**Terms of Reference**

**Construction Supervision Consultants for “Improvement of**

**Sylhet-Tamabil Road to a 4 lane Highway with SMVT on both sides” Project**

1. **BACKGROUND OF THE PROJECT**

The Government of Bangladesh (GoB) received a loan funding from the Asian Infrastructure Investment Bank (AIIB) for “Improvement of Sylhet-Tamabil Road to a 4 lane Highway”. A loan Agreement was signed between GoB and AIIB on 26 October 2020 to co-finance the project. The Roads and Highways Department (RHD) under Ministry of Road Transport and Bridges will implement the Project. A team of Construction Supervision Consultants will be engaged to assist Roads and Highways Department (RHD) to implement the Project. A part of the loan will be utilized as eligible payments for the Construction Supervision Consultant Contract.

The Ministry of Road Transport and Bridges (MoRTB) is the oversight body and the Roads and Highways Department (RHD) is the executing agency (the client). The consultant shall also coordinate with other concerned government agencies and local authorities, with the assistance of RHD, for carrying out selected activities of the project assignment.

1. **OBJECTIVE AND SCOPE**

The objectives:

1. Develop and establish a Quality Assurance Plan for all civil works and complete the project tasks within stipulated time frame;
2. Comprehensive supervision of all project works carried out by the contractors to ensure complete compliance with the project design, drawings, specifications and other stipulations made in the contract documents;
3. Review and amend, if necessary, the detailed design already prepared and confirm the final detailed design for project implementation. Additionally, Prepare (i) design, drawing, specifications and provide all supports required to establish a modified asphalt and a emulsified asphalt plant; (ii) design, drawing, specification and provide all supports for providing a traffic maneuver at the cross road with Tamabil Port access road and incorporate them in the final detailed design.

The Road Improvement Project includes the following packages of construction work:

|  |  |  |
| --- | --- | --- |
| **Civil Works Package Details** | **Number of Packages** | **Remarks** |
| Improvement of Sylhet-Tamabil Road (56.16 km) to a 4 lane Highway with SMVT on both sides | 4 Contracts  (3 civil works and 1 asphalt plant set-up) | 3 contracts for road improvement  1 for maintenance capacity building |

The scope of civil works for the road project will cover three periods:

|  |  |
| --- | --- |
| 1. Construction | 48 Months |
| 1. Defect Liability | 12 Months |
| 1. Performance Based Maintenance (PBM) | 8 (Eight) years after the Defect Liability Period (DLP).  The PBM will start after DLP during which each road package will be maintained by the same contractor who has completed that road package. The contractor will be liable for performance of the completed works (criteria to be specified in the Contract Document) for 8 years. The PBM will be a part of the work packages and the details shall be specified in Tender Document/Contract Agreement. |

Accordingly the consulting services involve the following three tasks:

1. **Task 1:**

**Construction Supervision of Project work and Inspection of Maintenance:**  The consultant shall (i) Review and make modification as necessary to the detailed design for the project already prepared by the design consultant; (ii) Provide all procurement supports to the project; (iii) Supervise the construction of all civil works under the project; (iv) Carryout performance monitoring and safeguards implementation; (v) Perform checks on the quality of maintenance woks done under the project with regard to the technical, contractual and financial aspects of the project; (vi) Conduct road safety awareness campaign. Also submit an assessment report on the quality of maintenance works done under the project; (vii) Provide other supports, if any, upon client’s request.

1. **Task 2:**

**Prepare Detailed Design:** The consultant will (i) prepare detailed design, drawing and specification of works and machinery, prepare BoQ, tender documents for setting up a axle load control station at location to be specified by the client; incorporate it in the final detailed design; supervise the construction work; prepare a management plan for operation and maintenance of the Plant and provide other supports, if any, upon client’s request. (ii) conduct survey, prepare design, drawing, specification, BoQ for the construction of a traffic control maneuver at the cross road with Tamabil port access road to provide passage for safe and uninterrupted commercial vehicles to and from the project road; incorporate the traffic control maneuver in the final detailed design; supervise the construction work and provide other supports, if any, upon client’s request.

