

Government of the People's Republic of Bangladesh  
Local Government Engineering Department  
Office of the Upazila Engineer  
Naniarchar, Rangamati Hill tracts.

**Request for Quotation (RFQ) Document**  
**for conducting Sub-Soil Investigation & Topographical Survey** for 3 (Three) nos  
of Primary school

Name of School : Sapmara, Karalyachari & Ghilachari Primary school  
Upazila - Naniarchar, Dist - Rangamati.

Name of Program : 'Fourth Primary Education Development Program (PEDP-4)'

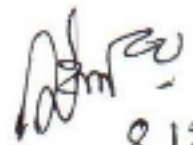
Name of Sub-Soil Investigation & Topographical Survey firm :

Address of Sub-Soil Investigation & Topographical Survey firm :

Name of Issuing Staff :

Designation :

Date of Issue :

  
8.12.21

**Mohammad Irfanul Kabir**  
**Upazila Engineer**  
**LGED**  
Naniarchar, Rangamati Hill District

## Schedule of Items and Priced Quotation

**Name of work :** Conducting of Topographic Survey and Sub soil Investigation capacity for 1)Sapmara 2) karalyachari Lalit Kumar Member Para 3) Ghilachari - 3 (Three) nos of primary schools in Naniarchar Upazila under the Project named "Fourth Primary Education Development Program (PEDP-4)"

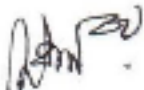
**Name of School :** Sapmara, Karalyachari & Ghilachari Primary school  
Upazila Naniarchar, Dist : Rangamati.

Sl.	Description of item of works	Unit	Qty	Unit Rate (Tk)		Total Amount (Tk)
				In Figure	In Words	
1.	<b><u>Sub-Soil Investigation:-</u></b> As Per TOR of Sub-Soil Investigation	nos	3			
2.	<b><u>Topographical Survey</u></b> As Per TOR of Topographical Survey	Nos	3			
Total Amount (Figure)						
Total Amount (Words)						

Note :Rate for each school Sub-Soil Investigation andTopographical Survey will be quoted by the Consultant/ firm including Vat.

signature of quotationer :

Name of Consultant/ firm :

  
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### 3. Eligibility Criteria:

- a) The consulting firm should have a minimum of 2 (two) years field experience in digital topo survey using high precision Total Station and GPS machine and production of digital maps using GIS and CAD. This must be well-experienced in generation of CAD format data and preparation of GIS database with topo survey information;
- b) The firm must have necessary tools, equipment and full-time technical staff to conduct the topographic survey, and prepare Topographic survey map and Layout master plan as per Schedule submitted with the tender.

### 4. Duration of the Assignment:

The duration of the assignment will be 15 days.

### 5. Support to be provided by LGED field offices:

- a) School related data and information;
- b) Identification of land and boundary of the primary school;
- c) In addition, necessary support and co-operation with regard to this assignment;

### 6. Deliverables:


- a) Digital Elevation Model (DEM) as mentioned in clause 2(VIII);
- b) Digital Contour Map at 5m grid interval (1-3m interval in hilly areas) as per clause 2(IX);
- c) Photographs both printed and soft copy in JPEG format, as mentioned in clause 2(XII) and 2(XIII);
- d) GIS format data as per clause 2(X) and CAD format data as per clause 2(XI);
- e) 3 Sets of Hardcopy Topo Survey maps (GIS & CAD maps in A3 size and 1:300 scale) as mentioned in Clause 2(X), 2(XI) and 2(XIV)
- f) 3 sets of Hardcopy Google Earth image covering school boundaries according to clause 2(IV);
- g) Layout master plan of the School showing all existing and proposed building and other physical infrastructures as per Clause 2(XI).

### 7. Payment:

The firm shall ensure submission of hard & soft copy of Topographic survey report to LGED H/Q & respective procuring entity within deadline. Until receipt of the hard and soft copy and its acceptance by the LGED H/Q no payment will be made to the firm.

- IV. All existing features need to be surveyed in such a way that the surveyed data can be overlaid on Google Earth properly, and also then need to prepare Google Earth image covering school boundaries;
- V. All elevation data has to be transformed with respect to the nearest Survey of Bangladesh (Sob) Bench Mark (BM). Name, ID number and location of the reference BM has to be provided.
- VI. 2 (two) Temporary Bench Marks (TBMs) have to be fixed on permanent structures nearby the school site, and GPS location of the TBM has to be clearly marked on the map. Also, a digital photograph of the TBM location has to be submitted with the deliverables.
- VII. Highest Flood Level (HFL) and Normal Flood Level (NFL) to be provided with reference to Sob Bench Mark.
- VIII. Development of Digital Elevation Model (DEM) based on topographic field survey data and using GIS tools and techniques.
- IX. Development of digital contour map at 5m grid interval (1-3m interval in hilly areas).
- X. Preparation of survey data in GIS shape file using Bangladesh Transverse Mercator BTM projection system, where X, Y, Z values of (all) features and necessary attribute information to be provided;
- XI. Generation of survey data in CAD format showing proper dimension of each infrastructure including the spaces between objects;
- XII. Location of the proposed building and other physical infrastructures to be determined in consultation with the Master Plan Preparation Committee, and plan of the building and others to be demarcated on the Layout Plan with proper dimensions. The color of different features should follow the standards given below:
- Existing building: Blue with hash
  - Proposed building: Red with hatch
  - Waterbody/pond: Cyan
  - Tree: Green
  - Electric Pole/ Tube-well: Magenta
  - Road: Black
  - Other features: Dark Pink
- XIII. Digital photographs at daylight condition to be taken for (i) at least 4 views of the whole school campus from different angles to capture the whole school scenario and (ii) at least 4 views of each building and all;
- XIV. Digital photographs (at daylight condition) shall show existing buildings, boundary wall, entry and approach to the site and important features around the site sequentially. Digital files of the photographs need to be organized in a systemic way giving meaningful names of the folders and files;
- XV. Before Submission, topography map and physical features' map to be duly checked, signed and authenticated by the concerned local officials of LGED); while Layout Master Plan should be signed by Master Plan Preparation Committee members;



