Terms of Reference (TOR)
For
Design and Supervision Firm for
Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER) Project

1. Introduction

Bangladesh is extremely vulnerable to the effects of climate change. The Global Climate Risk Index ranks Bangladesh as the world's seventh most affected country over the period 1999-2018. Rising temperatures leading to more intense and unpredictable rainfalls during the monsoon season and a higher probability of catastrophic cyclones are expected to result in increased tidal inundation. Besides, Bangladesh is also a deltaic country consisting of floodplains created by over 300 rivers and channels, including three major rivers: the Ganges, the Brahmaputra, and the Meghna. 25 percent of the country is less than 1m above sea level and 50 percent is less than 6m above sea level. Bangladesh is located at the foot of the highest mountain range in the world, the Himalayas, which is also the world's highest precipitation zone. During monsoon seasons, the winds from the sea towards the land raise the water levels in the Bay of Bengal, inhibiting drainage from these rivers to the sea. As rainfall is also high during monsoon seasons, river flows, local rain, and raised levels for the Bay of Bengal result in flooding of vast areas in Bangladesh. Floods are especially destructive when peak flows in these rivers occur at the same time.

Flooding in Bangladesh is a near-constant phenomenon, recurring with varying magnitude and intensity, affecting a greater population than any other natural hazard. Floods and riverbank erosion affect about one million people annually in Bangladesh. Once every three to five years, up to two-thirds of Bangladesh is inundated by floods. Runoff and peak 5-day rainfall intensity (a surrogate for an extreme storm event) are projected to increase. Such disasters have both direct effects (such as loss of lives and property) and indirect effects (such as loss of employment and income, reduced access to products and services, and the opportunity cost of resources that need to be diverted to relief and rehabilitation) as well as disrupting effects on rural economies, accelerating rapid urbanization and migration. Recent studies estimate that by 2050 Bangladesh could have 13.3 million internal climate migrants. Additional rural-urban migration would have significant consequences for air and water pollution and unsustainable consumption of natural resources while putting additional pressure on urban labor markets. Addressing climate risks is increasingly becoming urgent to ensure sustainable economic development of the country.
In the above backdrop, Resilient Infrastructure for Adaptation and Vulnerability Reduction (RIVER) Project aided by the World Bank has been undertaken with the objective to reduce the vulnerability of people in targeted communities to riverine and flash floods, and to improve the country's capacity in disaster preparedness and response. The objective has been planned to achieve through the implementation of the following activities:

I. Resilient Flood Shelters and Community Infrastructure: This component will finance the construction and/or rehabilitation of multi-purpose climate-resilient flood shelters as primary schools with related infrastructure that includes design features to meet the needs of women and vulnerable community members, including land-raising where feasible, provision of WASH facilities, distributed renewable energy systems like solar photovoltaic (PV) nano-grid schemes with related equipment and appliances and construction of climate-resilient shelter connecting roads. Climate resilient flood shelters will be built to replace existing primary school buildings in poor condition in flood prone areas, avoiding the need for land acquisition or resettlement to provide a safe haven from floods. Additionally, when feasible, the open land area of the school will be raised above flood level by filling with suitable earth and compacting mechanically to provide a safe haven for livestock. The shelters will be equipped with adequate community latrines to be usable throughout the year, including during floods. Selected shelters will include distributed renewable energy systems using solar PV nano-grid schemes to increase access to clean and sustainable electricity. This component will also finance the construction of climate resilient shelter-connecting roads (above flood level) to ensure the connectivity of shelters with the existing road network even during prolonged flood periods. In addition, flood shelters will be designed considering the different vulnerabilities of community members including, women and people with disabilities. This component will also finance community infrastructure such as: (a) support the construction, rehabilitation and improvement of select community climate resilient infrastructure (such as rehabilitation and construction of all-weather access and evacuation roads, construction of climate resilient culverts and bridges repair, repair and rehabilitation of existing landing stages, etc) to increase flood resilience and improve livability through community consultation and engagement; and (b) strengthen the facilitation capacity of existing community volunteers to enable community planning of the sub-projects. The construction, repair and rehabilitation of infrastructure conducted under this component will implement energy efficient practices and equipment to reduce greenhouse gas (GHG) emissions associated with the project activities. Additionally, where possible, the activities will use locally sourced material to reduce GHG emissions associated with transportation for procurement.

II. Strengthening Capacity for Disaster Preparedness and Response and Technical Assistance: This component will support strengthening the LGED's capacity through: (a) developing contingency plans for emergency preparedness, response and evacuations for extreme events in collaboration with local LGED offices; (b) updating and improving of the existing disaster shelter database and enhancing data back-up and recovery systems, and sharing access of the same with relevant stakeholders; (c) operationalizing a systematic damage, loss and needs assessment methodology for local infrastructure; (d) strengthening LGED's database and systems capacity for project management and performance monitoring; and (e) providing resources to carry out strategic studies including: (i) feasibility studies and preparation of designs (including safeguards assessments) for the scale-up of Project interventions; (ii) preparation of a master plan for long-term O&M and rehabilitation plan of disaster shelters considering the future climate projections; and (iii) geographic information systems (GIS) analysis to inform activities (i), and (ii) to minimize disaster and climate change impacts. This component will support improving community preparedness and resilience through: (a) carrying out CBDRM interventions and training and support for DRM and climate change; (b) training and behavioral change communication on WASH, health and nutrition, GBV, skills development of boys and girls, and other activities relevant for the community context; (c) carrying out community risk mapping activities; (d) supporting the design of protocols for the management of evacuees placed in emergency shelters, as well as the operation of shelters themselves; and (e) reviewing and updating the existing community O&M guidelines of the disaster shelters and other community infrastructure and provide technical support and targeted trainings to SMCs.

III. Project Management, Design, and Supervision, Monitoring, and Evaluation: This component will support to project management, implementation, and M&E. Specifically, it will: (a) establish and operate the PIU, provide consultancy and technical assistance for construction detailed design, procurement support, and construction supervision, preparation and implementation of environmental and social (E&S) instruments; (b) the capacity development of the PIU and communities in participatory planning and investment; (c) M&E activities; (d) technical assistance and training in areas such as disaster management and preparedness, climate change adaptation and mitigation, construction, contract management, financial management (FM), preparation of E&S assessments and to strengthen the flood preparedness and management program; and (e) the development of an information and communication technology (ICT) monitoring system to track the progress of the project on a real-time basis and carry out assessment of existing ICT and GIS infrastructure to enhance remote supervision capacity.

IV. Contingency Emergency Response: The objective of this subcomponent is to cater to unforeseen emergency needs. In case of a major natural disaster, the Government may request the Bank to re-allocate project funds to this component (which presently carries a zero allocation) to support response and reconstruction. Disbursements under CERC will be contingent upon the fulfillment of the following conditions: (i) the Government of Bangladesh has determined that an eligible crisis or emergency has occurred and the Bank has agreed and notified the Government; (ii) the Ministry of Finance has prepared and adopted the Contingent Emergency Response (CER) Implementation Plan that is agreed with the Bank; and (iii) LGED has prepared, adopted, and disclosed ES instruments required as per Bank guidelines for all activities from the CER Implementation Plan for eligible financing under the CERC.

