

**Government of the People's Republic of Bangladesh**  
**Ministry of Road Transport and Bridges**  
**Road Transport and Highways Division**  
**Roads and Highways Department**

**TERMS OF REFERENCE**

**CONSULTING SERVICE FOR PROJECT IMPLEMENTATION ACTIVITIES**  
**OF**  
**SYLHET-CHARKHAI-SHEOLA HIGHWAY IMPROVEMENT PROJECT**  
**UNDER**  
**ACCELERATING TRANSPORT AND TRADE CONNECTIVITY IN EASTERN SOUTH ASIA-**  
**BANGLADESH PHASE 1 (ACCESS PROGRAM), THE WORLD BANK**

**Package No.: SP-1**

**February 2024**

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### List of Abbreviations:

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7FYP	:	Seventh Five Year Plan
ACCESS	:	Accelerating Transport and Trade Connectivity in Eastern South Asia
ADB	:	Asian Development Bank
ASEAN	:	Association of Southeast Asia Nation
BBIN	:	Bangladesh Bhutan India Nepal
CPM	:	Critical Path Method
ESIA	:	Environmental & Social Impact Assessment
ESMP	:	Environmental & social Management Plan
IDA	:	International Development Association
ITS	:	Intelligent Transportation System
GOB	:	Government of Bangladesh
GRM	:	Grievance Redress Mechanism
MCA	:	Multi Criteria Analysis
MoRTB	:	Ministry of Road Transport and Bridges (MoRTB)
MPA	:	Multiphase Programmatic Approach
OHS	:	Occupational Health and Safety (OHS) Plan
PIC	:	Project Implementation Consultant (PIC)
PPA	:	Public Procurement Act
PPR	:	Public Procurement Rule
PAD	:	Project Appraisal Document
PBM	:	Performance Based Maintenance
RAP	:	Resettlement Action Plan
RPF	:	Resettlement Policy Framework
RHD	:	Roads and Highways Department
SAARC	:	South Asian Association for Regional Cooperation
SASEC	:	South Asia Sub-Regional Economic Cooperation
SDG	:	Sustainable Development Goal
SEA/SH	:	Sexual Exploitation and Abuse/Sexual Harassment
SME	:	Small and Medium Enterprise
SMVT	:	slow moving vehicular traffic
SWMS	:	Safe Work Method Statement
TMC	:	Transportation Management Center
WB	:	World Bank

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# **TERMS OF REFERENCE**

## **OF**

### **PROJECT IMPLEMENTATION CONSULTANT OF**

### **SYLHET-CHARKHAI-SHEOLA HIGHWAY IMPROVEMENT PROJECT**

#### **A. Introduction and Background**

1. Roads and Highways department, Bangladesh intends to engage a qualified and experienced firm to be the Consultant for Project Implementation activities of all aspects of the Sylhet-Charkhai- Sheola Highway Improvement Project.
2. The Government of the People's Republic of Bangladesh has received financing from the World Bank for the Accelerating Transport and Trade Connectivity in Eastern South Asia (ACCESS) Program - Bangladesh Phase 1 Project, a part of the World Bank's Multiphase Programmatic Approach (MPA). There are four components in this project and among them sub-component 2e which will support the upgrading of the 43 Km two-lane Sylhet-Charkhai-Sheola road to a climate-resilient four-lane road, connecting the Sheola Land Port with the Dhaka-Sylhet Highway. This component will be implemented by Roads and Highways Department (RHD), under the Ministry of Road Transport and Bridges (MoRTB) Bangladesh and is termed as SYLHET-CHARKHAI-SHEOLA HIGHWAY IMPROVEMENT PROJECT (the "PROJECT"). The Project has been approved by GOB in ECNEC meeting on 11 April 2023.
3. The Sylhet-Charkhai-Sheola Road is a vital link in the national highway network. There is no separate provision for slow moving vehicular traffic (SMVT) or non-motorized traffic (NMT). There are capacity constraints caused by congested junctions, roadside parking, markets, and built-up areas. Road safety on the existing road is inadequate because it is overcrowded with different types of vehicles, including rickshaws, bicycles, motorcycles, cars, buses, and trucks. When vehicles break down this reduces the highway to a single lane leading to traffic delays and congestion. The road is generally not in good state, with poor riding quality particularly between Charkhai and the border point. Undoubtedly, it has a detrimental effect on both cross-border commerce at Sheola Land Port and agricultural growth in the surrounding region.
4. Sylhet-Charkhai -Sheola Highway (42.985 km) will be widened and reconstructed with the improvement/widening of 03 bridges, improvement/widening of 31 culverts, construction of 04 pedestrian foot over bridges, construction of 07 flyovers and overpasses, toll plaza, bus bay, pedestrian crossings and intersections etc. The project will also include the establishment of Intelligent Transportation System (ITS) along the highway. This will involve setting up a Transportation Management Center (TMC) and installing various ITS elements such as CCTV cameras, fiber optic cables, vehicle detection components, travel advisory display message boards, etc.

#### **B. Objective and Scope**

5. The consulting services shall be provided by an engineering consulting firm. The main objective of this consultancy service is to assist Roads and Highways Department (RHD) to supervise and monitor the implementation of the Sylhet-Charkhai-Sheola Highway Improvement project (42.985 km road including

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structures) to complete the works with high quality within the project period. The scope of the service includes, but not limited to, the following tasks:

### 5.1 Task Summary

The Project Implementation Consultant (PIC), termed as either *consultant* or *PIC consultant* hereafter throughout this document, will mainly perform, but not limited to, the following tasks:

**Task 1:** Conduct limited survey & investigation (to validate contractor's submission of work plan, shop drawing or other proposal in relation to execution of the works) and suggest necessary adjustments/revision for the contractor, if needed.

**Task 2:** Where necessary, review and update Issue for Tender (IFT) design which consists of Highway and Structural drawing volumes of civil works tender documents.

**Task 3:** Provide Procurement and Contract Administration support for RHD to execute the project.

**Task 4:** Ensure Work Zone Safety by reviewing and approving contractor's Occupational Health and Safety management Plan (OH&SMP).

**Task 5:** Comprehensive supervision, Quality Assurance and Quality control of project implementation activities carried out by the contractors to ensure complete compliance with civil work contract documents.

**Task 6:** Monitoring project performance and assist RHD to successfully implement the social and environmental requirement in accordance with the ES specifications within the project period.

**Task 7:** Perform Road safety Audit (work zone stage, construction stage and pre-opening stage). Conduct Road safety Trainings and prepare relevant training materials.

**Task 8:** Preparation of road maintenance manual for Performance Based Contract (PBM).

**Task 9:** Support regarding Installation of ITS & OFC system and Technology Transfer to Project Implementation Unit (PIU).

**Task 10:** Organizing seminars and workshops

**Task 11:** Technology Transfer on ITS system

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## 5.2 Detailed Tasks

Above mentioned eleven tasks, related to civil works contract supervision and IFT design review, have been detailed in this section.

### 5.2.1 Survey and Site Investigations (confirmatory and for the purpose of design review)

- (i) Conduct site inspection to analyze and document existing field conditions and note any differences between existing field conditions and the data provided to the PIC e.g. design review report including all Annexures, highway and structural drawing volumes. Document unique site features using photographs or videos as appropriate.
- (ii) In connection to the design review, conduct topographic/feature survey along the road alignment where significant improvement of road geometry might be required, specially near road intersections, at entry and exit point of road alignment, near bridge, flyover and overpass locations etc.
- (iii) Verify contractor's baseline survey and monument works prepared for efficient and accurate control of vertical and horizontal alignment during construction or verify any other survey data collected by the contractor.
- (iv) Where necessary, conduct cadastral survey of the project area proposed for the improvement works, as agreed with the Client, to include property boundaries, parcel numbers, owner names, and other pertinent information.
- (v) Conduct adequate Geological/Geotechnical/hydrological investigations, secondary data analysis and laboratory testing works required for confirmation of detail design of any highway or structural design elements.
- (vi) Conduct construction material survey to identify the source, quality, and quantity of the construction materials as well as location of borrow pits and quarries.
- (vii) Update the Hydrology, Hydraulic and Drainage Study to include rainfall data analysis up to year 2022. Current study captured data up to 2017. Based on the updated study outcome, check for the adequacy of road embankment levels, number and location of cross-drainage structures and their opening sizes. This is to be noted that the project road is to be constructed as a resilient one through design features, materials selection and construction method.
- (viii) During the construction stage, if ground condition warrants updating any changes in the number, location and opening sizes of the cross-drainage structures, the consultant will incorporate those in the design by updating the highways and structural design. Also, recommend removal/replacement of any structurally unsound structures, if that was not captured in the design, and prepare design for the replacement structure.
- (ix) Assess availability and requirements for waste /spoil disposal areas.
- (x) Conduct field visit for entire length of the project road to verify locations and numbers of utility service lines (both buried/surface) against project feature survey. Through verification, if it is found that there is missing utility service line in the feature survey, update the feature survey by incorporating missing utility service lines.
- (xi) During the construction stage, if ground condition warrants, in discussion with PIU, the consultant will verify and comment on the utility design relocation drawing/map received from the respective utility service provider and ensure that relocation happens as per agreed utility relocation drawing.