1. **Task 3:**

**Establishment of a Modified and a Emulsified Asphalt Plant:** The consultant will (i) prepare detailed design, drawing and specification of works and machinery for setting up a Modified Asphalt Plant and a Emulsified Asphalt Plant at location to be specified by the client; (ii) provide related procurement support; (iii) supervise construction and installation works; (v) prepare a management plan for operation and maintenance of the plant; (vi) Help RHD with enhancing its capacity on operation and maintenance of the plant; (vi) provide other supports, if any, upon RHD’s request.

1. **DETAILED TASKS OF THE ASSIGNMENT**

The consultant shall carry out the following tasks:

1. **Task 1: Construction Supervision of Road Works:** 
   1. **Review, Amend and Confirm the Detailed Design**
2. Assess the surrounding project area and check the drainage patterns, design provisions, proposed structures i.e. bridges, culverts, SMVT crossing points, flyover, overpasses, pavement etc. as already prepared by the design consultant and develop detailed design for proposed structures or modify existing detailed design, if required, in consultation with RHD.
3. Conduct field visit to the entire project road to assess/check the locations of utility service lines both buried/surfaced along the project road and identify and assess the potential impacts of the project on road safety.
4. Prepare relevant design reports/mapping for utility services with the analyses, risk assessments, findings, and safety recommendations acceptable to client
5. Investigate and test the existing sub-grade and foundation material strength for pavement and structures.
6. Determine/design the appropriate pavement structure for roadways, bazaar areas, intersection points, storage areas and parking areas and modify the design of pavements in consultation with RHD including the rigid pavement, if required.
7. Prepare detailed design for an axle load control station, its office complex and operation structures including landscape design, architectural design and structural design with necessary geotechnical investigation/survey in connection with the design, drawing and required facilities for the axle load control station operation management. Complete design and drawings, prepare specification of works and machinery and incorporate it in the final detailed design, amend the bidding documents accordingly suitable for procurement in accordance with AIIB procurement Guidelines and AIIB Standard Bidding Documents.
8. Prepare the detailed design for a traffic control maneuver with the Tamabil Port internal roads to ensure safe and uninterrupted commercial vehicle movements to and from the project road. Conduct survey, prepare design, drawing, specification, BoQ and tender documents for the construction of the traffic control maneuver to ensure safe and smooth transition of commercial vehicles; incorporate it in the final design; provide all procurement supports; supervise the construction work and provide other supports, if any, upon the client’s request.
9. Prepare complete detailed drawings or modify detailed design drawings and tender documents accordingly suitable for procurement in accordance with AIIB procurement Guidelines and AIIB Standard Bidding Documents. Specify clauses in construction contracts to prohibit child labor and obligate the contractor to take measures to prevent HIV/AIDS.
   1. **Procurement Support**
10. Finalize/modify the bidding documents already prepared by the design consultant with necessary incorporation of changes as per the modified/final detailed design using AIIB’s Procurement Guidelines.
11. Prepare bidding documents of the design task for which they are assigned for execution of the civil works in accordance with AIIB Procurement Guidelines.
12. Provide necessary support services, which will involve assisting RHD to respond to questions from bidders and to issue addenda if required. Service during the bidding time will also include arranging a pre-bid meeting, site visit and public opening of bid documents.
13. Develop project specific bid evaluation criteria consistent with the AIIB’s guidelines and procedures that will be used by tender evaluation committee for evaluating the submitted bids. The technical sub-committee reporting to the evaluation committee will consist of an integrated team of technical specialists from RHD and the consultant.
14. Observe any non-compliance/deviation from the original bidding documents as issued and where appropriate, seek clarification from the bidders.
15. Upon completion of the bid evaluation, the evaluation committee will issue a Bid Evaluation Report with recommendations for award of the contracts. The Consultant will assist RHD with finalizing the contracts. The assistance will also include verification of the performance bond/ guarantees.
    1. **Construction Supervision**
16. As the Engineer’s representatives, the consultants will administer the construction contracts.
17. Workout a Quality Assurance Plan and establish a quality control system accordingly for all works to be carried out under the project.