Major activities includes 500 nos. Primary School cum Flood Shelters, 100 nos. Construction/Installation of Solar PV Nano-grid System, Raised land above Flood level 200 nos, Improvement of Flood Shelter Connecting Road- 275km, Construction of Bridges- 500 m, Construction of Culvert- 1330m, Improvement of community infrastructure Road- 110km, Solar Street Light- 6600 nos, Installation of Protection System- 1400nos.

The project is being implemented in 78 Upazilas of 14 Districts of Bangladesh. These 14 Districts are Kurigram, Lalmonirhat, Rangpur, Nilphamari, Gaibanda, Sirajganj, Pabna, Bogura, Gopalgonj, Rajbari, Madaripur, Faridpur, Sunamgonj, Hobiganj.

The LGED intends to hire a Design and Supervision consultancy firm (hereafter referred as 'D&S consultants' and 'the consultant') to support the implementing agency to design, implementation, supervision, contract and project management support including preparation of the site specific ES screening and environmental and social reports required by and complied with the World Bank's new Environmental and Social Framework (ESF as per ESMF of the project). Package number is LGED/RIVER/21-22/SD-1. It will be financed by the World Bank.

2. Objective of the Consulting Services.

The main objectives of the consulting services are to prepare the initial and final detailed designs, technical specifications, bill of quantity (BoQ), estimate and bidding documents; implementation, supervision, contract and project management support; preparation of site specific ES screening and environmental and social reports as per ESMF of the project; ensure implementation of various site specific ES instruments at the field level; develop, maintain and improve the Information, Communication Technology (ICT) based monitoring and decision support systems andintegrate with the LGED and already exists in existing projects. The main objectives of the consulting services are:

(a) Preparation of the site-specific master plan for flood shelters including total school/shelter premises,
(b) Survey, soil and sub-soil testing, preparation of the site-specific detailed sub-soil investigation report and profile for all interventions,
(c) Preparation and upgradation of architectural designs,
(d) Preparation and upgradation of detailed structural designs,
(e) Preparation and upgradation of electro-mechanical designs,
(f) Preparation and upgradation of sanitary and plumbing designs,
(g) Preparation of specifications, estimate and bill of quantities,
(h) Contract management & construction supervision of the works, and also of supply, installation of any goods.
(i) Enforce compliance of Environmental and Social Management Framework in the project,
(j) Developing, maintaining, and improving the ICT based monitoring and decision support systems and integrating with the LGED and already existing projects,
(k) Updating/preparation of Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Resettlement Action Plan (RAP), Stakeholder Engagement Plan (SEP), Labor Management Procedure (LMP), GRM Manual, and site specific ESIAs, and RAPs, ESMPs, and BOQs for Health, Safety and Environmental Management/Enhancement works, preparation of ES specification and other ES requirements to be included into the bidding document,
(l) Supervision of compliance of various ES instruments at the field level,
(m) Project management support to ensure completion of project activities within the stipulated construction period and in conformity with the approved drawings and specifications, ES standards achieving project development objectives with value for money.

3. Detail Scope of the Services

General Requirements

In accordance with the Act/ Rules & Regulation/ Guidelines of the Government of Bangladesh, and applicable Operational Directives (ODs)/ Operational Policies (OPs) and other guiding documents of the World Bank, the D&S Consultants shall carry out their tasks with accepted professional standards, utilizing sound international engineering and economic practices and standards. The Consultant shall deliver timely sound and diligent services.

In conducting this work, the D&S Consultants shall cooperate fully with Government officials related to the project who will provide the data and requirements if available. The D&S Consultants shall be solely responsible for the analysis and interpretation of all data received and for the conclusions and recommendations contained in their reports.

3.1. Site Investigation

The D&S Consultants will carry out the field investigation work including site analysis, land survey, sub-soil investigation, etc. as per requirements and as per the following procedures:

3.1.1. Site Analysis

The consultant will carry out site analysis to locate the best possible location, alignment and orientation for the construction taking into consideration the topography, disaster and climate vulnerability, soil characteristic and accessibility of the site and location of site, services like power and water supply etc.

The Consultant will visit the site and will take note of the general configurations of the site, topographical features, soil characteristics, approach to and from the site, usage of surrounding areas, river/canal velocity, catchment area, highest flood level, site services like power, water and gas supply, sewerage and drainage system. They will also collect information on vegetation of the area, climatologically data like wind direction, wind velocity, effect of flood, tide in the site, etc.

Based on the field information collected, the Consultant will make recommendation to the Client regarding the final selection of the site. The Consultant will prepare a tentative site layout plan for each site in order to consider its suitability for the proposed facilities. The Consultant will make recommendations for the improvement of the sites if required and the existing site services, if any, for consideration and approva1 of the Client. The Consultant will submit a block layout study of each site to Client for its approval.

The consultant will submit a set of preliminary site report commenting on the technical suitability, cost factor, construction difficulties and other factors related to any other problems to the Client for approval.

3.1.2. Land Survey

The Consultant will do the detailed topographical survey of each site, the land area to a suitable scale showing all spot levels to indicate the slope and configuration of the land area including the record of highest flood level experienced in the locality in and around the site. Survey will also be conducted for the location of existing buildings, structures and services, overhead and underground installations, service lines, trees and plantations, etc. Drawings will be prepared to suitable scale showing specific topographic and other data as follows:

- All spot levels including contour lines to indicate the slope and configuration of the land, difference of elevation of the project area with respect to adjacent areas, and location and invert levels of outfall of drain (if any) within or adjacent to the site,
- Direction and length of each property line,
- Total area of each site,
- Location of permanent benchmark locations set within or adjacent to each site and establishment of reference points, benchmarks etc.,
- Location, outside dimensions and description of all existing structures within each site, if any,
- Location types and size of all roads, waterbeds, walls, vegetation, utilities services etc.,
- Location of all septic tanks, soak wells, underground reservoirs or other underground structures within the site and,
- Location of Overhead services lines, power telephone with the location of poles,
- Cross-section of the river/channel for bridge/culvert,
- Plan and profile for roads,
- Master plan of the site,

The Consultant will submit the report to the Client for their record.

3.1.3. Sub-soil Investigation

The Consultant will conduct sub-soil investigations of the sites for construction. The investigation shall be supervised by the experts of the Consultant. Sub-soil investigation parties will conduct test boring and Standard Penetration Tests (SPT) and collect soil samples for laboratory tests to determine its bearing capacity for both sallow and deep foundations.
This work component of the soil investigation includes:

- Selecting number and location of bore holes at sites of structures,
- Conducting Standard Penetration Test (SPT) at 5'-0"iniervals,
- Collection of disturbed and undisturbed soil sample,
- Recording of groundwater table in each bore hole,
- Carrying out standard laboratory tests

3.1.4. Investigation Report.

Soil investigation report shall contain the details on the following particulars.

- Introduction,
- Purpose of the investigation,
- Scope of work,
- Site plan showing location of bore holes,
- Field investigation,
- Bore log,
- Laboratory analysis and charts,
- Evaluation of bearing capacity,
- Recommendation of the type of foundation for the structure,
- Any other information required and demanded by the clients.

The Consult will submit the sub-soil report to the Client for approval.