### 5.2.2 Review of Detail Design

- (i) This review works includes update/modification of any design work (e.g. highway alignment, geometric design, pavement design, structural design etc.) that falls under the cover of highway

- and structural drawing volumes of tender documents i.e. Issue for Tender (IFT) design, or inclusion of any new design element that might be required for the betterment of the project.
- (ii) In modifying IFT design, consultant will coordinate with RHD PIU and finally seek approval on final design from RHD Project Director (PD). Same principle will apply on the modification and changes in technical specification.
  - (iii) Make sure that the IFT design has considered application of climate resilient materials in the bed of cross-drainage structures and for slope protection. If application of climate resilient material is missing in the IFT design, incorporate climate resilient materials in the design and update the design and Specification accordingly.
  - (iv) If requested by the client, prepare road inventory of an existing road asset to assess its sufficiency in serving its intended purpose, and based on the assessment outcome, where necessary, provide design solution so that new design meets standard of the design specification and serve the intended purpose, and design solution is as per the satisfaction of the client.
  - (v) Based on updated hydrological and drainage study (to be performed as per above Task 1), if it necessitates modification of any drainage infrastructure design or, inclusion of any new drainage structures, design those structures and update the design drawing volumes accordingly, in consultation with RHD and Bangladesh Water Development Board (BWDB).
  - (vi) Prepare '**design report on updated design**' for the modification in the design and/or for the newly included or excluded design items.
  - (vii) To promote new construction materials and technologies, especially for the items listed below; consider and select pilot sections. Before implementation, document pros and cons, anticipated outcomes, and outcome measurement techniques for the materials and technologies that has been considered and proposed in the design.
    - High grade concrete or any other appropriate pavement materials to be considered at the bus-bays and parking lots.
    - Modified asphalt for performance enhancement, porous asphalt for noise reduction or for drainage benefits, specially treated base layer might be considered.
    - Pavement layers may be interlaced with appropriate geogrid material to improve load bearing capacity as well as to reduce the pavement thickness.
    - To enhance the stability of embankments in waterlogged areas, geo-cell material might be considered.
  - (viii) Review contractor's Project Management Plan – PMP [Quality Management Plan (QMP), Environmental and Social Management plan (ESMP), Occupational Health and Safety Management Plan (OH&SMP)] and upon review, approve the PMP.
  - (ix) Review contractor's work program/work schedule: seek clarification on changes in schedule, note the reasons behind the changes, identify the party(ies) responsible for the changes, reject/accept any changes with justification, and approve the work program in consultation with PIU.
  - (x) Assist PIU in land acquisition process i.e. review Land Acquisition Plan (LAP), assist in preparing LA case in the format required for the submission on Deputy Commissioner (DC) office.
  - (xi) Assist PIU in updating the Environmental Impact Assessment (EIA) document to comply with Department of Environment (DoE) requirements, subsequently modify the project Environmental and Social Management Plan (ESMP), help in implementation of ESMP by the contractor, monitor and report on the ESMP.
  - (xii) Any other relevant support service to PIU to obtain any **Deliverables** listed under section 14 of this document.

- (xiii) Review detailed earthwork analysis and calculations as presented in the project cost estimate document prepared by the design consultant, presenting sufficient detail to revisit the estimated earthwork unit price, if required. Consider borrow and waste sources and hauling distances in determining earthworks pay item unit prices. Cross check and verify the earthwork quantity and calculation as received from the contractors.
- (xiv) Review Contractor's Proposed construction detour maps, signage, and approach narrative for safe traffic movement along the road.
- (xv) Consider any relevant comments from RHD and WB while reviewing the design.
- (xvi) On the basis of the design, drawings, quantities, known and anticipated site conditions, production rates, hauling distances, and other available information, develop a construction Critical Path Method (CPM) bar chart schedule/Work Program that details the anticipated duration of each construction activity, the relationships between each activity, identifies float for each activity, and clearly defines the expected construction critical path(s). Individual activities should be detailed and distinct enough to produce meaningful results. Production rate calculation and crew number assumptions shall be documented as an attachment to the Work Program submission. This CPM schedule/Work Program will be for client use only and shall not be shared with bidders as part of the bid package.
- (xvii) The Consultant shall furnish the important documents, reports, drawings and other necessary information in a format acceptable to the Client.
- (xviii) In reviewing the design, where any design standard or guidelines is missing in the original design report (prepared by the design consultant), update the design by applying national and international best practice design guidelines and standards to ensure high quality design.

### 5.2.3 Procurement Support

It is expected that all the civil works bids will be awarded or will be under evaluation when the PIC consultant will be brought on board. However, the following services may be rendered if any of the works bids are invited later than planned.

- (i) If needed, update the bidding documents as per RHD and WB guidelines and in consultation with the RHD and WB, as appropriate.
- (ii) Provide support services, as needed, which may involve assisting RHD to respond to queries/questions from bidders and to issue addenda when required. Services during the bidding period will also include arranging at least one pre-bid meeting and site visits and the public opening of bids.
- (iii) Develop project specific bid evaluation criteria consistent with the WB's regulations and procedures that will be used by the evaluation committee to evaluate technical proposals. The technical sub-committee reporting to the evaluation committee will consist of an integrated team of technical specialists from RHD and the consultant.
- (iv) Suggest to RHD any non-compliance or deviation from the bidding documents (as issued) will be noted, and where appropriate, clarification from bidders will be requested.
- (v) Upon completion of the bid evaluation, the evaluation committee will issue a Bid Evaluation Report with recommendations for award of the contract(s). The PIC will assist RHD/PIU in finalizing the contract. This assistance will include, but not limited to, the verification of performance bonds and guarantees.
- (vi) Provide any other procurement support service on RHD/PIU's request for successful onboarding of civil works contractors.

### 5.2.4 Occupational Health and Safety (OH&S) in Work Zone

The Consultant needs to proactively ensure that work zone safety level is of the highest standard during planning and execution of the works by the contractor. The document for ensuring OH&S for conducting any site works under the Contract will be contractor's **OH&SMP** document as mentioned above under Section 5.2.2. OHS&MP must be approved by the PIC consultant.



Contractor's **OH&SMP must contain** at least following topics of Work Health and Safety:

- (i) Emergency contact number of ambulance, hospital, fire, police, utility service companies.
- (ii) Statement of contractor's authorized person to ensure all site personnel trained as per the requirement of OH&SMP, especially in the areas of OH&S responsibilities.
- (iii) Contact person from the contractor's end to liaison with client representatives in all OH&S matters.
- (iv) OH&S responsibilities at contractor's organizational/management level, OH&S responsibilities of contractor's employees and site personnel, visitors and additional OH&S responsibilities of Project Manager and Site Supervisor(s)
- (v) Detail description of employee or operator specific selection, placement, induction & training
- (vi) Detail on OH&S communication with employees & subcontractors, e.g. frequency of site-specific inductions and toolbox meetings, OH&S meeting frequency.
- (vii) How subcontractors will be selected, monitored from OH&S perspective, and how any subcontractor will be inducted on site specific OH&S matters.
- (viii) Responsibility of updating OH&SM by specifying the contractor's person responsible for this job
- (ix) Personnel Protective Equipment (PPE) & clothing. Specially need the PPE procedure and Safe Work Method Statement (SWMS) to explain for which task who need to wear which PPE.
- (x) Project housekeeping in terms of cleanliness and tidiness.
- (xi) Amenities like drinking water quality and provision at site, toilet facilities at site, mealtimes for the site staff
- (xii) Control of hazardous substances and dangerous goods
- (xiii) Safe Work Method Statements (SWMS) preparation for any High-Risk activities though identification of hazard, risk assessment and control procedure. Auditing of SWMS by the PIC consultant. Also employees' induction to SWMS.
- (xiv) Site Safety Audit (SSA) frequency, procedure and template. Audit to be performed by the PIC consultant on behalf of client.
- (xv) Traffic Management procedure, and Traffic Management Plan (TMP) for any construction site, where applicable.
- (xvi) Continuous improvement mechanism/procedure to improve safety document like SWMS, SSA template, TMP etc.
- (xvii) Evacuation and Incident Emergency Planning
- (xviii) Incident and Hazard investigation that should include investigation, assessment, corrective actions, incident notifications to clients, government and authority notification, health and safety incidents.
- (xix) OH&S performance monitoring reporting by the contractor.
- (xx) Maintaining OH&S records
- (xxi) Any attachments, forms and procedures, SWMS template to support the OHSMP.
- (xxii) Use of plant and equipment, plant hazard assessment, daily pre-start inspection, suitability of plant and equipment, mobile plant, floats/trailers, maintenance of plant and equipment

### 5.2.5 Comprehensive Supervision of Project Implementation Activities of Civil Works Contracts

The consultant will support PIU in administering civil works construction contracts following the contract conditions.

