCS, MoES

(for and on behalf of the President of India)

……

…….

Annexure – V

NO DEMAND CERTIFICATE BY THE BIDER

I, (Full Name and Address of the Contractor) …… …… …… …… …… …… do hereby acknowledge to have received payment in full from ……. …… …… …….. for all the services rendered by me in connection with…… ……. (The number and date of contract agreement)

This is to certify that I have no further claim whatsoever against the Government in connection with or arising out of the said contract which remains unadjusted.

Signature of the Contractor with date

(Defacing a revenue stamp)

Annexure - I

List of cities

Sr.No.	City	State	Tentative Area (Sq km)
1.	Srinagar	Jammu & Kashmir	300 (Under execution in Program mode of PAMC (Geosciences), MoES
2.	Patna	Bihar	109
3.	Meerut	Uttar Pradesh	172
4.	Jammu	Jammu & Kashmir	112
5.	Amritsar	Punjab	220
6.	Jalandhar	Punjab	160
7.	Bhavnagar	Gujarat	54
8.	Surat	Gujarat	326
9.	Bhiwandi	Maharashtra	32
10.	Nashik	Maharashtra	259
11.	Pune	Maharashtra	244
12.	Bhubaneshwar	Orissa	393
13.	Cuttack	Orissa	192
14.	Chennai	Tamil Nadu	426
15.	Asansol	West Bengal	127
16.	Vadodara	Gujarat	160
17.	Coimbatore	Tamilnadu	106
18.	Agra	Uttar Pradesh	188
19.	Varanasi	Uttar Pradesh	80
20.	Bareilly	Uttar Pradesh	123
21.	Lucknow	Uttar Pradesh	310
22.	Kanpur	Uttar Pradesh	300
23.	Kolkata	West Bengal	Completed
24.	Indore	Madhya Pradesh	526
25.	Vijayawada	Andhra Pradesh	261
26.	Dhanbad	Jharkhand	258
27.	Mangalore	Karnataka	132
28.	Kochi	Kerala	95
29.	Kozhikode	Kerala	128
30.	Thiruvananthapuram	Kerala	214