3.2. Preliminary Design and Documents

Design of all the infrastructures shall comply with the latest Bangladesh National Building Code (BNBC 2020). If the relevant information is not available in the BNBC 2020 the Consultant may also recommend the Uniform Building Code (UBC), ACI Code, ASTM as applicable. The Consultant will carry out the following tasks:

- Prepare the design criteria in consultations with the Client,
- Identify the functional, floor space requirement, alignment for the purpose,
- Determine orientation of the structures and facilities to be incorporated for proper and efficient functioning of the building,
- Determine appropriate foundation design for construction of the Shelter buildings and other structures. The Consultant will have to do necessary soil investigation,
- Develop alternative plan (architectural designs), alignment, location for review and selection of the best plan and alignment for other structures like bridges/culverts/access, evacuation and connecting roads/growth centers,
- Review various plans and designs for the shelter building and other structures. Provide recommended design with detail cost estimates including bill of Quantities and brief on cost effectiveness,
- Develop alternative plans, alignment, locations and designs and recommend the best plan, alignment, location and design with detail justification in support of the recommended solution,
- Evaluate in detail all the alterative and assist to select the most effective and functional plan, location and alignment. The priority should be given to the minimum requirement of the O&M and minimum energy uses and minimum GHG emissions. Incorporate any correction or change in plan,

3.3. Design development document

From the approved preliminary drawing, the consultant will prepare the design development documents consisting of the following items:

- Plans and outlines specifications,
- Size, alignment, location and character of the buildings and other structures,
- Types of materials,
- Type of structure,
- Mechanical and electrical systems,
- Site development,
- Water supply and sewerage system,
- WASH facilities, Gender and disability consideration, and Energy efficiency and minimum GHG emission where applicable,
- Minimum O&M requirement,
- Other external services,
- Telecom and intercom systems,
- Internal roads etc.
- Alignment, layout and profile of approach road for bridges and roads,
- Alignment and layout of bridges/connecting roads,
- Velocity & flow of river/canal and catchment areas for bridges/culverts,
- Highest flood levels, frequency of floods and other disasters,
- Potential ES issues,

The methodology to be adopted in the design and development should be clearly mentioned.

3.4. Preparation of Final Architectural Drawings

After appraisal, review and revision of the preliminary designs the consultant will undertake preparation of the final architectural design with the following considerations:

✓ Flood Shelter, Raised Platform & Growth Center Market
- Optimum utilization of space,
- Provision for future extension,
- Conformity with existing structures,
- Provision for utility spaces,
- Provision for internal & connecting roads and walkways
- Provision for drainage facilities and exterior lighting system
- Climate and environmental considerations,
- OHS and CHS issues, Environment and social aspects

✓ Landing Stages (River Jetty) and Ghats
- Provision for future extension
- Conformity with existing structures
- Location and level of ramp and stair for both wet and dry seasons
- Provision for connecting roads and anchorage system

✓ Community and Shelter Connecting Roads
- Optimization route alignment
- Provision for right of way, roadway features and road safety measures
- Provision for future improvement

- Provision for roadside tree plantation

The design shall be studied in larger scale, in full depth and further developed incorporating all aspects of function, construction, finishes, utility services, fixtures, furnishing and equipment for all spaces. Architectural designed drawing shall include at least the following and necessary detailing there of:

- ✓ Flood Shelter, Raised Platform & Growth Center Market
  - Site plan, floor plan, all dimensions, doors, windows, schedule,
  - Four side elevations,
  - Blow up details, toilet and kitchen details,
  - Fire alarm, detection and firefighting system details,
  - Telephone lines details,
  - Sectional elevation,
  - Door and window details sheet,
  - Aluminum frame partition wall details,
  - WASH facilities,
  - Gender and disability consideration/ accessibility details,
  - Lightning protection systems and structures details,
  - Energy efficiency and minimum GHG emission consideration details where applicable,
  - School rooms where applicable,
  - Cattle shelters area where applicable
- ✓ Landing Stages (River Jetty) and Ghats
  - Master plan
  - Plan, elevations and sections of ghats and jetties
  - Plan, elevations and sections of ramps, stairs, retaining walls, toilets, waiting sheds, safety measures, tube wells, garbage pits
  - Electrical and plumbing fixture layout plan
  - Doors and windows schedule
  - Gender and disability consideration details
  - Lightning protection systems and structures details
- ✓ Community and Shelter Connecting Roads
  - Road map
  - Longitudinal profile and survey drawings
  - Road cross sections
  - Plan, sections and elevations of side and cross drainage structures and slope protection works
  - Road safety measures
  - Freeboard Requirement

All drawing should be duly signed and submitted within a presentable folder, it may be noted that the category of drawing will not however be limited to the above area but also the consultant may need to provide more details other than this if situation demands or the client's demands.

3.5. Preparation of Structural Design & Drawing

On the basis of the approved architectural drawing by the client, the consultant shall prepare preliminary structural design with detailed drawings in AutoCAD and other software (as requested/required) of the proposed shelter building and other structures along with design calculations and analysis using structural design software such as ETABS, or STAAD Pro. The Consultant will submit all these analysis, reports and drawings for necessary approval from the client.

After getting approval of the preliminary structural design, the consultant shall prepare detailed structural design and drawing in sufficient details by incorporating necessary changes, corrections requested by the client. Structural design/drawing shall at least include but not limited to the following:

- Detailed structural drawings in AutoCAD and other software (as requested/required),
- The detailed design consideration, parameters and relevant assumptions,
- General Notes & specifications of all construction materials,
- Bearing capacity of soil,
- Ultimate strength for reinforcement,
- 28 days concrete strength, fc,
- Clear covers, hook's, lapping, connections and development length details,
- Mix proportions,
- Design Criteria Method (USD/WSD) and assumption,
- Sub-structure details,
- Super structure details,

- Bar bending schedules,
- Wind load assumption,
- Earthquake details,
- Pile load capacity,
- Trench Plan,
- **All design calculations in report form including run models and results and reports from the analysis software**.

3.6. Preparation of Sanitary/Plumbing Design & Drawing

The consultant shall prepare the sanitary/Plums & design and drawing of the projects duly approved by the authority as per approved architectural drawling. They shall at least include but not limited to the following:

- Rainwater harvesting system,
- Roof drainage plan,
- Water supply and drainage Plan of the floor,
- Detail of Pipelines,
- Sewerage details,
- Details of surface drains,
- WASH and related details,
- Layout and details of inspection pit, soak well & septic tank,
- Details of soil pipe,
- Pipelines and
- Details of bathroom fittings and pipelines.

3.7. Preparation of Electrical / Mechanical Design & Drawing

The Consultant shall prepare the internal & external electro-mechanical system design and drawing duly approved by the client for the project as per the approved architectural design & drawing. They shall include at least but not limited to the following:

- Layout plan fitting and fixtures (light, fan, exhaust fan, 3&2 pin socket etc.),
- Detail of telephone, intercom, e-mail etc. installation system,
- Position and size of Distribution Box, Sub-Distribution Box, circuit Breaker, Bus Bar Trucking;
- Position of Solar panel and/or PV Nano grid where applicable and required,
- Position and details of lightning protection systems and structures,
- Cable line route with size,
- Laying of PVC/OI pipe (concealed/surface),
- Earthing details,
- Fire alarm, detection and firefighting system,
- Site plan/layout plan showing HT/L T distribution line/Electric poles,
- Service Connections,
- Others as required.

3.8. Networking System

Plans will be drawn on the basis of architectural working drawings. Drawings will indicate route of conduits, size of conduits, location of fixtures etc. Drawing showing Networking layout, drawing will also contain location of conduits, telephone outlets, telephone cable conduit, etc.