  
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# Terms of References for Topographic Survey

## 1. Background:

Local Government Engineering Department (LGED) is responsible for construction of additional rooms in primary schools and other institution buildings of Directorate of primary Education (DPE) under Fourth Primary Education Programme (PEDP4) upon preparation of master plan for each school incorporating present and future needs of physical infrastructures and giving due consideration to gender, environment and social aspects towards contributing to create child friendly learning environment.

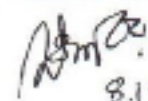
Owing to the fact that many schools built in pasts have too many buildings in premises leaving no play area, dilapidated structures poses high risk to safety, and in many cases, life of the buildings reduces without planned and proper maintenance. In special zones such as in hills and hoar, many built assets are at risk not having protection walls. Light and air circulation to the building(s) is inadequate in absence of proper plan and inadequate design.

Thus, LGED needs to collect data and information on topographic features, other physical and environmental features carrying out digital topographic survey in the premises of 1) Sapmara 2) Karalyachari Lalit Kumar Member Para 3) Ghilachari 3 (Three) nos primary school under Nanniarchar Upazila of Rangamati District and prepare topographic survey map, master plan layout and a report through engaging a qualified firm under this Terms of References (TOR).

## 2. Scope of work:

The scope of work will include, but not limited to, the followings:

- I. Topographic survey of the entire school campus, covering all features within and outside school boundaries for at least a distance of 50m from its boundaries;
- II. Detailed topographic survey by using high precision Total Station and GPS machine. Latitude, Longitude and Altitude (X, Y, Z) values of all points need to be taken at 5m (1-3m for hilly areas) interval depending on site condition with an accuracy of at least 20cm for altitude and 3m for Latitude & Longitude.
- III. Topographic features must include, but not limited to, the following features:
  - a) All existing buildings and other physical structures with proper shape including number of floors and height;
  - b) Electric pole, tube-well, utilities to the building such as gas line, water supply, drainage, sewage disposal within the site;
  - c) Trees more than 3m height with their local name;
  - d) Water body (e.g. river, canal, ponds), bridges and ghats if any;
  - e) Adjacent road and/or link road with its width, alignment and elevation (spot level);
  - f) Any other district features such as homesteads, government office, important archaeological or historic structures, market places, community center or other public/private institutions.



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- II. The firm shall have full-time graduate civil engineer and/or diploma engineer in civil with relevant experience. A Geotechnical Engineer must review and sign the report with his/ her MIEB Code.
- III. The firm shall submit a brochure having its firm profile. Past track records and address (both laboratory and office address with telephone number and email) Cellphones of key personnel are desirable.
- IV. The firm must submit work certificates of the relevant experiences with the tender.

**5. Duration of the Assignment:**

The duration of the assignment will be 15 days.

**6. Support to be provided by LGED Field Offices:**

- I. Topographic survey result and layout plan of the particular school/ institution;
- II. Identification of school/ institution land, boundary and proposed building location in site;
- III. In addition necessary support and co- operation with regard to soil investigation.

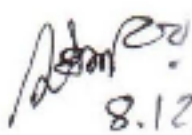
**7. Deliverables:**

- I. Signed field Soil Bore Log Sheet to be sent at email address of [pedp3lged@gmail.com](mailto:pedp3lged@gmail.com) or directly to PEIMU of LGED HQ within 48 hours of soil sample collection;
- II. 3 (three) signed copies of final Soil Test Report to be sent to LGED HQ with a copy to the concerned PE;
- III. Soft copy of the Final Soil Test Report in CD to be sent to LGED HQ and the concerned PE.

**8. Payment Schedule:**

- I. 1<sup>st</sup> installment of 30% payment will be made to the firm after receipts of the Field Soil Bore Log Sheet and its acceptance by LGED HQ;
- II. 2<sup>nd</sup> installment of 50% payment will be made after receipts of the Final Soil Test report by the concerned PE and its acceptance by LGED HQ;
- III. Final installment of 20% payment will be made after receipts of soft copy Final Soil Test Report in CD by the concerned procuring entity (PE) and LGED HQ. Soft copy must be scanned with upazilla engineer signature.



