

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
**MINISTRY OF LOCAL GOVERNMENT RURAL DEVELOPMENT AND
COOPERATIVES**

LOCAL GOVERNMENT ENGINEERING DEPARTMENT

**GAZIPUR DISTRICT RURAL INFRASTRUCTURE DEVELOPMENT PROJECT
(GDRIDP)**

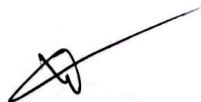
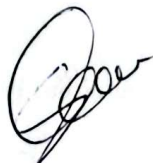
TERMS OF REFERENCE (TOR)

FOR

DESIGN AND SUPERVISION CONSULTANCY (FIRM)

(Package No. GAZ/R/P/GP-1)

OCTOBER 2023



TERMS OF REFERENCE

FOR

DESIGN AND SUPERVISION CONSULTANT (FIRM)

1. Background

During the past decades, rural infrastructure in Bangladesh significantly improved. Despite progress, rural connectivity in Bangladesh remains weak, impeding the physical and economic access. Only 40% rural population has access to all-weather roads. 33% of upazila and union roads and 84% of village roads are still unpaved. Lack of inter connectivity between district to District and district to Upazila sometime more time need to more time to reach destination. Local Government Engineering Department (LGED) has launched a rehabilitation and up gradation of shortest inter connection of road in Gazipur district.

This Term of References (TOR) intends to procure design and supervision consultancy services with a view to implement the rural roads and bridges design and construction supervision for the project area.

2. Objective of Consulting Services

Objective(s) of the Assignment:The assessments for Consultancy is designed and supervision for the civil works.

Specific objectives of the consultancy are:

- To conduct physical surveys of the alignment to fix the proposed land acquisition;
- To undertake feasibility studies, including preliminary engineering design and cost estimates of subprojects;
- To conduct technical assessments of subprojects;
- To undertake detailed engineering designs, including specifications, drawings, and detailed cost estimates;
- To prepare of bidding documents; and
- To ensure construction supervision and quality control

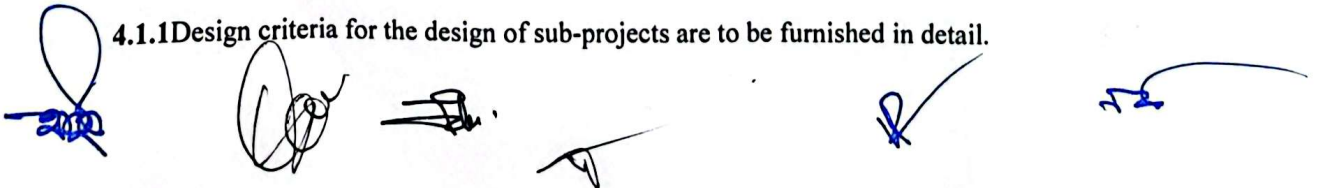
3. Project Area

The project area covers different upazilas under Gazipur District of the Dhaka division.

4. Scope of the work

4.1 Detailed Engineering Design

4.1.1 Design criteria for the design of sub-projects are to be furnished in detail.



4.1.2 Width and length of the bridge, carriage way, vertical and horizontal clearance of the bridge, foundations and substructure should be in conformity with the international design standard and structural requirements.

4.1.3 Due considerations should be given to aesthetics of the structures suited to the ambient environment.

4.1.4 It is noted that before preparation of final design of all sub project, the consultant must submit the Draft Final design to the office of the Project Director(GDRIDP) of LGED for the purpose of Vetting.

4.2. Detailed Engineering Drawings

The design shall yield a comprehensive set of detailed drawings suitable for tendering and actual execution of the project. The drawings shall be conveniently sized for construction site and shall be drawn to suitable scales to provide clarity of comprehension. During the Preparation of Final Engineering Drawing, the aesthetic view of the subproject as well as the landscape of approach road must be considered and the Final Drawing of the bridge would be prepared on the basis of architectural point of view.