3.9. Bill of Quantities and Cost Estimate

Schedule of items of work and bill of quantities and cost estimate will be prepared in details from the completed working drawings for each site separately. Bills of quantities will be prepared as per construction sequence. Market prices of building materials, current wages of skilled and unskilled laborers and transport costs will be obtained by the Consultant and used for computing item rates as per labor and material standards set by LGED or PWD for similar kinds of work suitably up-dated by the Consultant as per requirement based on recent market rate. The items not covered by the LGED/PWD schedule will be analyzed as per current market prices of labor wages and materials. The unit rates for each item of work thus analyzed and prepared shall have the approval of the Client. Cost estimates of bid package shall be prepared by assembling item wise costs for all works in the package. Contracting of Project will be done based on the most updated cost estimates. The Consultant will submit estimates to the Client for their approval. The Consultant will also prepare excel based templates and/or tools for estimating the BoQ and any other calculation for the bidding documents.

3.10. Technical Specification

Detailed and precise technical specifications for construction works and materials are very important for effective quality control of all construction works. Detailed specifications will therefore be prepared for different items of construction

works describing all works desired to be done by the Contractor under the item in sufficient detail so as to eliminate or minimize scope of misunderstanding or dispute between the Client and the Contractor and to ensure that the Client does not have to accept bad works of contractor because of any lapse or lacuna in the specifications.
Generally, detailed specification of any work will cover the following:

- Scope of work,
- Materials specification,
- Method of works,
- Installation methods,
- Applicable test method: mostly ASTM, AASHTO, BSTI etc.
- Methods of measurements,
- Method of Payment

3.11 Procurement Support

The D&S Consultants will prepare the bidding documents for procurement of Works and Goods following the World Bank's Standard Procurement Documents or model/harmonized national bidding documents as agreed by the World Bank, assisting in bid evaluations and contract award process. And monitoring and reporting procurement progress.

3.12 Construction Supervision

The D&S Consultants will perform their duties during the contract implementation period of the contracts to be executed by the Employer and the Contractor. The Consultant shall perform all duties and activities required for execution of works in accordance with the terms and conditions of the contract and shall perform the following activities but not limited to those only:

(a) Manage cost, quality and time in accordance with the terms and conditions of the Contract;
(b) Survey, inspect, measure and value the work performed by the Contractor, verify statements submitted by the Contractor and issue payment certificates such as interim payment certificates and final payment certificate as specified in the contract;
(c) Assessment of variations and claims. Advise the Employer on resolution of any contractual disputes;
(d) Issue instructions, approvals and notices as appropriate;
(e) Examine, inspect, test assess the compliance of all inputs such as materials, labor and equipment provided by the Contractor in accordance with the Contract;
(f) Check and approve the Contractor's method of work, including site organization, performance standards, quality assurance Plan (QAP) submitted by the contractor, testing, safety plan, social and environmental requirements so that this TOR, laws and regulations, the specifications or the contract are complied with;
(g) Regularly monitor physical and financial progress, and take appropriate actions to expedite progress if necessary, so that the time for completion set forth in the contract will be duly complied by the Contractor;
(h) Explain and/or adjust ambiguities and/or discrepancies in the Contract Documents and issue any necessary clarifications or instructions with consultation with the Procuring Entity. Issue further drawings and give instructions to the Contractor for any works which may not be sufficiently detailed in the contract documents, if any;
(i) Review and approve the Contractor's working drawings, shop drawings and drawings for temporary works. Also review and approve, if any, design prepared by the Contractor for any part of the permanent works;
(j) Liaise with the appropriate authorities to ensure that all the affected utility services are promptly relocated;
(k) Carry out field inspections on the Contractor's setting out of the works in relation to original points, lines and levels of reference specified in the contract;
(l) Organize, as necessary, management meetings with the Contractor to review the arrangements for future work. Prepare and deliver minutes of such meetings to the Employer and the Contractor;
(m) Supervise the works so that all the contractual requirements are met by the Contractor, including those in relation to i) quality of the works, ii) safety and iii) protection of the environment.;
(n) Supervise and endorse field tests, sampling and laboratory test to be carried out by the Contractor;
(o) Inspect and check the construction method, equipment to be used, workmanship at the site, and attend shop inspection and manufacturing tests in accordance with the specifications;
(p) Use the available and commonly used supervision and monitoring system/checklists/templates/apps of the Employer during the field visits;
(q) Coordinate the works among different contractors employed for the Project;
(r) Carry out timely reporting to the Employer for any inconsistency in executing the works and suggesting appropriate corrective measures to be applied;
(s) Provide periodic and/or continuous inspection services during defects notification period and if any defects are noted, instruct the Contractor to rectify;
(t) Check and certify as-built drawings;
(u) Submit monthly progress report and Quarterly environmental and social progress/monitoring report (including incident reports, labor grievances, occupational health and safety compliance, labor induced gender based violence

etc among others) within two weeks of end of a calendar quarter in format approved by the Employer/Procuring Entity;

(v) Prepare replies of audit report for Procuring Entity; and

(w) Carry out further activities and reporting required for smooth execution of the project and required by the Project Director.

While carrying out all the above, and any other responsibilities as conferred under the contract documents, in case of contracts following national competitive procurement, the Consultant shall play the role of 'Project Manager' as described in the Conditions of Contract under national procurement documents (with or without modifications to adopt World Bank requirements). In case of all international competitive procurement where the works will be implemented following the FIDIC conditions of contract, the Consultant shall play the role of 'Engineer' as provisioned in the FIDIC Conditions of Contract for Construction, 2nd Edition 2017.

3.12 Environmental and Social (ES) Requirements

3.12.1 Site specific ES assessment and compliance monitoring

The main objective under Environmental and Social (ES) (Including health, safety and gender) requirement is to conduct the site-specific ES screening, identify the potential impact of project activities, collect and consolidate the filed information, prepare all the required documents/reports, provide technical oversight on the project activities, provide support in the areas that require technical assistance by environmental, social and gender experts of PIU. Overall, the D&S consultant is responsible for preparation of various site-specific ES instruments and overseeing and reporting on the ES compliance during the implementation in the field. The assignment includes the following tasks:

1) Prepare site specific ES screening and site-specific ES assessment reports and/or ESMPs for various sub-projects following the guidelines provided in the approved ESMF of the project.
2) Develop a GRM and OHS/CHS manual for implementation
3) Prepare ES specification based on the site-specific ESA/ESMPs and include those and other ES requirements into the bidding documents.
4) Assist PIU to review and approve Contractor's Environmental and Social Management Plans (C-ESMPs),
5) Ensure compliance of various ES instruments such as ESMPs, OHS/CHS plans etc. during implementation,
6) Prepare and submit monthly and quarterly monitoring report (including incident reports, reports on labor induced GBV, OHS issues compliance of contractor's on C-ESMP etc., among others) within two weeks of end of a calendar quarter,
7) Environmental and Social Monitoring and reporting in accordance with the ESMPs
8) Ensure overall compliance of the works with GoB and World Bank's ES requirements,

3.12.2 Review and update the ES framework documents

The D&S consultants will review the already prepared ES Framework documents i.e. Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), Resettlement Action Plan (RAP), Stakeholder Engagement Plan (SEP), Labor Management Procedure (LMP) and update/recommend to update the documents if required/instructed by the clients.