- (i) Maintain, update, monitor, report on and, where applicable, administer the project's risk management framework. Under the framework, while a risk is created, provide (a) a risk name, (b) description, risk (c) owner, (d) set risk status (open, work in progress, closed, resolved), (e) set target resolution date, and (f) note down resolution once resolved. During risk monitoring, update all the above inputs, as required.

- (ii) Develop the Quality Assurance Plan (QAP) as per contract specification to ensure the work quality for provisions of pavement and structures. QAP needs to outline, as of minimum, contract specific quality objectives, processes, responsibilities, and resources required to achieve and maintain the desired level of quality. QAP needs to be aligned with civil works contract specification.
- (iii) Establish procedures to verify contractors' performance through progress status check against approved work program, quality control reports, quality survey records, contractor's request for variation or change orders, and timeliness & accuracy of contractor's claim and invoice submissions.
- (iv) Provide full-time and on-site representation and supervision at each ongoing civil works project site.
- (v) Make all necessary measurements to control the quality of works and advise RHD PIU in making all engineering decisions required for the successful and timely implementation of the construction contracts.
- (vi) Perform site visits regularly in an interval as per consultation and agreed with RHD PIU. During site visits, consultant's responsible personnel will:
  - (a) examine the reality and the quality of the setting out of works and its adherence to the drawings; the consistency between the approved drawings, the works carried out and the quantities accounted for in the interim payment certificates.
  - (b) ensure the quality of the works in conformity to QAP and the contract technical specifications,
  - (c) examine the project management documents such as: work register, including the list of equipment used daily, relevant measurement books, calculation finches and shop drawings approved by the supervision team, minutes of site meetings, the topographical, geotechnical and every other intermediary task's acceptance reports, any other contractual documents and administrative orders, site correspondence and all correspondences between the contractor and the supervising consultant.
  - (d) examine the site management aspects such as: the quantity and efficiency of the topographical and geotechnical teams' deliveries, the laboratory testing and the adequacy and availability of equipment, etc.
  - (e) remaining works to be executed,
  - (f) address any pre-dispute situations which are likely to result in a claim from the contractor or a site shut down.
  - (g) do the checks and verifications to be carried out using appropriate methods and technique including, but not necessarily limited to, e.g. site surveys, laboratory and site tests, measurements, photos and calculations to verify quantities based on statements and documents produced by the contractor and the supervising consultant.
  - (h) recommend and execute further in-depth measures, if deemed necessary.
- (vii) Regularly conduct progress review meetings with client and contractors to ensure the progress of land acquisition and resettlement, environmental clearance, and implementation of other associated safeguards against target timeline in the approved Work Program.
- (viii) Consultant Team Leader (TL) needs to submit monthly Status Report on each contract to Project Director (PD). Status report must contain, as of minimum, reporting month, overall status/key message, key activities completed in the reporting period, key activities planned for next month, schedule status, cost status, risk status.
- (ix) If any project activity is deviating from the targeted deadline as shown in the approved work program, identify and record the reasons for the delay and party responsible for the delay, and establish the mechanism to avoid such delay. When required, re-baseline the work program, keeping original baseline alive. When required, use the proof of delay in rejecting or establishing any claim.
- (x) Ensure that all works comply with the approved engineering designs and technical specifications, agreed schedule and budget, conditions of the contracts, standard engineering practice, and WB's safeguard policy.

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- (xi) Ensure that works contractors engage in safe construction practices, and protects the safety of both workers and the public.
- (xii) As per requirement of the Contractor's OH&SMP, ensure that contractors submit Safe Work Method Statement (SWMS) for all the high risk construction activities e.g., concreting, piling, asphalt works, excavation, etc., to ensure safe delivery of the works. All the SWMS must be approved by the PIC prior to the start of any high risk construction activities on site.
- (xiii) Report any incident or accident to PIU within 24 hours after learning of the incident or accident or, as specified in the approved OH&SMP.
- (xiv) Where there will be an impact on vehicular and pedestrian traffic due to construction activities, contractor needs to submit a Traffic Management Plan (TMP) and Traffic Guidance Scheme (TGS) to ensure safe movement of traffic. All the TMPs/TGSs must be reviewed and approved by the consultant.
- (xv) Provide general guidance and issue instructions to contractors in connection to programmed construction activities.
- (xvi) Document contractors' submissions and advise the Project Director as well as WB's Project Management Team in making engineering decisions;
- (xvii) Advise the Project Director and the WB's Project Management Team on work progress, quality control and implementation issues, if any.
- (xviii) Review and approve contractors' material sources, contractors' working/shop drawings, and drawings for temporary works. Also review, if any, designs prepared by the Contractor for any part of the permanent works.
- (xix) Provide clarification on the disputed issues, anomalies, errors or risks that could affect the project objectives and make the appropriate recommendations and/or take the necessary actions to remedy them.
- (xx) Ensure that the construction methodology proposed by the contractor are practically implementable and safe for carrying out the works. Double check that SWMS for any high-risk activity is signed off by all the site staff involved with that activity.
- (xxi) Inspect contractor's construction equipment as per approved OH&SMP provision; perform lab and field tests on materials and completed works as per contract specification. Notify contractors to remedy works and materials that fail to comply with specifications.
- (xxii) Ensure site safety by complying with the requirements set in the approved OH&SMP;
- (xxiii) Ensure application of mitigation measures to minimize/eradicate adverse environmental impacts by complying with the requirements of project EMP.
- (xxiv) Check that 'as-built' drawings are prepared by the contractors for all works as construction progresses and assist PIU in documenting 'as-built' drawings in the offline/online depository.
- (xxv) Advise RHD PIU and Project Director on all matters relating to contractors' claims and to make recommendations thereon.
  - (xxvi) Exercise consultants' duty in connection to establishing any technical and engineering procedures in reviewing and approving contractor's submission that are delegated by the Project Director.
  - (xxvii) Clarifying ambiguities and/or discrepancies in the Contract Documents.
- (xxviii) The consultant will act in such a way that the instructions/observation of RHD PIU are complied by the contractor as per the contract.
- (xxix) If not delegated, consultant must not exercise approval of contract variation, change in scope and extension of time and contractor's claim. However, consultant will evaluate any proposed changes (e.g. time, scope and cost) by the contractor and communicate to RHD for approval.
- (xxx) Assess and review any value engineering proposals submitted by the contractor and place it to RHD PIU for consideration and approval.

- (xxxi) Prepare quarterly cash flow projections for the Employer in an acceptable format, in which cash flow should identify, as of minimum, to date contract commitment, to date expenditure, future expenditure for a year ahead, project budget, budget deficiency or savings.
- (xxxii) Support the contractor for preparation of contractor's ESMP and regularly monitor its implementation.
- (xxxiii) Assist PIU in setting up and running project Grievance Redress Mechanism (GRM) on: stakeholder engagement, resettlement, Sexual Exploitation and Abuse/Sexual Harassment (SEA/SH) and labor & working conditions, the latter with support from the contractor.
- (xxxiv) Assist PIU in grievance resolution and regularly monitor and report to the PIU on the status of GRM and outstanding grievance cases.
- (xxxv) Play key role in measurement of completed work in the GoB format as well as World Bank guideline and certification of payment.
- (xxxvi) Executing the project arrangements for stakeholder participation in infrastructure development, for off-pavement road maintenance, tree plantation and caretaking, establishment of Women's Market Sections (WMS), implementation of the Community-based Road safety (CBRS) program, and NGO activities.
- (xxxvii) Review and certify work volume and process interim and final payments of the contractors with fair judgement. Ensure timely submission of contractors' interim payment certificates, final payment certificate and release of payment.
- (xxxviii) Ensure project financial management procedures are in place and are strictly followed, specifically relating to payments, financial accounting, requests for time extension and contractors' claims and invoices.
- (xxxix) If required by the employer, the PIC consultant will provide any of the following as additional services: (a) prepare reports including technical appraisals, additional contract documentation and/or review and comment on the contractor's proposals, as may be required for the successful completion of the Project; and (b) provide any other specialist services as may be required from time to time.
- (xl) Train, demonstrate advanced technology and share the engineering concepts with the members of PIU so that RHD members can improve their engineering skills.
- (xli) Plan, cooperate, liaise and provide necessary support to utility service providers for ensuring prompt shifting of utility lines from the project site to an acceptable location in consultation with PIU.
- (xlii) Provide public outreach and communicate with all relevant organizations on behalf of the PIU to ensure that the project is presented in a respectable manner in the local discussions, and in the media. Provide periodic and/or continuous inspection services during defects Liability Period (DLP). If defects are identified, instruct the contractor to rectify the defects within specific timeline and monitor defect rectification works to ensure quality as per QAP. Coordinate with PIU once defects are identified and once rectified.
- (xlili) The Team Leader (TL)/Deputy TL of the consultant or his/her delegate will conduct an inspection of the works on the expiry of the Defects Liability Period. The Team Leader will provide a report outlining any actions to be taken by the contractor and issue such notices as may be necessary. TL/Deputy TL and/or his/her delegate should set aside two weeks of time for post-construction inspection towards the end of defect liability period.
- (xliv) During the above post-construction visit, the TL or his/her delegate will gather such data as may be needed to agree the contractor's final statement and to process the final payment certificate. Similar to the site inspection, the TL/Deputy TL and/or his/her delegate should set aside one week of time for post-construction inspection report writing and final payment certification towards the end of defect liability period.
- (xlv) The consultant will assist/cooperate Ministry, planning commission or IMED team while visiting /inspecting the project site.