4.3. Implementation of the Land Acquisition and Resettlement Plan (if required).

During submission of the land acquisition plan following information must be incorporated

4.3.1 To conduct physical surveys of the alignment to fix the proposed land acquisition.

4.3.2 By the help of concern District Executive Engineer, LGED, the Consultant will prepare land acquisition plan.

4.3.3 The Consultant will submit land acquisition details (Dag no., mouza, khatian and other necessary information verified by Upazila land office and showing the same in mouza map of concern sub-project site).

4.3.4 Type of land. Name of the actual owner of the land with detail address and the quantity of the land.

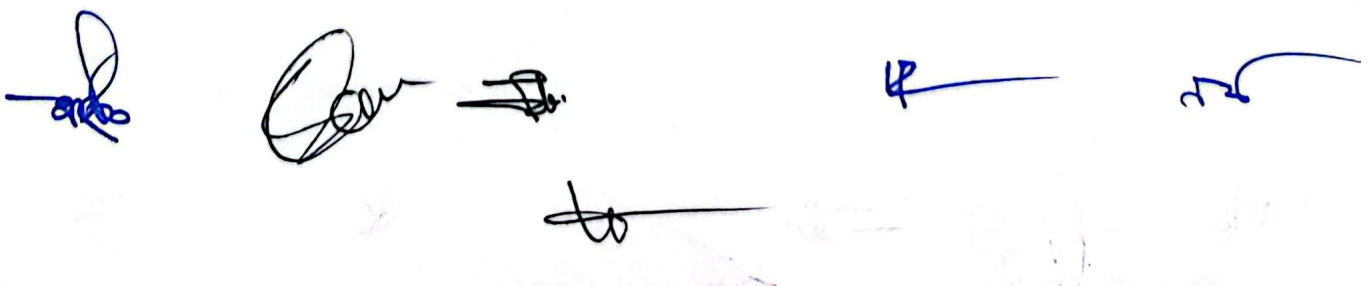
4.3.5 If any anomaly is seemed during the execution phase of the sub-project, land acquisition plan and other related activity have to revised by consultant without any additional payment. Consultants have to do their job within specific time period quarantined by the client.

4.4 Detail Structural Design for Road and Bridges:

To undertake detailed engineering designs including specifications and drawings.

4.5 Estimate Preparation

Preparation of detailed estimation and BOQ of sub-projects using software used by LGED (e.g. RSEPS, EVCS etc.)



4.6 Tender Documents Preparation

The Consultant shall prepare the pre-qualification and tender documents for construction contract of the sub-projects following PPR-2008.

4.7 Construction Supervision of Physical Works

- 4.7.1 With due diligence and efficiency supervise fully the construction of the works which are to be executed in accordance with sound technical administration, financial and economic practices. The consultant shall perform all duties associated with such tasks to ensure that only the best construction practice is followed and that the final product is in all respects equal to that specified, at the most economic costs and is executed in full compliance with the specifications
- 4.7.2 Organize the supervision of the works contract with proper allocation of responsibilities to individual members of the supervision team and supervise their work in order to ensure that it is effectively executed.
- 4.7.3 Ensure construction safety measures are duly performed in accordance with design and specification.
- 4.7.4 Assist in preparing Variation Order (VOs) in light of contract agreement and recommend for approval, if required. In this case proper attention should have to be paid during design and preparation of BOQ so that the numbers of Variations could be kept minimum. The consultant shall attach a precise technical justification with their recommendation for variation.
- 4.7.5 Check and verify in a regular basis the validity of all insurance/guarantees which the contractor is obliged to have in place, if necessary.
- 4.7.6 Approve the Contractor's setting out of the Works and preparation for the Works, prior to issuing approval to construct the Works.
- 4.7.7 Routinely inspect the Works both under construction and completed, for compliance with the Specifications and the agreed method of working, as a basis for payment. Formally arrange joint inspections with LGED and the Contractor for acceptance and/or identification of defects of the works executed or under construction.
- 4.7.8 Continuously monitor the Contractor's progress against programme and his method of working in respect of each and all construction activities and produce a resource analysis against production needs. Advise the Contractor when additional resources or revised methods of working or revised programme of the works are deemed to be required.
- 4.7.9 Review the Contractor's proposed working drawing/plans and associated calculations. Approve or reject the proposals accordingly and identify any changes required.
- 4.7.10 Assist LGED to review and check the Contractor's Payment Applications through verifying the accuracy of the measurement and costing calculations and the sufficiency of the supporting documentation. Also certify the contractor's eligible payments. Advise LGED on whether liquidated damages are due from the Contractor or not. Also help LGED to prepare and issue final completion certificate.