3.12.3 Assist PIU in management of contractual obligations

a. The consulting firm will assist Environmental and Social Consultants of PIU to ensure the ESF obligation of the project as well as to confirm the incorporation of the clauses into the bidding documents and legal agreement with the contractor. Such obligation would include implementation of the site-specific ESMP and any other applicable ES instruments.
b. The consulting firm will report ES related non-compliance issues of contractors according to the project specific non-compliance rectification procedures and will assist for remedy action application

3.12.4 Capacity Building responsibilities

a. The consulting firm will develop training plans for various stakeholders such as PIU staff, contractors' personnel and staff of other relevant agencies. Key topics to be focused on include ESF, ESMP, OHS and CHS, GBV, resource efficiency and pollution management, waste management etc. which will be reviewed and approved by the PIU ES Consultants.

b. The consulting firm will organize trainings related to environmental, social, gender, health, and safety to raise the capacity of contractors and other relevant stakeholders to implement the ESMPs and carry out required monitoring activities.

3.12.5 Monitoring of Grievance Redress Mechanism

The consulting firm will be an important part of the grievance redress mechanism (GRM) of the project. The team will develop a standalone GRM and monitor the administration of grievances, assist PIU towards resolving issues or coming to terms with complainants based on assessment of the problems, type of complaints, and gravity of the situation.

3.12.6 Technical Advice to PIU field based Environmental and Social Consultants

When necessary and required by PIU, the consulting firm will provide technical advice related to ES aspects to the PIU. Such advice would include coordination with other relevant organizations/entities, formulation of strategies to address major issues and complaints, handling grievances, and enhancement of capacity of PIU.

3.12.7 Arrange and Conduct Public Consultations

The consulting firm will arrange and conduct consultation that will need to ensure that Project affected people and other stakeholders are informed about the Project activities and its possible impacts, as well as offered the opportunity to share their opinions and feedback to input into the ES assessments, planning and design studies and their implementation in accordance with the Stakeholder Engagement Plan (SEP). For meaningful consultations with project-affected groups, communities, women of various age, persons with disabilities, elderly people, local NGOs and rights groups, all relevant documents must be provided in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted.

3.13 Information and Communications Technology (ICT) Monitoring:

ICT monitoring will be used to enhance the efficiency of the project by providing a single-stop instrument to monitor the progress of construction, implementation of ESMP, tracking the GRM/GRS, compliance with ESF, sharing images to assess quality of construction, and keep track of field visits from related professionals. It will follow the examples of the already developed ICT monitoring systems of MDSP and EMCRP. The existing ICT Monitoring System of MDSP/EMCRP is built from scratch using open source set of tools and platforms that has provided the opportunity to develop a custom software system from scratch catered to the needs of the project. The system users can collect data using mobile phones utilizing the dedicated android application, and upload in the system which can be accessed by the web-interface. The data is collected, sorted and consolidated in the system based on the preset forms for different stage of construction. The data is then processed to determine project progress and generate useful results. The platform automatically adds date and time, and GPS coordinates to form data and photos, which are transmitted upon submission to an online database. In geographic areas without mobile internet, the submission is stored on the phone memory and transmitted at a later time. In continuation of success of MDSP and EMCRP, such a system with enhanced tools will be developed in RIVER Project as well. The system will need to be accessible to permitted users, where reports will be pinned to the physical interventions locations which are visible on an interactive map interface. It is expected that the ICT monitoring will provide in-depth and real-time snapshots of project performance in a resource-constrained environment, automatically place pressure points on identified problem packages, inject transparency into the construction process, and motivate supervision teams and contractors similar to the existing projects. Specific tasks of the consultancy firm will include but not limited to:

- Identify software requirements based on the scope of works of the project and existing practices of PIU in implementing the existing projects,
- Identify appropriate developments platforms/tools and finalize the design for the system in coordination of stakeholders,
- Identify possible system requirements and assess the availability of resources. If the available resources are not adequate, then the team should suggest alternative solutions,
- Develop a custom, user-friendly MIS for project management, following the already developed ICT Monitoring System under MDSP, and EMCRP. The system needs to have a web-interface that can be accessed with a login credentials by end-users where all the data related to project progress and monitoring information will be available. A mobile application needs to be developed for data collection from the field, preferably for Android operating system. The app should be developed under the consideration that the monitoring reports would be generated by field level supervision engineers for the purposes of monitoring construction progress of infrastructure construction, maintenance as well as ES compliance (implementation of ESMP) under RIVER Project,
- Create customized forms for monitoring reports that closely replicate and supplement the paper-based system that LGED currently uses,
- Solicit feedback on the proposed user interface and forms from LGED staff, including headquarters staffs and field level engineers and finalize based on feedback,
- Setup monitoring terminals in LGED HQ (*in coordination with MDSP and EMCRP ICT Monitoring system*) with one systemin the Chief Engineer's office and another system in the PIU office,

- Develop a dashboard - database monitoring systems accessible to assigned users in LGED and PIU office showing the progress of construction by packages including implementation of ESMP, tracking the GRM/GRS, compliance with ESF, sortable by district, Upazila, Union and villages,
- Develop database management system and put in place system analyst trained in the management of the system; the system should put in place edit trackers to fully capture edits made to submitted reports, draw attributes and analyze site-based and user-based statistics, as well as generate monthly reports for LGED PIU staff as well as the Chief Engineer,
- Install system on equipment purchased by LGED, and conduct training sessions (both in headquarters and at the field level for field level engineers) by the system analyst,
- Monitoring and oversight over rolling out the system during the project's implementation period,
- After completion of the work, the technology will be transferred to LGED,
- Develop a website to publish the public information of the project including featuring of project works, sharing of promotional content, disclosure of appropriate documents. The ICT monitoring system shall be a part of the website, accessible using login button redirecting to login panel,

3.14 Assessment and Preparation of Medium to Long Term Planning and guidelines

In parallel with the supervision activities and after (or the final part of) the design completion, on the second year of the contract, the consultant shall undertake the following assignment for the medium to long term planning and operation guidelines for the infrastructures:

- Updating the disaster shelter system database and developing the centralized and coordinated systems for data sharing, monitoring and decision making,
- Disaster loss, damage and needs assessment and reporting methodology and system in LGED,
- Contingency planning for emergency preparedness for response for LGED,
- Long term O&M and rehabilitation plan and guideline for the shelters and community infrastructures constructed under the project (considering the future climate impacts and ensuring minimum O&M costing and requirements),
- Management of Evacuees in the shelters and plan/operational guideline to resume full schooling after the disaster at the earliest possible time.

Disaster Shelter Database and Centralized Web-based Systems: The national comprehensive and systematic database for disaster shelters (comprising of the cyclone shelters and flood shelters) is not visible. The existing primary and high schools, other public infrastructures like different government buildings, mosques, college premises, etc. which are in better condition are being used as shelter during different disasters. During the feasibility study of the project, the information including the year of construction, details of the facilities, condition of the infrastructures, etc. of the existing flood shelters of the 14 project districts was collected. The disaster shelter database will be updated and improved to provide clarity on overall flood shelter needs and gaps in the target districts. The database will further ensure preservation of the data collected before and during project implementation. It will also enhance data recovery and backup systems to prevent data loss in the event of a flood, fire, earthquake, or high winds. The D&S consultant is expected to develop a comprehensive computer-based database portal: web-based system with GIS locations, photographs, details of the shelters, and using the same identification code used by the directory of primary education (DPE), and secondary and higher education division (SHED). The firm should assess the existing database and portal of disaster shelters (if any) and incorporate all the learnings from the previous attempts. The database should be compatible with the systems of the DPE, SHED, LGED, DDM and relevant ministries and will have to scope to accommodate the updates and inclusion of new type of infrastructures that are/can be used as shelters.