18. Nominate representatives who will be full-time resident in the assigned project areas.
19. Make all necessary measurements and control the quality of works and advice the engineer in making decisions required for the successful and timely completion of the construction contracts (3 civil work contracts and 1 contract for establishment of a Modified Asphalt and an Emulsified Asphalt Plant).
20. Review and amend, if necessary, the work schedule proposed by the contractor to ensure its compatibility with the progress of land acquisition and resettlement action, environmental clearance, and other project implementation aspects.
21. Ensure that all project works comply with the approved design and drawings, technical specifications, approved schedule and budget, terms and conditions of the contracts, the standard engineering practice and the AIIB project policy:
22. Provide general guidance and issue instructions to contractors in consultation with the Project Director;
23. Make engineering decisions in consultation with the Project Director whenever necessary;
24. Advise the Project Director on quality control, work progress and other contractual issues. Clarify on the disputed issues, anomalies, error or risks that could affect the project objectives and make appropriate recommendations and/or take the necessary actions to remedy them;
25. Ensure that the construction method proposed by the contractor for carrying out the project works are satisfactory and compatible with project parameters ;
26. Inspect contractor’s construction yard and equipment; check on the test results of construction materials and soil tests: safety measures taken for the property and personnel engaged at sites;
27. Chalk out schedule of mitigation measures to minimize the adverse environmental impacts.
28. Notify contractors to rectify works and remove materials that fail to comply with project specifications;
29. Review the design of culverts, under passes, flyovers, bridges, foot over bridges and ensure that the methods of construction comply with the traffic safety measures;
30. Monitor and supervise (i) progress of contract works vis-à-vis contract schedule, and (ii) progress of contractor’s works vis-à-vis applicable technical specifications and design;
31. Ensure that ‘as-built ‘drawings are being prepared by the contractors for all works as construction processes;
32. Ensure the road safety design requirements are being implemented following the contract specifications;
33. Establish procedures for reporting progress and problems on time including quality check reports, quality survey records, request for variation or change orders, and contractor’s claims and invoices;
34. Evaluate any proposed changes (e.g. scope, time and cost) by the contractor during the course of the project;
35. Check and certify work volume and process interim and final payments of the contractors. Ensure timely disposal of contractors’ interim payment certificates and payment.
36. Ensure that the project financial management procedures are in place and are being strictly followed especially relating to payments, financial accounting, requests for time extension and contractors’ claims and invoices;
37. If so required by the employer, the supervision consultant will provide the following as additional service: (a) prepare reports on technical appraisals, additional contract documentation and/or review and observations on the contractor’s any proposals, as may be required for successful completion of the project; and (b) provide any other services as may be required from time to time during the course of the project.
    1. **Performance Monitoring and Safeguards Implementation**
38. Design and undertake performance monitoring and evaluation of the Project in accordance with AIIB’s Project Performance Management System (PPMS) Handbook.
39. Review, prepare/update and monitor the implementation of IEE report, EMPs (contract specific) and Resettlement Action Plan (RAP) to comply with AIIB ESF requirements.
40. Ensure that the construction methods as proposed by the contractor are satisfactory with particular reference to the Environmental Management Plan of IEE Report; requirements of the environmental clearance issued by DOE; technical requirements of environmental standards based on AIIB’s ESF; inspection of contractor’s construction equipment; safety measures for the works, property, personnel, and general public; the schedule of mitigation measures to address the adverse environmental impacts to be monitored.
41. Supervise and monitor the implementation of contract specific environmental mitigation plan (EMP). In case of unexpected environmental impacts, coordinate with the Project Director and PMC and recommend necessary mitigation measures for implementation;
42. Monitor report and provide guidance on the implementation of the Resettlement Action Plan (RAP) to ensure compliance with the AIIB’s policy on involuntary resettlement; prepare updates and addendum to the RAP whenever necessary; participate in the grievance redress actions as required.
43. Support RHD in the preparation of the semi-annual social monitoring reports.
44. Prepare and submit the following reports:

Inception report, quality assurance manual, brief monthly progress report, detailed quarterly progress report, detailed project completion report and maintenance manual. (Format and contents of the reports are to be acceptable to the employer)

1. Conduct road safety audits during and at the end of the project construction work.
   1. **Independent Inspection of Road Maintenance**
2. Check conformity and quality of the contractual documents. Checks shall be focused in particular on: (a) consistency of the contractual documents, (b) existence and compliance with the relevant procedures of the Administrative Orders, Addendums, Variation Orders, etc.; and (c) works have been executed in accordance with the contractual basis.
3. The task of independent inspection of Road Maintenance works needs to be carried out up to the Defects Liability Period (DLP). After DLP, the project road will be under Performance Based Maintenance (PBM) contract, the cost of which will be borne from the Government of Bangladesh (GOB) budget with the concerned Road Division of RHD. During the PBM period, if necessary; the client may engage separate consultant from GOB budget for maintenance quality checks.
4. Conduct site visit regularly and perform all tests during which the auditor will examine:
   1. The reality and the quality of the setting out of works and its adherence to the drawings; the consistency between the approved drawings and the works actually carried out and the quantities accounted for in the interim payment certificates
   2. The quality of the works in conformity with the contract specifications,
   3. The site management documents such as: work register, list of equipment used daily, measurement books, calculation finches and as-built drawings approved by the supervision team, minutes of site meetings, the topographical, geotechnical and every other intermediary task’s acceptance reports. Progress reports of the supervising consultant, all contractual documents and administrative orders, site correspondences and all correspondences among the contractor, the consultant, the engineer and the employer.
   4. The site management aspects such as: the quantity and efficiency of the topographical and geotechnical team’s deliveries, the laboratory testing facilities and also the adequacy and availability of equipment, etc.
   5. Remaining works to be executed.
   6. Any pre-dispute situations which are likely to result in a claim/a site shut down situation.
5. The checks and verifications by the auditor will be carried out using appropriate methods and techniques including but not necessarily limited to: site surveys, laboratory and site tests, measurements, photos and calculations to verify quantity of the statements/documents produced by the contractor and the supervising consultant.
6. The auditor may recommend and execute further in depth measures if deemed necessary.

1. **Task 2: Establishment of Modified Asphalt and Emulsified Asphalt Plant**
2. The consultant will prepare design for a Modified Asphalt and an Emulsified Asphalt Plant, their operation structures and office buildings including landscaping design, architectural design, and structural design with necessary geotechnical investigation/survey in connection with the design, drawing and required facilities for the plant establishment.
3. Prepare detailed design report and operational plan for Modified Asphalt and Emulsified Asphalt Plant including plan and profile, civil works drawing, structural designs, cost estimate, construction drawings, land acquisition and resettlement plan, IEE/EIA reports, rate analysis, detailed bill of quantities, specification of plant and works, bid documents for procurement of the works in accordance with AIIB Procurement Guidelines.
4. Modified Asphaltand Emulsified Asphalt Plant will be established at Sylhet (location to be specified by the client) and will be used for piloting a new approach to develop RHD’s existing road maintenance practices.
5. Develop management tools for the Modified Asphalt and the Emulsified AsphaltPlants to introduce their operation in RHD’s road maintenance system.
6. Develop capacity of RHD through Staff training and publish manual/handbook on Asphalt Plant operation and maintenance management.
7. **CONSULTANT'S INPUTS**

The assignment will be carried out over a period of sixty *(60)* months from the date of commencement (expected by July 2021). The supervising assignment will be implemented by a consulting firm through competitive bidding. It is estimated that about 93 person-months of international consultants and 843 person-months of national consultants along with 468 person-months of support staff will be required.