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### 5.2.6 Performance Monitoring and Safeguard implementation

- i. Consultants shall ensure that the construction work method proposed by the Contractor are satisfactory with particular reference to the Environmental and Social Management Plan (ESMP) and EIA report; the regulatory requirement of environmental clearance from DOE; technical requirement of sound environmental standards on the basis of Environmental and Social Management Framework (ESMF) of the project to ensure compliance to WB's Environmental and Social framework (ESF); inspection of contractor's construction equipment; and safety of the construction works, property, personnel, and general public; the schedule of mitigation measures for adverse environmental impacts to be monitored by the Consultant.
- ii. Support the contractor(s) in the preparation of contractor's environmental and social management plan (C-ESMP) following the project ESMP. The C-ESMP will include periodic (quarterly) reporting format on E&S risk management based on which the contractor will report to the PIU on the related risk management issues. Subsequently, ensure implementation and monitoring of the C-ESMP by the contractor(s).
- iii. Design and undertake project performance monitoring and evaluation of the project in accordance with the Environmental and Social standard (ESS) of the ESF, relevant policy, guidelines.
- iv. Prepare/update the Emergency Response plan of the Contractor to include provisions for pandemic (covid-19 and potential future ones) management.
- v. Monitor, facilitate and, where relevant, implement other social and gender related activities, including the HIV/AIDS, human trafficking, and road safety awareness campaign to the communities along the corridor and at labor camps.
- vi. The preparation of Environmental and Social Management Plan including Resettlement Action Plan, Labor Management Plan, Stakeholder Engagement Plan, Occupational Health and Safety Plan (OHS) and any others as required under WB ESF and/ or national legislation for the improvement works will be provided by PIU. However, the Consultant is expected to completely follow instructions from these documents to ensure that the specific findings and recommendations of these studies are fully integrated into the detailed design process, implementation schedule and work implementation procedure.
- vii. Monitor, report and provide guidance on the implementation of the Resettlement Action Plan (RAP) in line with the project RPF prepared in compliance with the WB's policy on involuntary resettlement; prepare updates and addendum to the RAP whenever necessary.
- viii. Assist the PIU in managing/running the project GRM and stakeholder Engagement Plan (SEP) as outlined in the E&S documents. This will include the SEA/SH and workers' GRM as well, based on, respectively, the project SEA/SH Risk Mitigation and Action Plan and Labor Management Procedures (LMP). Ensure the smooth functioning of the all GRMs in close coordination with the Contractors and PIU. Prepare periodic report on behalf of the PIU on the status of the GRM and grievance submitted by the PAPs.
- ix. Assist the PIU in the implementation of the SEA/SH Risk Mitigation and Action Plan and Gender Action Plan.
- x. As mass production of asphalt and its transportation is anticipated in the project area potential adverse impact on the environment and population needs to be evaluated and monitored including recommending appropriate mitigation measures. Review and update the air quality monitoring, noise mitigation measures and waste management plan as and when required.
- xi. Review the Contractors drawings, work plans, methodology etc. Check if the construction work zone safety measures are in place and are adequate, modify the plan and methodology if required.

### 5.2.7 Road safety Audit, Safety Training and Training Material

- (i) The consultant shall conduct road safety audit (RSA; construction stage, work zone stage and pre-opening stage) to check the road safety adequacy in all areas based on the following Road Safety Audit Guide and Toolkit (No. a-c below) under the cover of Road Safety Management Framework and Safe System (d-f below):
  - a. AUSTRROADS Guide to Road Safety Part 6: Road Safety Audits (2022)
  - b. Nepal ROAD SAFETY AUDIT MANUAL 1997 (Rev 2022) published by National Road Safety Council
  - c. India Manual on Road Safety Audit (first revision), August 2019
  - d. AUSTRROADS AP-R509-16 Safe System Assessment Framework (2016)

- e. VicRoads Safe System Assessment Guidelines (2019)
- f. PIARC Road Safety Manual for LMIC countries
- (ii) In conducting RSA, pay special attention to check whether uncontrolled intersections, entry/exit lanes and U-turn facilities are safe for all road users.
- (iii) Screen the project area in view of reputed guidelines for road safety enhancement (e.g. Highway Safety Manual) to identify the areas of improvement.
- (iv) Incorporate the safety enhancement concepts with the design and construction of the roadway so that the long term safety of the newly-constructed road is significantly and measurably higher than other four lane highways in Bangladesh and in the developing world.
- (v) In addition to the engineering concepts, identify the social and economic issues that may lead to conditions ripe for crashes or contribute property loss due to crashes or injury/fatality due to crashes. A team of multidisciplinary experts may be appointed by the consultant firm for a short period for identifying these factors that relate to the engineering for safety improvement along the finished road. This panel of experts should identify all the stakeholders to enhance road safety, develop appropriate training materials for these different group of stakeholders.
- (vi) Conduct road safety training via appropriate resource personnel to educate road users and spread awareness among the stakeholders. The trainers should be experienced in conducting similar training e.g. training on contemporary social awareness issues, impact of road accident severity, common causes of road accidents. The Consultant should consult with RHD and world bank to determine the venue, frequency, training content and identifying training participants/target groups.
- (vii) Suggest road safety awareness billboard contents for RHD's future use or installation along project road.

### 5.2.8 Road maintenance Manual for Performance Based Maintenance (PBM)

The task of Independent Inspection of Road Maintenance needs to be carried out up to Defects Liability Period (DLP). However, after DLP, the project roads will be under PBM contract, the cost of which will be borne from Government of Bangladesh (GOB) budget through the concerned Road Divisions of RHD. The PBM period is not included in the scope of this investment project and hence, this assignment does not include the supervision of the PBM. Nevertheless, the PIC consultant shall prepare a maintenance manual that will act as maintenance guideline for the Contractor during PBM period. The PBM period will be administered through GOB funded maintenance programs.

### 5.2.9 Support regarding Installation of ITS & OFC system

- (i) Review of the detail system design, system installation management, and maintenance guidelines and procedure etc. for implementing Intelligent Transportation System (ITS) along the project road.
- (ii) Review of detail system design, system installation management, and maintenance guidelines and procedure etc. for implementing backbone Optical-Fiber Cable (OFC) System along the Project Corridor (43 km).
- (iii) Assist to prepare institutional development proposal for operation and maintenance of project specific OFC and ITS system.
- (iv) Supervision of ITS and OFC installation, supply through testing and confirmation of supply as per specification.
- (v) Assist to organize training/Seminar/Workshop regarding OFC and ITS in Bangladesh.

### 5.2.10 Seminar/Workshop

a. The Consultant shall arrange workshop/seminar (at Client's cost) in the following manner:

- Four workshops/seminars are to be arranged: first one as an inception workshop to lay out work methodology and the next three on specific technical aspects related to the project implementation (design, or any new technique piloted in the project, novel construction materials or any other relevant topic may be proposed), the consultant shall propose the workshop discussion outline with PIU and Bank team for comment and

agreement. The workshops should generally highlight topics that are either important for stakeholder feedback or are good examples for other projects or the stakeholders to benefit from.

- The Stakeholders to be invited to the seminars/ workshops will include representative from ; RHD, Ministry of Road Transport and Bridges, Bangladesh Railway, Bangladesh Water Development Board, Directorate of Environment, Planning Commission, IMED, ERD, Development Partner (WB), Deputy Commissioners' Office, Local Representative (Mayor, Chairman etc.), including other relevant stakeholders as per guidance from RHD.

b. The Consultant shall arrange Meetings for transport sector integration and coordination among the Stakeholders like EA/IA, Line Ministry, Field Officers and associate office and Contractors/Consultants, Local Representative, or others.