Disaster loss, damage and needs assessment and reporting methodology and system in LGED: The current practice and methodology of the damage and needs assessment after any disaster is manual which requires more manual interventions, time, and resources, for dissemination and collection and may not result an efficient and best practices. To ensure the quality, reduce the assessment period and finally improve the quality standard the current disaster loss, damage and needs assessment and reporting methodology and systems needs to be re-assessed. The D&S consultant on the basis of the assessment should propose the changes/recommendations to improve the methodology of the assessments. The assessments and reporting systems based on the discussion and finalization upon concurrence from LGED should be digitized to a web-based systems. The relevant training materials will be developed by the D&S consultant. The firm shall provide the trainings on each and every step of the assessments and reporting methodology and system uses to the LGED training wings, division and district level officials who will finally train the upazila, and local level field officials. The systems must be integrated with the LGED website. This system is expected to be developed and integrated with LGED website by 2025 after user acceptance tests.

Contingency planning for emergency preparedness for response for LGED: Collaboration with the local LGED offices along with the continuous input from the PIU and LGED headquarter will be required for developing contingency plans for emergency preparedness, response, and evacuations for extreme events for LGED. These will include operational procedures such as pre-positioning equipment and materials including gender-responsive goods and services (such as

dignity kits, safe delivery kits) in advance of floods, coordinating with the relevant government agencies and SMCs on evacuation and sheltering, and sequencing critical repairs, among others.

Long term O&M and rehabilitation plan and guideline for the shelters and community infrastructures: Existing O&M guidelines for disaster shelters and other community infrastructure needs to be reviewed and updated under the RIVER project to improve community involvement and ownership and integrate energy efficiency practices to reduce greenhouse gas emissions. Targeted training on O&M will be provided to the SMCs. Information/awareness raising sessions will be conducted to encourage appropriate behavior among the wider community in support of O&M using approaches, such as visual guides or manuals to help them perform the necessary O&M activities. The community and SMC training on the above will be carried out by the 'Community Engagement' firm under RIVER while the trainings of the trainer (from 'Community Engagement' firm) needs to be provided by D&S firm. Follow-up technical support will also be provided under the project for completed work to help address real-time O&M issues as they arise.

Management of Evacuees in the shelters and plan/operational guideline: Design of protocols for the management of evacuees placed in emergency shelters, as well as the operation of the shelters themselves are very critical for the effective functionality of the shelters during and after any disasters. The D&S consultant is expected to collect the information on the current practice, analysis the methodology, other best practices, recommend and develop the management and operational plan for the flood shelters in Bangladesh following the locality, culture and any other relevant parameters. Special focus should be on gender sensitivity and disability considerations, including the prevention of Gender-Based Violence/ Sexual Exploitation and Abuse/ Sexual Harassment (GBV/SEA/SH) and referral pathways for GBV response, along with the planning for sheltering during disasters and processes to initiate and operate the schools after the disasters. Refresher training on the above will be carried out by the 'Community Engagement' firm under RIVER while the initial training to the community, SMCs and trainings of the trainer (from 'Community Engagement' firm) needs to be provided by D&S consultant.

The D&S consultants will communicate and coordinate with relevant ministries and agencies for the above purposes and arrange seminar/workshop and consultation meetings as required. The D&S consultants will also coordinate with Community Engagement and capacity development firm through the Project Director and PIU officials to ensure harmonization and exchange of knowledge on the relevant issues and subjects. For the disaster loss, damage and needs assessment and reporting methodology, and contingency planning for emergency preparedness, the continuous and effective communication and feedback will be critical. The details methodology and training materials development will be responsibility of the D&S consultants. GIS analysis to inform the above activities to minimize disaster and climate change impacts must be done where applicable and needed. Relevant data and findings from the studies can be shared across agencies and with communities to identify risks and strengthen regional resilience.

4. Implementation Arrangements

The consultants will work closely with the LGED's PIU and coordinate their work with other relevant units of LGED, the Ministry of Local Government, local administration, and relevant ministries and agencies. Through the inception stage, the Consultant shall prepare a detailed schedule and task-flow diagram, which depicts the interrelationship of various tasks in each assignment that lead to the complete works and mechanism of coordination with the client and other related entities. This would be kept and updated throughout the Project duration.

Project Director would be designated as Head of the Project Implementation Unit (PIU) to coordinate all interfaces with the Consultants. Head of PIU with support from the Chief Engineer would also assist the Consultants in resolving various administrative issues which may arise during implementation of the Contract. The Consultants are expected to be readily available during project implementation.

The Consultants shall be responsible for all aspects of the performance of services as set forth in the preceding sections of this ToR. LGED would be responsible for providing the existing data and information including all reports prepared so far for the project. It is a World Bank-financed project and it has Project Appraisal Document and Procurement Regulations. The Consultant is to comply with those, attend & cooperate with review missions and provide reports, and information as required by the Bank.

5. Duration of the Assignment

The duration of the assignment is expected to be sixty (60) months covering the full project period. The tentative commencement date of the assignment is December 2023.

6. Selection Procedure and Form of Contract.

The consultant would be selected following Quality and Cost Based Selection (QCBS) as set forth in the World Bank Procurement Regulations for IPF Borrowers (Fourth Edition, November 2020). The form of contract would be Time Based.

7. Staffing Requirements

The consultants should propose a comprehensive team composition with task assignments for each key staff along with non-key/support staffs to meet the objectives and scope of the services. These staff-months are indicative and the consultants are free to propose their estimate supported by methodology and organization and staffing schedule to be proposed for the implementation of the service.

Key professional experts to be evaluated during technical evaluation process for the assignment is given below. The consultant must propose suitable individuals as experts in these key positions; and submit their own estimate of the required number of person-months against each of these key positions to carry out the assignment in conformity with the scope of services.