- 4.7.11 Thoroughly review and analyze the Contractor's applications for extensions of time (if required) and provide necessary recommendation along with justifications in the light of the Contract Agreement.
- 4.7.12 Take digital color progress photographs throughout the duration of the Contract. Keep and maintain an official photographic record.
- 4.7.13 Submit progress reports, special report (to fully acquaint the client with all aspects likely to affect the Technical and Financial implementation of the project), final reports and records, and other hard outputs regarding construction progress and the status of the Works Contract.
- 4.7.14 Ensure quality of materials and works by performing required number of inspection or laboratory tests using LGED laboratory.

5. Team Composition and Qualification Requirement for Key Experts:

The consulting team will be headed by a national team leader. The indicative inputs are listed in the table below:

Consultancy Package		No. of Staff	Person-month	Total Person-Month
A. National Consultants (Key Experts):				
1.	Structure Design Engineer Cum Team Leader	01	18	18
2.	Supervision Engineer Cum Quality Control Engineer	04	18	72
3.	Junior Supervision Engineer (Work Supervisor)	04	18	72
Total [Consultancy Package]		09		162
B. Support Staff (Not For Evaluation)				
01	CAD operator	01	18	18
02	Estimator	01	18	18
03	Lab Technicians	01	18	18
04	Lab Assistant	01	18	18
Subtotal B: [Support Staff]		04		72
Grand Total (Consultancy + support staff)		13		234

* Consultant may use additional support staffs to complete the assignment.


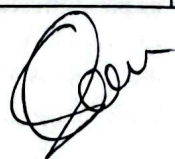




Qualification Requirement for above mentioned key staffs is provided below:

Sl. No.	Position	Qualifications & Experience	Assigned task (not limited to)
1	Structure Design Engineer Cum Team Leader	<ul style="list-style-type: none"> • Minimum Bachelor's degree in civil/highway engineering, Post graduate degree on relevant topic is preferred; Or, • 20years experience in the field of design of civil works of which at least 8 years of Roads, Bridges and Building Design . 	<p>He/She will help PMU and PIUs in the structural design of civil construction works under guidance and supervision of The Project Director. His/her tasks include, but not limited to, the following:</p> <ul style="list-style-type: none"> • Collect relevant data, information related to structural design of schemes included in the subproject report; • Responsible for overall management of the consultant team; • Structural design of the pavement of different sub-projects. • Undertake feasibility study, detailed design, prepare design reports for the subproject; • Assist in the preparation of detailed estimate and bill of quantities; • Check/inspect sites that need special attention; • Any other responsibility assigned to him by The Project Director/PMU.
2	Supervision Engineer Cum Quality Control Engineer.	<ul style="list-style-type: none"> • Bachelor degree in civil engineering with over 15 years' extensive supervision experience of which at least 5 years Roads, Bridges and 	Assist PD/ PMU and Structure Design Engineer(Team Leader) for infrastructure development, and International Construction Supervision Engineer with:

Sl. No.	Position	Qualifications & Experience Building supervision.	Assigned task (not limited to)
			<ul style="list-style-type: none"> • Assist PIUs to ensure quality of works. • Examine and make recommendations on the contractor's facilities, to ensure that these facilities conform to the agreed contract documents; • Examine and make recommendations on the contractor's proposed work methods including but not limited to examining and approving occupational health and safety procedures; • Assess the adequacy of materials, equipment and labor provided by the contractors, the contractor's methods of work, and rate of progress and (where required) recommend appropriate action to the PIU to expedite progress; • Examine and make recommendations on the contractor's plans defining the location of the crushing and aggregate processing plants and the like; • Examine and make recommendations on all implementation plans and working drawings prepared by the contractor; • Issue all necessary field instructions to the contractor, and examine and control the work to ensure that these are carried out according to the contract documents; • Provide general guidance to the contractor as may be necessary to ensure that the works are carried out according to schedule and within the terms of contract; • Ensure that the contractors

Sl. No.	Position	Qualifications & Experience	Assigned task (not limited to)
			<p>have prepared the Contractor's EMPs (CEMPs) prior to actual construction; supervise the implementation of environmental mitigating measures required for the construction activities;</p> <ul style="list-style-type: none"> • Conduct sample quality control test, verify quality testing results made by contractor and recommend appropriate action. • Check/inspect sites that need special attention; • Any other responsibility assigned to him by the Team leader and the Project Director.
3	Junior Supervision Engineer (Work Supervisor)	<ul style="list-style-type: none"> • Bachelor degree in civil engineering with 5 years' extensive experience of Roads, Bridges and Building supervision. Or, • Diploma in Civil Engineering with 10 years extensive Supervision experience of which at least 5 years Roads, Bridges and Building supervision. 	<p>He/she will be responsible of the following.</p> <p>Assist PD/ PMU /Structure Design Engineer (Team Leader)/ and Supervision Engineers for infrastructure development, and Construction Supervision Engineer with:</p> <ul style="list-style-type: none"> • Oversee and maintain a safe, productive work environment for all on-site workers • Maintain quality control throughout the project • Ensure that projects are on schedule • Maintain daily records • Provide assistance to construction workers as needed • Coordinate and direct subcontractor schedules and activities • Perform field inspections, analyze progress, and report findings • Identify and troubleshoot issues and take immediate corrective measure though Supervision Engineers

Sl. No.	Position	Qualifications & Experience	Assigned task (not limited to)
			<ul style="list-style-type: none"> • Oversee subcontractor compliance with safety policies, procedures, and programs • Maintain accurate records, including daily logs, for The Project activities • Perform and Assist LGED official to do Field survey as needed.
4	CAD Operator	<ul style="list-style-type: none"> • Diploma in Civil Engineering/ Diploma in CAD or Equivalent degree with minimum 5 years' experience as CAD Operator. • Knowledge of Auto Cad Software, Design and Drawing preferred. 	<p>He/she will be responsible of the following:</p> <ul style="list-style-type: none"> • Revise and modify existing drawings, prepare shop drawings, and construct three-dimensional models, using 2D and 3D CAD software • Create and update standard architectural documents, including floor plans, elevations, sections, and details • Develop detailed architectural drawings using AutoCAD and Revit software based on client specifications • Adhere to architectural standards set for the projects, including meeting client project deadlines, using approved software, following architectural codes, and using only approved materials • Perform calculations and dimensioning, considering building materials, structural elements, and installation requirements • Work with Project director, Team Leader, Project Manager Estimators, and other staff members to support and aid in the construction works of The Project.