### 5.2.11 Technology Transfer on ITS System

The Consultant shall propose specific plan and content for an overseas technical visit which will provide exposure to innovative technology to RHD officials regarding ITS and OFC system. The scope of the technical visit shall cover at least 10 participants' visit (at Consultant's cost) preferably to a WB member country where state-of-the-art technology of ITS system is being applied for smart highway operation. During the technical visit, the Consultant shall provide exposure to RHD officials to get hands-on experience regarding installation, operation, and maintenance of ITS system. The details will be finalized during Contract negotiation.

## 6. Number of Civil Works Contracts

The Project will have following civil work Contracts:

**Table: B-1: Civil Work Packages**

Package no	Description of package	unit	Quantity
WP-1/LOT SS-1	Part-1: Construction Phase: Improvement of Sylhet - Charkhai - Sheola Highway into 4-Lane Highway with service lanes on Both sides from Sylhet (Kadamtali) to Golapganj (Ch 00+000 to 18+900 km) Part-2: Maintenance Phase; Performance Based Maintenance of the Improved Sylhet - Charkhai - Sheola Highway into 4-Lane Highway with service lanes on Both sides from Sylhet (Kadamtali) to Golapganj (Ch 00+000 to 18+900 km)	km	18.90
WP-1/LOT SS-2	Part-1: Construction Phase: Improvement of Sylhet - Charkhai - Sheola Highway into 4-Lane Highway from Golapganj to Sheola Bridge (Ch 18+900 to 36+900 km) Part-2: Maintenance Phase; Performance Based Maintenance of the Improved Sylhet - Charkhai - Sheola Highway from Golapganj to Sheola Bridge (Ch 18+900 to 36+900 km).	km	18.00
WP-1/LOT SS-3	Part-1: Construction Phase: Improvement of Sylhet - Charkhai - Sheola Highway into 4-Lane Highway from Sheola Bridge to Sheola Landport (Ch 36+900 to 42+985 km) Part-2: Maintenance Phase; Performance Based Maintenance of the Improved Sylhet- Charkhai - Sheola Highway from Sheola Bridge to Sheola Landport (Ch 36+900 to 42+985 km)	km	6.085

## 7. Consultancy Phases

The scope of Consultancy service related to Civil work packages has following three phases [(i) - (iii)]:

**Table B2: Phasing of Civil Work Packages**

Period	Time Frame
(i) Design Review Period	The design will be reviewed and checked in initial 3 months. Throughout the service period, Design Review will be done by the PIC if required according to the field condition.
(ii) Construction Period	36 months from effective date
(iii) Defects Notification Period (DNP)	12 months from taking over
(iv) Performance Based Maintenance (PBM) Period	6 years from the end of DNP The PBM period will start immediately after the Defects Notification Period ends. During the PBM period, each road package will be maintained by the respective contractors who will have constructed the road. The contractor will be liable for performance of the road. Key performance indicators will be specified in the contract document. The PBM period shall be Part 2 of the civil works contracts. The Tender for Part-1 and part-2 shall be bundled together as the respective construction contractors shall be liable to maintain the road for 6 years on performance-based maintenance basis. The respective Additional Chief Engineer, RHD shall be the Employer for the PBM part of the contract (part 2). However, expenditure for part-2 shall be borne from RHD operational budget. <b><u>The Performance based maintenance (PBM) period is not included in the scope of this investment project and hence, this assignment does not include the supervision of the PBM period.</u></b> Nevertheless, the Consultant shall prepare a maintenance manual that will act as maintenance guideline for the Contractor during PBM period.

## C. Estimated Duration of the Consultancy Service (Implementation Schedule)

### 8. Consultancy Duration

The total duration of consulting services will be Fifty-Two (52) months.

**Table D1: Consulting Service Implementation Schedule**

Period	Time Frame
(i) Design Review Period	03 months
(ii) Construction Period	36 months
(iii) Defects Notification Period (DNP) of the Civil Work Packages	12 months
(iv) Civil Work Contract Closure	01 months



**D. Selection Procedure and Form of Contract**

**9. Consultant Selection Procurement Method**

The consultancy will be provided by a consulting firm. The market approach is International. The Consultant will be selected following Quality and Cost Based Selection (QCBS) procedure as per of the World Bank's Procurement Regulations for IPF Borrowers, July 2016 and updated in September 2023. The Contract will be a Time-based Contract.

**E. Consultant's Input**

**10. Consultant's Professional and Staff**

To achieve the objectives of consultant services under this Terms of Reference and in accordance with the scope of works as stated, the requirement of following professional and staff with anticipated person months estimated by RHD:

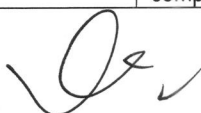
The assignment will be carried out over a period of Fifty-two (52) months from the date of commencement. The assignment will be implemented by a consulting firm. It is anticipated that about 120 person-months of input by International Key Experts and 562 person-months by National Key Experts, and 473 person-months of National Non-key Experts will be required. Total 1155 Person-month input is estimated to complete the assignment.

**11. Attendance Management of Consultants.**

In the attendance sheet which should be provided along with the consultant invoice, the local site consultant personnel (consultant & staff) attendance sheet (especially for offices under resident engineers) shall be countersigned by the authorized person determined by the client. However, the Team Leader of the Consultant shall countersign the entire attendance (field and head office) sheet which will be the integral part of the Consultant Invoice.

Table E1: Required Experts					
Sl. No	Position	Required Qualifications and Experiences	Task and Responsibility	No of Person	Total Person - month
<b>A1. Key Experts (International)</b>					
IC01	Team Leader (Senior Highway Engineer)	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree in the relevant field.</li> <li>• Must have Professional Engineer (P.Eng) or equivalent certification.</li> <li>• Minimum 20 years of professional experience.</li> <li>• Minimum 15 years of experience in planning, preparation, design, and construction supervision of highway projects.</li> <li>• At least 05 years of experience as project team leader or similar leading position in a comparable project.</li> <li>• At least one highway construction project supervision experience as Resident Engineer (RE) or similar position</li> </ul>	<ul style="list-style-type: none"> <li>• To administer the project implementation as per Contract</li> <li>• To lead and manage construction supervision team</li> <li>• Provide technical expertise and guidance to team members and stakeholders throughout the project lifecycle</li> <li>• Demonstrate a strong understanding of civil engineering principles, construction methodologies, and relevant regulations and standards</li> <li>• Communicate project progress, milestones, and challenges effectively to client, contractor and other team members, ensuring alignment with project objectives and expectations.</li> <li>• To ensure all deliverables are prepared in accordance with contract specifications, timelines and budgetary constraints</li> <li>• To oversee all supervision works through supervision team</li> <li>• To act as "the Engineer/Engineer's Representative" to carry out duties and exercising authority</li> <li>• To check and certify as-built drawings</li> <li>• To issue instructions, additional or modified drawings to the Contractor</li> <li>• To coordinate with RHD concerning variations and claims</li> </ul>	1	40
IC02	Senior Contract Specialist	<ul style="list-style-type: none"> <li>• Bachelor's degree in Engineering or Construction Management, postgraduate degree in relevant field/Internationally recognized contract management certification is preferred</li> <li>• Minimum 20 years of professional experience</li> <li>• Minimum 15 years of experience in preparation/management of construction contracts under FIDIC or similar international documents</li> <li>• Specialized knowledge/training on Contract Management/Administration</li> </ul>	<ul style="list-style-type: none"> <li>• To assist Team Leader in coordination with RHD regarding administration and management of civil work contracts</li> <li>• Ensure that contracts run in compliance with contract conditions.</li> <li>• To assist Team Leader in coordination with RHD regarding variations and claims</li> <li>• To review the proposals submitted by the contractors</li> <li>• To assist RHD in responding to any contractual matter e.g. to</li> </ul>	1	12