8. Key Experts

Sl. No.	Description of Experts	No. of Expert	Person-month
1.	Team Leader	1	**60**
2.	Deputy Team Leader cum Senior Structural Engineer	1	60
3.	Senior Environmental Specialist	1	60
4.	Senior Resettlement /Social Specialist	1	60
5.	Gender, Community Engagement and Mobilization Expert	1	60
6.	Senior Architect	1	36
7.	Energy Expert	1	36
8.	Senior Transportation Specialist/ Pavement Engineer	1	36
9.	GIS Expert	1	36
10.	DRM, Damage and Needs Assessment Expert	1	36
11.	Senior Quantity Survey Engineer	1	36
12.	System Analyst/ Database developer	1	36
13.	Procurement Expert	1	36

9. Qualification and Experiences of Key Experts

Sl. No.	Position	Academic qualification	Desirable years of professional experience	Specific Experience
1	Team Leader	B.Sc. Engineering (Civil)/ Equivalent	20 years,	(a) She/He should have 10 (ten) years' experience of construction management, supervision & monitoring out of which 05 years' experience in building construction Project. (b) Five (05) years International experience as Team Leader/Deputy Team Leader in construction project. (c) Experience of working in disaster management project in World Bank or any Development Partner funding project would be an additional qualification.
2	Deputy Team Leader cum Senior Structural Engineer	B.Sc. Engineering (Civil)/ Equivalent	15 years,	(a) Five (05) years' experience as a Deputy Team Leader or similar position of construction management, supervision & monitoring of at least one major building construction project. (b) She/He should have 05 years professional experience in the field of structural design in RCC structures like industrial, commercial, educational and residential buildings. He should have knowledge and experience of national and international

				design code, standard, methods etc. for analyzing and designing of building structures. (c) Experience of working in disaster management project in World Bank or any Development Partner funding project would be an additional qualification.
3	Senior Environmental Specialist	B.Sc. in Environmental Science/ Engineering or Graduation in relevant field	10 years	(a) 05 years of similar experience in environmental screening, site specific impact assessments, mitigation measures and oversee the compliance of Environmental Management Plan. (b) Experience in World Bank or any Development Partner funding project.
4	Senior Resettlement/ Social Specialist	Master's in Social Science or in any relevant field	10 years	(a) 05 years of similar experience in social screening, preparation and implementation of Resettlement Action Plan, GBV, Community and Workers Health and Safety etc. (b) Experience in World Bank or any Development Partner funding project.
5	Gender, Community Engagement and Mobilization Expert	Masters in Sociology/Social Science/Relevant field	10 years	(a) 05 years of experience as Gender Specialist in Projects with financing from international development financial institutions. (b) Experience of preparing gender analysis, gender action plan, gender-based violence plan (c) Experience in World Bank, ADB and JICA funded projects as Gender Specialist will be added advantage.
6	Senior Architect	M.Arch (Architecture) or MSc in Architecture or BA in Architecture with Masters in relevant field	12 years	(a) Eight (08) years of experience in practice under IAB Membership/ relevant international professional body. (b) 3 years of proven experience of construction management and supervision (c) 2 years of experience in community Architecture/Landscape Architecture/ Vernacular Architecture / Disaster Management Project as Architect will be added advantage. (d) M.Arch or Mac (Architecture) in Energy and Environment division Vernacular Architecture/Landscape Architecture will be an added advantage. (e) Experience of Workshop on Vernacular Construction will be an added advantage.
7	Energy Expert	B.Sc. in Mechanical Engineering or equivalent/ M.Sc in Renewable Energy or relevant field	12 years	(a) 08 years of proven experience in renewable energy sector, project management and supervision. (b) Experience in strong practical experience in Solar Home System, solar powered drinking water system, Solar Street light and LED based solar system. (c) Experience of working with World Bank, ADB, JICA or any Development Partner funding project is preferable.
8	Senior Transportation Specialist/ Pavement Engineer	B.Sc. Engineering (Civil)	12 years	(a) Five (05) years specific experience in design and quality control and construction management of road pavement.

9	GIS Expert	B.Sc. in Civil Engineering, Geography, GIS, Cartography or related field.	08 years	(a) 05 years of professional experience with GIS in a functional role. (b) Experience in strong practical experience in using Geographic Information Systems (GIS) is essential, specifically ESRI products and Geospatial analysis and Mapping with complex set of information. (c) Experience in World Bank or any Development Partner funding project is preferable.
10	DRM, Damage and Need Assessment Expert	Bachelor's Degree in social science/ emergency response/ disaster planning/ public administration/ business administration/ any discipline relevant to resilience and disaster / climate risk management	08 years	(a) 03 years of increasingly responsible national/ international development experience. (b) Experience in planning and managing technical co-operation strategies/ investment frameworks and in disaster risk management. (c) Extensive field experience in disaster environments and an in-depth knowledge of issues in the country. (d) Extensive experience in project development especially in the areas of DRM and crisis prevention and recovery. (e) Experience in establishing inter-organizational networks and partnerships at the operational level. (f) Experience in World Bank or any Development Partner funding project is preferable.
11	Senior Quantity Survey Engineer	B.Sc. Engineering (Civil)	10 years	(a) 05 years of similar experience in estimating of quantity of BOQ items, schedule of rates, drawing of building and road contracts and preparation/checking of civil works' measurement/ bills
12	System Analyst/ Database developer	B.Sc. Engineering (Computer Science)/ Equivalent	08 years	(a) 03 years of similar experience in ICT Sector preferably in project monitoring by ICT. (b) Experience in developing open-source set of tools.
13	Procurement Expert	B.Sc. Engineering (Civil)/ Equivalent	12 years	(a) The procurement expert shall have at least 8 years of relevant international/national experience in carrying out public procurement, including in preparation of procurement plans, bidding documents of buildings, roads and bridges, bid evaluations and contracts following World Bank's Procurement Regulations and Standard Procurement Documents, as well as latest Public Procurement Rules (PPR) and Public Procurement Act (PPA) of Government of Bangladesh. Should also have fair knowledge of contract laws and experience in application of conditions of contract, settlement of contractual claims and disputes, and in the World Bank's Procurement Regulations. (b) Experience in World Bank or similar institution funding project is required.

In addition to above listed positions of professionals; the consultant should make arrangements for other experts and support professionals with adequate experience in relevant fields. Indicative list of other staffs / experts / support professionals who may be required for the assignment is given below but shall not be limited to those. During technical evaluation process, these staffs will not be evaluated.

10. Non-Key Staff

Sl. No.	Positions	Qualification	Experience	Number	Person-month
1	Planning Engineer	B.Sc. Engineering (Civil)	08 years of which 03 years in similar	1	60
2	Monitoring, Evaluation & Compliance Consultant	B.Sc. in Engineering or Master's economics/ statistics/ commerce/ equivalent;	10 years of which 05 years in similar	1	24
3	Media Consultant	Bachelor Degree in journalism, marketing, communications or a related field	10 years of which 05 years in similar	1	24
4	Electrical Engineer	B.Sc. Engineering (Electrical) or Equivalent	08 years of which 05 years in similar	1	60
5	Sanitary & Plumbing Engineer	B.Sc. Engineering (Civil) or Equivalent	08 years of which 05 years in similar	1	60
6	Water Supply Engineer	B.Sc. Engineering (Civil) or Equivalent	08 years of which 05 years in similar	1	60
7	Regional Resident Engineer	B.Sc. Engineering (Civil) or Equivalent	12 years of which 07 years in similar	4	240
8	District Resident Engineer	B.Sc. Engineering (Civil) or Equivalent	08 years of which 05 years in similar	14	840
9	Architect	Bachelor in Architecture or Equivalent	08 years of which 05 years in similar	1	36
101	Database Specialist	B.Sc. Engineering/Computer Science/ Equivalent	08 years of which 05 years in similar	1	60
11	Quantity Survey Engineer	Diploma in Civil Engineering	15 years of which 05 years in similar	3	162
12	Junior Database Specialist	B.Sc. Engineering/Computer Science/ Equivalent	05 years of which 03 years in similar	2	108
13	Junior Structural Engineer	B.Sc. Engineering (Civil)	05 years of which 03 years in similar	3	156
14	Junior Engineer	B.Sc. Engineering (Civil)	05 years of which 03 years in similar	2	108
15	Transportation Engineer (Rural Roads)	B.Sc. Engineering (Civil)	05 years of which 03 years in similar	1	60
16	Junior Social Specialists	Master's in Social Science or in any relevant field	05 years of which 03 years in similar	3	180
17	Junior Environmental Specialists	B.Sc. Engineering (Civil)/ Environment or equivalent	05 years of which 03 years in similar	3	180
18	Junior Monitoring, Evaluation & Compliance Consultant	BSc. in Engineering or Masters in economics/statistics/ commerce/ equivalent	05 years of which 03 years in similar	1	60
19	Junior Financial Management Consultant	Master of Commerce in Accounting/Finance or MBA in Accounting/Finance.	05 years of which 03 years in similar	1	36
20	Field Supervisor	Diploma in Civil Engineering	05 years of which 03 years in similar	42	2520
21	MIS Specialist	B.Sc. Engineering/Computer Science/ Equivalent	05 years of which 03 years in similar	1	60
22	Auto CAD Specialist	Diploma in Civil Engineering	05 years of which 03 years in similar	3	180
23	Surveyor	Diploma in Civil Engineering or equivalent	05 years of which 02 years in similar	4	240
24	Lab Technician	Diploma in Civil Engineering	05 years of which 02 years in similar	14	708