  
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100 ft or more as necessary. No boring beyond 60ft depth shall be conducted without prior written approval (both administrative and financial) of the Primary Education Infrastructure Management Unit (PEIMU) of LGED HQ;

8. SPT must be taken @ 3ft interval up to 15ft depth and @ 5ft interval after 15ft. Two samples (250 gram each) shall be collected at 6ft, 9ft, 20ft and 25ft one of the samples will be taken by the firm for its laboratory test and the other shall be sent to the office of the concerned PE for conducting laboratory test at LGED Central Laboratory for validation purpose;
- VI. During drilling, company must have to record the whole operation of two boring using CC camera to ensure proper work and avoid ambiguity.
- VII. If clayey soil encountered at any depth during boring, undisturbed soil sample must be collected with the help of Shelby tubes;
- VIII. Field soil Bore Log (attached) must be filled in with necessary information before leaving the site, duly signed by foreman of the firm, Headmaster of the particular school, and LGED technical staff present in the site. No bore log with incomplete information and/or without signatures will be accepted.

#### (c) Laboratory Testing & Reporting:

- I. The firm will carry out following laboratory tests:
  1. Unconfined compression for cohesive soil
  2. Direct shear ( $\phi$ )
  3. Grain size Analysis, Hydrometer Test, Natural Moisture Content, Liquid Limit and Plastic Limit. (Grain size Analysis and Hydrometer Analysis at 2m and 7.5m depth must be ensured).
- II. Field Soil Bore Log Sheet (2(b)XI) prepared having 6"-6"-6" penetration SPT value shall be signed by the concerned PE before submission to PEIMU, LGED HQ.
- III. Prepare draft soil test report including Bore Log, photographs, analysis and comments with result mentioning of soil bearing capacity. The Bore Logs must contain N-value, soil type, water table (RL), EGL, (SOB/PWD) of borehole top and clearly written commencement & completion date & time of each bore. The draft report shall be submitted to the concerned PE for review.
- IV. Prepare final soil test report (3 copies) incorporating comments of the concerned PE for submission within 10(ten) days after boring completion. Before submission of the report to LGED HQ. It should be duly checked, signed and authenticated by the PE.
- V. In case of anomaly observed in test results between firm and LGED central lab at validation, the firm shall be obliged to re-test within one week of written notification. The cost of such re-test will be borne by the firm.

#### 4. Eligibility Criteria:

- I. The firm shall have essential soil testing equipment, adequate technical staff and laboratory facilities, and a minimum of 2 (two) years field experience on sub- soil investigation. If the firm do not have own lab facilities, they may take help of LGED laboratory facilities.



## Terms of Reference for Sub-Soil Investigation

### 3. Background:

Local Government Engineering Department (LGED) is responsible for construction of additional rooms in primary schools and other institution buildings of Directorate of Primary Education (DPE) under Fourth Primary Education Development Programme (PEDP4). To ensuring safe and sound building design, LGED needs to collect data and information on sub-soil condition and examine soil bearing capacity, and thus will engage a qualified firm experienced in soil testing for undertaking sub-soil investigation in premises of **1) Sapmara 2) Karalyachari Lalit Kumar Member Para 3) Ghilachari 3 (Three) nos primary school(s)/institution(s) under Nanniarchar Upazila of Rangamati District** under this Terms of Reference (TOR). It is noted that the proposed primary schools would have provision of foundations for multi-storied building.

### 2. Scope of work

The firm will require to:

#### JJ. Preparatory Work

Prepare a detailed work plan in consultation with Upazila Engineer or Executive Engineer ["Procuring Entity (PE)"] for conducting sub-soil investigation in particular school/ institution;

JJJ. Submit the Plan with Schedule to the offices of the concerned PE, with a letter informing mobilization and soil investigation start date at each particular school/institution;

W. Mobilize proper and necessary soil investigation equipment (for example, sufficient SPT spoon in proper dimension, cutter Shelby tube and auto release hammer, 4-inch ring cutter) to the project site. In addition, Bentonite Powder (LL > 350 and mix ratio 4%-6% shall be ensured on the site;

IV. Ensure that those equipment and others are checked by the concerned Upazila Engineer and/ or Laboratory Technician at the site prior to start of actual field operation.

#### Y. Field Work

Mark bore hole points on the proposed building site, in presence of LGED's technical staff and in line with topographical survey results (where RL of the bore hole should be fixed in respect of SOB/PWD data);

5. Conduct sub-soil investigation work using 4-inch bore ring cutter for SPT test and soil sample collection in presence of LGED's technical staff, headmaster and the firm field engineer;

7. Distance between two borings shall preferably be 40-50ft. At least 2 (two) digital color photographs for each boring operation shall be taken having presence of headmaster and LGED technical staff in shots (and color photograph in A4 size is to be submitted with the Field Boring Sheet);

IV. For each bore, the minimum depth of boring shall be 60ft. If poor quality soil is encountered and N-value observed <15, the boring depth shall be extended up to