		<ul style="list-style-type: none"> <li>• Knowledge and experience in technical, contractual, and legal aspects of procurement of the WB-financed project will be an added advantage.</li> </ul>	deal with contractor's claim, to negotiate and resolve dispute and claim, to justify extension of time, verify entitlement of any variation etc.		
IC03	Senior Structural Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree in structural engineering</li> <li>• Minimum 20 years of professional experience</li> <li>• Minimum 15 years of experience in designing of bridge/flyover/overpass with different bridge construction technologies</li> <li>• At least one project experience of supervising large bridge construction (&gt;300 m)</li> <li>• Experience in state-of-the-art large (&gt;300m) bridge/flyover designing</li> <li>• Substantial knowledge and familiarity with climate resilient structure design and construction</li> <li>• Specialized knowledge, technique, experience and problem-solving ability to overcome implementation challenges of structural designs will be preferred</li> </ul>	<ul style="list-style-type: none"> <li>• To review and modify the existing structural design, drawings where necessary.</li> <li>• To review the alternative structural design proposals submitted by the contractors</li> <li>• To review Contractor's working drawings.</li> <li>• To explore and recommend value engineering options in structural design and implementation</li> <li>• To carry out field inspections regarding construction method, equipment to be used etc.</li> <li>• To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> <li>• To prepare construction completion reports</li> <li>• To prepare the operation and maintenance plan</li> <li>• To check and certify as-built drawings</li> </ul>	1	20
IC04	Senior Pavement and Material Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree in relevant field preferred</li> <li>• Minimum 20 years of professional experience</li> <li>• Minimum 15 years of experience in pavement design, Quality assurance, quality control and materials testing of transport related infrastructure project</li> <li>• Minimum 08 years of experience in asphalt work including at least 01 (One) assignment with polymer modified bitumen (PMB).</li> <li>• Substantial knowledge and familiarity with climate resilient highway design, resilient materials selection, specifications, advanced techniques to construct resilient roads and structures.</li> <li>• Specialized knowledge/training on pavement design, pavement construction, quality assurance etc. will be preferred</li> </ul>	<ul style="list-style-type: none"> <li>• To prepare/review/modify (as appropriate) the Quality Assurance Plan of the Project</li> <li>• To review/modify (as appropriate) the existing pavement design &amp; drawings where necessary</li> <li>• To review the proposals submitted by the contractors</li> <li>• To review and recommend the Mix Design (Concrete and asphalt) proposals submitted by the Contractors.</li> <li>• To review all of contractor's working drawings related to pavement</li> <li>• To carry out field inspections</li> <li>• To inspect the construction method, equipment to be used</li> <li>• To survey and measure the work output performed by the contractors</li> <li>• To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> <li>• To check and certify as-built drawings</li> <li>• To prepare construction completion reports</li> </ul>	1	30



			<ul style="list-style-type: none"> <li>• To prepare the operation and maintenance plan</li> </ul>		
IC05	Senior Environmental Specialist	<ul style="list-style-type: none"> <li>• Post graduate degree (Master's or Ph.D) in Environmental Science/Management, Natural Resources Management, Civil or Environmental Engineering, or other relevant disciplines (e.g. Applied Natural Sciences).</li> <li>• Minimum 20 years of professional experience</li> <li>• At least 15 (Ten) years proven experience (work or applied scientific research) in the area of environmental management or impact assessment, including environmental management related to road construction or Transport infrastructure up-gradation projects.</li> <li>• Understanding and familiarity with existing World Bank Environmental and Social Standards (ESSs) of the Environment and Social Framework (ESF) and related guidance and good practice notes is preferable.</li> </ul>	<ul style="list-style-type: none"> <li>• To review and monitor the implementation of systems necessary for compliance with applicable Environmental policies and legislations, and project specific procedures developed for environmental management.</li> <li>• To assist PIU to ensure compliance of ESIA, ESMP and other ES documents of the project during implementation</li> <li>• To monitor the environmental issues of the updated ESIA, ESMP for the project</li> <li>• To review and recommend Environmental Plan, occupational Health and safety management plan, construction material sourcing plan etc. submitted by the Contractors.</li> <li>• To follow up with the contractors, and other agencies in addressing various environmental safeguard actions</li> <li>• To prepare periodical Environmental Monitoring report</li> </ul>	1	6
IC06	Senior ITS Specialist	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil/Transportation/Electrical engineering or in relevant field, postgraduate degree in relevant field preferred</li> <li>• Minimum 12 years of professional experience</li> <li>• Minimum 06 years of experience with OFC system and ITS design/implementation project related to traffic, road safety and highway operations</li> <li>• Must have experience in completion of at least one ITS implementation project.</li> <li>• Familiarity with ITS system architecture and the state of the art in ITS and the market.</li> </ul>	<ul style="list-style-type: none"> <li>• Detail system design, system installation support for implementing backbone Optical-Fiber Cable (OFC) System and preparation of maintenance guidelines and procedure etc. For the same.</li> <li>• Detail system design, system installation support for implementing Intelligent Transportation System (ITS) and National Axle Load Control &amp; Management System (NALCMS) and preparation of maintenance guidelines and procedure etc. For the same.</li> <li>• While designing ITS and OFC system for this project road, customize client supplied standard ITS OFC system, where possible, including necessary improvement to suit this project alignment or road corridor.</li> <li>• To prepare/review and recommend Contractor's proposal related to ITS and OFC system installation.</li> <li>• To assist in preparing institutional development</li> </ul>	1	12

			proposal and technology transfer for operation and maintenance of RHD's OFC and ITS system.		
<b>Total=</b>				<b>6</b>	<b>120</b>
<b>Note: "International Consultant" means international experience, for which the international experience outside the country of the proposed individual's nationality will be considered.</b>					
<b>A2: Key Experts (National)</b>					
<b>Sl. No</b>	<b>Position</b>	<b>Required Qualifications and Experiences</b>	<b>Task and Responsibility</b>	<b>No of Person</b>	<b>Total Person - month</b>
K01	Highway Engineer cum Deputy Team Leader	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree in relevant field preferred</li> <li>• Minimum 20 years of professional experience</li> <li>• Minimum 15 years of experience in planning, preparation, design, and construction supervision of similar projects</li> <li>• Work experience as a Highway Engineer for 5 years in a similar project is a must.</li> <li>• Preference will be given to a candidate who possesses experience as a Team leader/Deputy team leader in similar projects.</li> </ul>	<ul style="list-style-type: none"> <li>• This position will be equally responsible for both Highway Engineering works and Deputy Team leadership. Highway Engineering will be the prime responsibility.</li> <li>• To administer the project implementation as per Contract</li> <li>• To conduct all related tasks together with Project Team Leader</li> <li>• To manage, supervise and coordinate all tasks for national experts and staffs</li> <li>• To review the proposals submitted by the contractors</li> <li>• To review and recommend contractor's submitted working drawings</li> <li>• To carry out field inspections</li> <li>• To inspect the construction method, equipment to be used</li> <li>• To monitor and measure the work output performed by the contractors</li> <li>• To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> <li>• To prepare construction completion reports</li> <li>• To prepare the operation and maintenance plan</li> <li>• To check and certify as-built drawings</li> </ul>	1	42
K02	Pavement Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree in relevant field is preferred</li> <li>• Minimum 15 years of professional experience in supervision of various pavement work (Flexible and Rigid)</li> <li>• Minimum 05 years' experience as Pavement Engineer in transport infrastructure projects</li> <li>• Specialized knowledge in Pavement design and experience in Polymer</li> </ul>	<ul style="list-style-type: none"> <li>• To review/modify (as appropriate) the existing pavement design &amp; drawings where necessary</li> <li>• To review the proposals submitted by the contractors</li> <li>• To review all of contractor's working drawings</li> <li>• To carry out field inspections</li> <li>• To inspect the construction method, equipment to be used</li> </ul>	1	24

		modified bitumen (PMB) pavement work will be an added advantage.	<ul style="list-style-type: none"> <li>• To survey and measure the work output performed by the contractors</li> <li>• To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> <li>• To check and certify as-built drawings</li> </ul>		
K03	Contract/Procurement Specialist	<ul style="list-style-type: none"> <li>• Bachelor's degree in engineering or construction management, postgraduate degree preferred</li> <li>• Minimum 15 years of professional experience</li> <li>• Minimum 10 years of experience in preparation/management of construction contracts especially under International Federation of Consulting Engineers (FIDIC) or similar conditions</li> <li>• Knowledge and experience in technical, contractual, and legal aspects of procurement of the WB-financed project will be an added advantage.</li> </ul>	<ul style="list-style-type: none"> <li>• To assist the Engineer regarding procurement/contract management</li> <li>• To assist the Engineer to coordinate with RHD concerning variations and claims</li> <li>• To review the proposals submitted by the contractors</li> <li>• To assist RHD in resolution of contractual issues/claims</li> </ul>	1	24
K04	Structural Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil/structural engineering, master's degree preferred</li> <li>• Minimum 15 years of professional experience</li> <li>• Minimum 10 years of experience in structural design for transport infrastructure projects.</li> <li>• At least one project supervision experience as structural engineer.</li> </ul>	<ul style="list-style-type: none"> <li>• To review and modify the existing structural design, drawings where necessary.</li> <li>• To review the alternative structural design proposals submitted by the contractors</li> <li>• To review Contractor's working drawings</li> <li>• To carry out field inspections</li> <li>• To inspect the construction method, equipment to be used</li> <li>• To explore and recommend value engineering options in structural design and implementation</li> <li>• To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> <li>• To check and certify as-built drawings</li> </ul>	1	24
K05	Environment cum Occupational Health & Safety Specialist	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil/environmental engineering or environmental science, master's degree preferred</li> <li>• Minimum 15 years of professional experience</li> <li>• Minimum 10 years of experience in environmental management and compliances for highway/Bridge/railway projects</li> <li>• Certification/Work experience in Occupational Health and Safety management will be given preference</li> <li>• Understanding and familiarity with existing World Bank Environmental and Social Standards &amp; frameworks is preferred</li> </ul>	<ul style="list-style-type: none"> <li>• To assist RHD in supervision and monitoring of the implementation of ESMP</li> <li>• To monitor the environmental impacts in accordance with the ESMP</li> <li>• To prepare monthly/quarterly Environmental Monitoring report</li> <li>• To prepare Environmental and Social Safeguard Evaluation Report</li> <li>• To monitor the environmental issues of the updated ESIA, ESMP for the project</li> <li>• To review and recommend Environmental Plan, occupational Health and safety</li> </ul>	1	12