25	Data Entry Operator	Bachelor Degree	03 years of which 02 years in similar	4	240

11. Support Staff

Sl. No.	Positions	Qualification	Number	Person-month
1	Computer Operator	Bachelor Degree	4	240
2	Office Management Accountant	Bachelor Degree	1	60
3	Accountant	Bachelor Degree	1	60
4	Driver	SSC	4	216
5	MLSS	SSC	6	360

12. Reporting Requirements

The reporting requirements of the D&S Consultants will be designed to meet the nature of the project. These will compose of but not limited to:

Inception Report: An Inception Report within one months of start of the assignment, outlining overall work program of the Consultant which shall include but not limited to: (1) Design and Supervision Methodology; (2) Detailed work Plan; (3) Consultant Organogram and staffing with job description (4) Quality Assurance and Quality Control Procedure Plan; (5) Safety Procedure; (6) Sample output for monthly and quarterly report including ES Issues and (7) Risk Management Plan.

Monthly Progress Report: By the seventh (7) day of each month, the Consultant shall submit Monthly Progress Report in the accepted form briefly and concisely, describing all activities and progress for the previous month using bar charts, S-curve etc. Problems encountered, or problems anticipated shall be clearly stated, together with steps taken or recommendations for their correction. The Consultant will also record the payment status of the contract, payment forecast of the next three months, status of all claims for costs or time extensions submitted by the contractor. The report shall include the minutes of the monthly site coordination meetings, Site visits and copies of relevant correspondences & notices. It will also indicate the work to be performed during the coming month, progress on ESIA, ESMP, C-ESMPs, SEP, LMP and RAP and the dates of induction and de-induction of various key personnel.

Quarterly Progress Report: The Consultant shall prepare a comprehensive report summarizing all activities at the end of each quarter, to be submitted to the Project Director by 15th of the following month. Such reports shall essentially be monthly progress reports with summary of the Quarter in respect of (i) the activities of the Project Manager and the Resident Engineers, (ii) the progress of the contract, (iii) all contract variations, (iv) the status of Contractor's claims, if any, (v) details and brief descriptions of any technical and contractual problems being encountered, and the Project Manager's suggestions on how to overcome those, (vi) details of physical and financial progress in approved formats, including financial details of the contracts as a whole consisting of the costs incurred, the forecast cost and the financial plan (vii) conditions which would significantly affect construction schedules or the cost of the project (viii) progress on ESIA, ESMP, C-ESMPs, SEP, LMP, Capacity development and RAP; (ix) any other relevant information for the ongoing contract. The reports shall also be submitted in electronic format in addition to the required nos. of hard copies within two weeks of end of a calendar quarter.

Quarterly ES Monitoring Report (Full Project): Report should contain compliance status of Environmental and Social Management Framework (ESMF). It should reflect the result of ES screening, ES impact of project activities, mitigation measures taken, its results grievances redress issues, contractor's compliance with the ESMF, incident reporting, and stakeholder consultation etc. in a consolidated form within two weeks of end of a calendar quarter.

Annual Report: It will be the compilation of the quarterly progress reports and quarterly ES monitoring report.

Assessment and Plan/Guideline/Final Report: The consultant from the second year after contract signing will undertake the assessments for the following subject and topics. The assessment and final report will be prepared and finalized within second (two within first two years) and third (rest three within third) year of contract signing:

- Updating the disaster shelter system database and developing the centralized and coordinated systems for data sharing, monitoring and decision making,
- Disaster loss, damage and needs assessment and reporting methodology and system in LGED,
- Contingency planning for emergency preparedness for response for LGED,
- Long term O&M and rehabilitation plan and guideline for the shelters and community infrastructures constructed under the project (considering the future climate impacts and ensuring minimum O&M costing and requirements),

- Management of Evacuees in the shelters and plan/operational guideline to resume full schooling after the disaster at the earliest possible time.

Project Completion Reports: The Consultant shall prepare a comprehensive completion report for the works contract and supply contracts. These reports shall be submitted immediately after completion of the project. The reports shall summarize inter-alia the method of construction, the construction supervision performed, problems encountered, solutions undertaken, lessons learned and recommendations for future projects of a similar nature. A draft of each Completion Report will be prepared first, which will be finalized after obtaining comments from the Employer. Project Completion Reports will be updated by the Consultant by incorporating the relevant information and comments of the Employer.

Sl. No.	Description of Report to be submitted	Nos. of Copies
1	Inception Report	5
2	Monthly Progress Reports	16
3	Monthly ES Reports	16
4	Quarterly Progress Reports	16
5	Quarterly ES Reports	16
6	Annual Reports	5
7	Project Completion Report	6
8	Survey Reports	6
9	Sub-soil Investigation Reports	6
10	Preliminary Design Report	4
11	Detailed Analysis, Design and Drawings	15 for each structure
12	Estimate	4 for each structure
13	Bill of Quantities	15 for each structure
14	Assessment and Plan/Guideline/Final Report	Each 6 copies
15	Any other reports required by TOR	Each 6 copies

14. Responsibilities of LGED

The consultant shall work under the direct supervision of the Project Director, RIVER Project (LGED), Dhaka. In case of any unforeseen events, be it in terms of physical or social obstacles at field levels; the LGED concerned field offices will be actively involved in the project implementation and take initiatives to solve them and ensure good working environment.

LGED shall provide office space and 04 (four) vehicles to the consultant. Operation and maintenance cost will be reimbursed.

Technical and project management issues shall be discussed in tri-partite meeting between LGED, PD of RIVER Project and the consultants. Any unresolved issue, technical or otherwise, would be taken up with LGED through the Project Director and LGED, Dhaka.

The Project Director, RIVER Project (LGED) shall assist the consultant, as far as possible, in collection of the following data, services and facilities:

- Available hydrological, sub-soil investigation, current rate schedules, related information etc.
- Available maps such as planning map, project index maps, contour maps, mouza maps etc.
- Available studies carried out by different study partners in relation to this study for generation of secondary information and future plans.
- Physical monitoring data done by LGED
- Arrange meeting and/or knowledge sharing events with MDSP, EMCRP and any other relevant PIU and/or D&S firm if required