Sl. No.	Position	Qualifications & Experience	Assigned task (not limited to)
			<ul style="list-style-type: none"> • Make revisions to detailed architectural drawings, model drawings, and site plans, including adding, deleting, or modifying details • Assist other staff members as needed
5	Estimator	<ul style="list-style-type: none"> • Diploma in Civil Engineering with 5 years' experience of relevant field. • Knowledge of Auto CAD, RSEPS/EVCs/Road Inventory (LGED) preferred. 	<p>He/she will be responsible of the following:</p> <ul style="list-style-type: none"> • Prepares work to be estimated by gathering proposals, blueprints, specifications, and related documents of LGED • Computes costs of estimate as per Schedule of Rates, LGED • Resolves discrepancies by collecting and analyzing information. • Presents prepared estimates by assembling and displaying numerical and descriptive information. • Prepares special reports by collecting, analyzing, summarizing information • Maintains cost database by entering and backing up data. • Contributes to team effort by accomplishing related results as needed.
6	Lab Technicians	<ul style="list-style-type: none"> • Bachelor degree with 5 years' experience of relevant field. • Knowledge of MS Office, Excel sheet and relevant Software preferred. 	<p>He/she will be responsible of the following:</p> <ul style="list-style-type: none"> • Perform the Lab works for the project schemes under the LGED official's and concern Project Official. • For field investigation, ensure all engineering equipment's available at site as per instruction. Inform the Project office/Team leader if any Equipment defect is detected.

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Sl. No.	Position	Qualifications & Experience	Assigned task (not limited to)
			<ul style="list-style-type: none"> • Receive, label and analyze samples. • Design and execute laboratory testing according standard procedures, make observations and interpret findings as per instructions • Conduct experiments under defined conditions to verify/reject various types of hypotheses using refined scientific methods • Record all data and results in specified forms (paper and electronic) with accuracy and responsibility as per official format of LGED • Maintain equipment and assist in ordering laboratory supplies • Ensure that all safety guidelines are followed strictly at all times and maintain a clean and orderly environment.
7	Lab Assistant	<ul style="list-style-type: none"> • H.S.C degree with 3 years' experience of relevant field. 	<p>He/she will be responsible of the following:</p> <ul style="list-style-type: none"> • Collecting the sample from work site under the guideline of LGED officials and Lab Technician. • Assist Lab technician to carry engineering equipment to the site for performing investigation. • Performing laboratory tests including pre- and post-analytic phases • Preparing samples/specimens producing accurate and reliable data and interpret results. • Adhere to correct procedures, policies and health/safety • Maintain work area and equipment • Provide administrative

Sl. No.	Position	Qualifications & Experience	Assigned task (not limited to)
			assistance <ul style="list-style-type: none"> Contributes to team effort by accomplishing related results as needed.

6. Duration of the Assignment & Location.

The Duration of assignment about 18 (Eighteen) Months and location at Gazipur District. It is envisaged that Consultants services will commence around March, 2024.

7. Reporting Requirement

Consultant support will be provided over the 18 (Eighteen) Months project implementation period. The consultants will submit the following reports:

Deliverable	Month of Delivery ^a	Summary of Contents
Project Management Advisory		
Inception Report	#2	Initial findings, detailed approach and methodology, detailed work plan. 10 hard copies and soft copy
Monthly Report	#2, #3, ..., #18	Monthly progress, detailed by sub-project location. 2 hard copies and soft copy.
Quarterly Report	#3, #6, ..., #18	Quarterly progress. 2 hard copies and soft copy.
Semi Annual Report	#6, #12, 18#	Semiannual progress. 2 hard copies and soft copy.
Annual Report	#12, #18	Annual progress. 2 hard copies and soft copy.
Special reports (as requested by PMU)	TBD	Contract management, handover of facilities, confirmation of operations. Shall include report that all safeguards requirements have been complied etc.
Project Completion Report	#18	2 hard copies and soft copy

^aMonth of delivery (#1 is the first month of the assignment). Format to be agreed prior to first submission. Submit all reports to Project Director, PMU

8. Institutional Arrangement and Counterpart Support

(a) Services, facilities and property to be made available to the Consultant by the Client:

Office communication equipment such as telephone, fax and internet, Office space etc will be rent by consultant firm.

(b) Professional and support counterpart personnel to be assigned by the Client to the Consultant's team:

The Consultant will work directly with the Project Director of Gazipur District Rural Infrastructure Development Project(GDRIDP) and support the officials and staff of LGED at Gazipur District and PMU LGED-HQ.

(c) Logistics and Facilities provided by the client:

LGED will provide the necessary data to execute the assignment.