			management plan, construction material sourcing plan etc. submitted by the Contractors. • To follow up with the contractors, and other agencies in addressing various environmental safeguard actions		
K06	Resettlement Specialist	<ul style="list-style-type: none"> <li>• Master's degree in social science/Sociology/Anthropology/Development Studies or equivalent qualification in a related field.</li> <li>• Minimum 10 years of professional experience in implementing resettlement plans in Bangladesh</li> <li>• Minimum 06 years of experience in resettlement plans for road/infrastructure projects</li> <li>• Understanding and familiarity with existing World Bank Environmental and Social Standards &amp; frameworks is preferred</li> </ul>	<ul style="list-style-type: none"> <li>• To assist RHD in supervision and monitoring of the implementation of safeguard documents (RAP, ESIA etc.) as per the WB guideline.</li> <li>• To monitor the impacts in accordance with the RAP</li> <li>• To prepare monthly Land Acquisition and Resettlement Monitoring Report</li> <li>• To monitor the land acquisition and resettlement activities to be executed by implementing NGO.</li> <li>• To prepare Social Safeguard Evaluation Report</li> </ul>	1	18
K07	Resident Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree in the relevant field is preferred</li> <li>• Minimum 20 years of professional experience in highway construction and design</li> <li>• Minimum 15 years of experience in supervision of highway projects</li> </ul>	<ul style="list-style-type: none"> <li>• To administer the project implementation as per contract</li> <li>• To assist the Engineer to approve the proposals submitted by the contractors</li> <li>• To assist the Engineer to issue instructions to the Contractor and additional or modified drawings</li> <li>• To supervise and coordinate the day to day filed activities by the Contractors.</li> <li>• To assist the Engineer to coordinate with the RHD concerning variations and claims</li> <li>• To review and approve contractor's SWMS prior to start of any major construction activity.</li> <li>• To verify and recommend contractor's working drawings</li> <li>• To prepare and maintain inspection and engineering reports</li> <li>• To prepare/certify Contractor's payment invoice</li> <li>• To assist any process in terms of dispute board mechanism</li> <li>• To control all administration of the consultant team in cooperation with the Deputy Team Leader</li> </ul>	3	120
K08	Bridge Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering,</li> <li>• Minimum 15 years of professional experience</li> <li>• Minimum 10 years of experience in construction supervision of</li> </ul>	<ul style="list-style-type: none"> <li>• To implement/supervise bridge &amp; other structural works as per contract</li> <li>• To review the proposals submitted by the contractors</li> </ul>	2	72

		bridge/flyover/overpass especially with prestressed concrete superstructure <ul style="list-style-type: none"> <li>Specialized knowledge/training/certification in Bridge/flyover construction/supervision work is preferred</li> </ul>	<ul style="list-style-type: none"> <li>To review all of contractor's working drawings</li> <li>To carry out field inspections specially related to bridge/flyover/overpass etc.</li> <li>To inspect the construction method, equipment to be used</li> <li>To inspect and verify fabrication if steel and concrete products and assembly and installation of these products</li> <li>To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> <li>To prepare the operation and maintenance plan</li> <li>To check and certify as-built drawings</li> </ul>		
K09	Quality and Materials Engineers	<ul style="list-style-type: none"> <li>Bachelor's degree in civil/materials engineering</li> <li>Minimum 15 years of professional experience</li> <li>Minimum 10 years of experience in quality control and materials testing in highway/transport infrastructure project</li> <li>Knowledge/training/certification in quality control and materials testing work is preferred</li> </ul>	<ul style="list-style-type: none"> <li>To implement the project as per approved quality assurance plan, technical specification of the Contract document.</li> <li>To review the proposals submitted by the contractors</li> <li>To perform/review/certify Mix Design</li> <li>To ensure Quality Assurance Plan including quality control and inspection</li> <li>To perform day to day field testing and quality control activities of construction work.</li> <li>To carry out the necessary inspection prior to the issuance of a Taking-Over Certificate</li> </ul>	3	114
K10	Quantity Engineer	<ul style="list-style-type: none"> <li>Bachelor's degree in civil engineering or construction management</li> <li>Minimum 15 years of professional experience</li> <li>Minimum 10 years in quantity survey/ measurement, invoicing, etc. in highway/transport infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>To conduct all quantity and measurement related tasks together with other experts.</li> <li>To maintain day to day record</li> <li>To perform price analysis and cost estimates</li> <li>To prepare/certify Contractor's work measurement and payment invoice</li> </ul>	3	112
	<b>Total=</b>			<b>17</b>	<b>562</b>
<b>A3: Non-Key Experts (National)</b>					
NK11	Hydrologist/Hy draulics Engineer	<ul style="list-style-type: none"> <li>Bachelor's degree in civil/water resource engineering, postgraduate degree in preferred</li> <li>Minimum 10 years of professional experience</li> <li>Minimum 05 years of experience in hydrology preferably with relevant hydrological analysis software</li> <li>Substantial experience in the drainage design of highway projects</li> </ul>	<ul style="list-style-type: none"> <li>To perform the hydrological analysis of the existing design of highway and catchment area of the project site.</li> <li>To analyze the flood data of the project site and suggest necessary modification in highway and structural design</li> </ul>	1	12

✓



			<ul style="list-style-type: none"> <li>• To check the navigational adequacy of the structure and suggest modification.</li> <li>• To prepare a climograph of the project site area</li> </ul>		
NK12	Road Safety Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering, postgraduate degree preferred</li> <li>• Minimum 12 years of professional experience</li> <li>• Minimum 08 years of experience in road safety planning, design and audit.</li> <li>• At least three formal road safety audits undertaken under guidance of a Senior Road Safety Auditor, including at least three at design stages.</li> <li>• Specialized knowledge/training/accreditation regarding Road safety is required.</li> </ul>	<ul style="list-style-type: none"> <li>• To review/update the existing design from road safety perspective</li> <li>• To assist RHD in supervision and monitoring of Road Safety issues.</li> <li>• To review Contractor's safety management plan and recommend for approval.</li> <li>• To perform road safety audit (RSA) to documents safety hazards, safe system energy, audit recommendations, risk rating and client response to accept /reject recommendations under the cover of RSA Report.</li> </ul>	1	18
NK13	Assistant Resident Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering or construction management</li> <li>• Minimum 10 years of professional experience</li> <li>• Minimum 05 years of experience in supervision of highway construction projects</li> </ul>	<ul style="list-style-type: none"> <li>• To assist the Engineer to approve the proposals submitted by the contractors</li> <li>To assist Resident Engineer in supervising and coordinating the day to day filed activities by the Contractors.</li> <li>• To assist RE to coordinate with the RHD concerning variations and claims</li> <li>• To assist RE in certifying contractor's working drawings and Payment invoice</li> <li>• To assist RE in operation, coordination and controlling filed administration</li> <li>• To assist RE in reviewing contractor's SWMS.</li> </ul>	3	95
NK14	Electrical Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in electrical/electric engineering</li> <li>• Minimum 10 years of professional experience</li> <li>• Minimum 05 years of experience in transport infrastructure projects</li> </ul>	<ul style="list-style-type: none"> <li>• To assist RHD in supervision and monitoring of electrical issues of project</li> <li>• To check/prepare and recommend the various electrical drawings of the projects</li> <li>• To explore/recommend energy efficiency and renewable energy source for the electrical devices of the project</li> </ul>	1	6
NK15	Social Development cum Gender and SEA/SH Specialist	<ul style="list-style-type: none"> <li>• Master's degree (MA/MSS/MSC)</li> <li>• At least 10 years of work experience.</li> <li>• At least 05 years work experience in social development/ community awareness/stakeholder engagement program in similar project.</li> </ul>	<ul style="list-style-type: none"> <li>• To Provide input/ support during the preparation and finalization of all E&amp;S instruments/ documents.</li> <li>• Undertake periodic monitoring of project activities from social perspective and ensure compliance of all consultants</li> </ul>	1	12

			(INGO, Contractor, other individual consultants) <ul style="list-style-type: none"> <li>• Carrying out skill needs assessment and implementing livelihood improvement/restoration programs.</li> <li>* Carry out consultations with the stakeholders including any communication campaigns/initiatives as necessary under the guidance of PD/PIU.</li> <li>*Assist PIU/PD in the implementation of the project Gender and SEA/SH Action Plan</li> <li>*Monitor functioning of the project GRMs (resettlement, stakeholder engagement, SEA/SH, etc.) and provide technical assistant/guidance to the contractors and I-NGOs on the functioning of the project GRM.</li> </ul>		
NK16	Junior Site Engineer	<ul style="list-style-type: none"> <li>• Bachelor's degree in civil engineering from reputed public or private universities</li> <li>• 02 years of professional experience in construction projects is preferable</li> <li>• Fresh graduate with excellent academic record is also eligible for the position</li> </ul>	<ul style="list-style-type: none"> <li>• To carry out day to day field inspections with special care to the earth filling, concreting work, asphalt work etc.</li> <li>• To assist RE in smooth operation and coordination of the day to day filed acitivities</li> <li>• To attend Contractor's Request for Inspection (RFI) on time as instructed/assigned by RE</li> </ul>	10	330
<b>Sub-Total (Support Staff)</b>				<b>17</b>	<b>473</b>

Notes:

1. All Key Expert (International) and key Expert (National) shall be evaluated for technical scoring of the Consulting Firms.
2. The Non-Key Experts shall be evaluated for minimum requirement compliance.
3. The Team Leader position must be proposed from the Lead Firm.

**Table E2: Support Staff**  
(CVs to be evaluated on pass or fail basis during negotiation)

No.	Title of Support Staff	Required Qualifications and Experience	No. of Position	Total Person- Month
SS 01	CAD Technician	<ul style="list-style-type: none"> <li>• Diploma in civil engineering/Surveying</li> <li>• Minimum 05 years of professional experience</li> <li>• Minimum 03 years of experience as CAD Technician</li> </ul>	01	36
SS 02	Laboratory Technician	<ul style="list-style-type: none"> <li>• Diploma in civil/material engineering/graduation</li> <li>• Minimum 10 years of professional experience</li> <li>• Minimum 05 years of experience as Laboratory Technicians</li> </ul>	03	108
SS 03	Assistant Laboratory Technicians	<ul style="list-style-type: none"> <li>• Diploma in civil/material engineering</li> <li>• Minimum 05 years of professional experience</li> <li>• Minimum 03 years of experience as assistant Laboratory Technicians</li> </ul>	06	216
SS 04	Office Manager	<ul style="list-style-type: none"> <li>• Bachelor's degree in any discipline</li> <li>• Minimum 10 years of professional experience</li> </ul>	01	52
SS 05	Topographic Surveyors	<ul style="list-style-type: none"> <li>• Diploma degree in civil engineering/ Surveying</li> <li>• Minimum 10 years of professional experience</li> <li>• Minimum 05 years of experience in road/ highway/ bridge surveys</li> </ul>	03	108
SS 06	Computer Operator	<ul style="list-style-type: none"> <li>• Minimum H.S.C.</li> <li>• Minimum 05 years of experience as Computer Operator</li> <li>• Certification in computer skill</li> </ul>	03	144
SS 07	MLSS	<ul style="list-style-type: none"> <li>• Minimum S.S.C</li> <li>• Minimum 03 years of professional experience</li> </ul>	04	192

12. Required staffs and amenities should be procured by the consultant as per their requirement and should be incorporated while quoting of rates. The consultant may propose alternative staffing arrangements and person months in their technical proposal provided that the quality of tasks performed is not compromised and provided that all the reporting obligations are covered. The consultant may propose non-key staff (for example survey and geotechnical crew members, engineering technicians for construction supervision, engineering technicians, etc.) as appropriate and reasonable to complete the work. All key and non-key staff should be included in the fee proposal for each task. Design and construction team members are expected to support each other during both design and construction phases to ensure high quality, cost-effective, and constructible design and implementation.

#### F. Terms of Reference for Support Staff

##### 13. Support Staff ToR

The Support Staff will have the responsibility of providing necessary support in topographic survey, management of site during construction, preparing and correcting the designs etc. The laboratory Technicians will provide support in carrying out material testing.

#### G. Documentation and Reporting Requirement

##### 14. Reporting and Deliverables

The Consultant will prepare and submit reports in a format and content agreed with RHD and WB. The Project Director may require the Consultant to perform other tasks consistent with the above scope, including preparation of technical appraisals/ additional contract documentation, and review and comment on the contractor 's proposals.

The documentation and reporting requirements included but are not limited to the following:

- (i) Report and update the design and works implementation schedule, highlight any unforeseen delays, and timely propose corrective measures.
- (ii) Undertake project performance monitoring and evaluation following the RHD and WB guideline and reporting up to project completion.
- (iii) Collect baseline survey data based on the indicators in the project's design and monitoring framework; and measure the indicators overtime during the assignment period.
- (iv) Develop and maintain a storage and retrieval system of records.
- (v) Documenting information supplied by the field teams, decision made at meetings, progress on civil works, certified achievements and milestones, financial records, any deviations from or changes to the contract plan (scope, cost, materials time), correspondences, site diaries, test data and quality control reports, quality survey records, as-built drawings, and progress reports.

#### 14.1 Deliverables:

The specific reporting deliverables requirements under the tasks are included in the list below. Send hard copies of each deliverable (10 copies or as directed by PIU) to the project directors office or if indicated, to RHD main office. Make available all deliverables in PDF format as well as the source files (e.g. GIS shape files, CADD files, Excel files, etc.), and distribute to RHD, WB, and other partners as required via FTP or other methods using hyperlinks.

- (i) Inception report;
- (ii) Design review reports i.e. '**design report on updated design**' including plan & profile, Civil works drawing, Structural designs, cost estimate, construction drawings, any update regarding Environment Management Plan, Land acquisition and Resettlement Plan, rate analysis, detailed bill of quantities, bid documents.
- (iii) Quality assurance Plan;
- (iv) Report on HIV/AIDS, anti-trafficking and road safety awareness campaign, and gender mainstreaming activities.
- (v) Update EIAs, RAP and due diligence reports based on the detailed design if required, and
- (vi) Monthly progress reports on the design and bidding progress, or as requested by governments and WB.
- (vii) Monthly progress/status reports;
- (viii) Quarterly progress reports;
- (ix) Annual environmental monitoring reports;
- (x) Semi-annual social monitoring reports;
- (xi) Project performance monitoring reports;
- (xii) Maintenance manuals; and
- (xiii) Project completion report (PCR)
- (xiv) Road Safety Audit (RSA) report.
- (xv) Inception report, describing procedure and approved standards for maintenance quality check;
- (xvi) Site Inspection Report
- (xvii) Quality check reports, including remedial measures if weakness is found; and
- (xviii) Monthly progress reports, or as requested by government and WB.

#### H. Data, Local Services, Personnel and Facilities to be provided by the Client

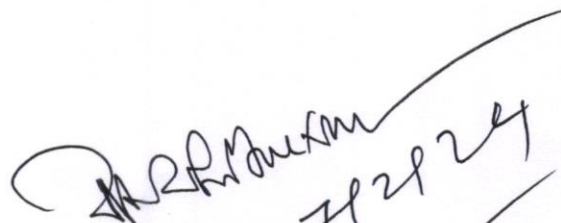
#### 15. The Client will provide the Consultant with the following:

- (i) Access to design reports prepared by design consultant, feasibility report;
- (ii) Counterpart staff and engineers to work with the Consultant;

- (iii) Provide the Consultant and each of the personnel with work permits and other documents as necessary;
- (iv) Assist in obtaining necessary visa for the personnel and, if appropriate, their eligible dependent;
- (v) Assist in clearance through customs of any property required for the services and of the personal effects of the personnel and their eligible dependents;
- (vi) Issue to officials, agents, and representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the services.

**16. The Client through the civil work contracts will provide the Consultant with the following:**

- (i) Office space at site (including utilities, office equipment, and furnishings) for appropriate experts, and for other as-needed field/technical support staff;
- (ii) Transport facilities at site for appropriate field experts and field staffs (Shared vehicle);
- (iii) Housing accommodation at site for appropriate experts and field staffs;
- (iv) Necessary survey equipment (Total Station and GPS) and other logistic support (such as access to field laboratory etc.). Details of facilities and logistic support from the client will be outlined in the Request of Proposal (RFP) document.

  
27/2/24

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