**Attendance Management of Consultants**: The attendance sheets of the consultants should be submitted along with every consultant’s invoice. The attendance sheets submitted by the resident engineers for the local consultants (with support staff) who will be engaged at site (especially for offices under resident engineers) shall be countersigned by authorized persons nominated by the client. However, the Team Leader of the Consultant shall countersign all attendance sheets (both of the field and head office) which shall be an integral part of the Consultant’s Invoice.

**Table 2: Required Experts**

| **No.** | **Title** | **Relevant Experience and Qualification** | **Position** | **Person-Months** |
| --- | --- | --- | --- | --- |
| **Key Expert (International)** | | | | |
| IC01 | Team Leader/Senior Highway Engineer | * Bachelor degree in civil engineering, post graduate degree preferred * Min. 20 years of professional experience * Min. 15 years in planning, preparation and design of highway projects, at least 7 years as Project Team Leader | 1 | 42 |
| IC02 | Senior Pavement Engineer | * Bachelor degree in civil engineering, post graduate degree preferred * Min. 15 years of professional experience * Min. 10 years of experience in road pavement design and construction | 1 | 24 |
| IC03 | Senior Geo-technical Engineer | * Bachelor degree in civil engineering, post- graduate degree preferred * Min.15 years of professional experiences * Min.10 years of experience in foundation design and geotechnical engineering | 1 | 09 |
| IC04 | Senior Bridge Engineer/ Structural Engineer | * Bachelor degree in civil engineering, post graduate degree preferred * Min. 15 years of professional experience * Min. 10 years of experience in bridge design and construction | 1 | 18 |
| **Sub-Total =** | | | **04** | **93** |
| **Key Expert (National)** | | | | |
| NC01 | Deputy Team Leader/ Highway Engineer | * Bachelor degree in civil engineering, post graduate degree preferred * Min. 15 years of professional experience * Min. 10 years in planning, preparation and design of highway projects | 1 | 60 |
| NC02 | Pavement Engineer | * Bachelor degree in civil or material engineering * Min. 10 years of professional experience * Min. 8 years in road pavement design and maintenance | 2 | 36 |
| NC03 | Structural Engineer (Bridge) | * Bachelor degree in civil engineering * Min. 10 years of professional experience * Min. 8 years in structure and bridge design | 1 | 36 |
| NC04 | Geotechnical Engineer | * Bachelor degree in civil engineering, post- graduate degree preferred * Min.15 years of professional experiences * Min.10 years of experience in foundation design and geotechnical engineering | 1 | 18 |
| NC05 | Contract/Procurement Specialist | * Bachelor degree in engineering or construction science, post graduate degree preferred * Min. 15 years of professional experience * Min. 10 years of experience in preparation/management of construction contracts and procurements for international bidding | 1 | 24 |
| NC06 | Hydrologist/ River Training Engineer | * Bachelor degree in civil engineering, post- graduate degree preferred * Min.15 years of professional experiences * Min.10 years of experience in hydraulic/hydrologic engineering and river training design | 1 | 06 |
| NC07 | Architect (Bridge, Building, Landscape) | * Bachelor degree in Architect, post graduate degree preferred * Min. 15 years of professional experience * Min. 10 years in planning, preparation and design of Building | 1 | 06 |
| NC08 | Resident Engineer | * Bachelor degree in civil engineering, post graduate degree preferred * Min. 15 years of professional experience * Min. 8 years in Project Engineer/Project Manager | 3 | 162 |
| NC09 | Quality and Materials Engineer (Road, Building, Bridge) | * Bachelor degree in civil/mechanical/material engineering * Min. 10 years of professional experience * Min. 8 years of experience in quality control, materials testing and road construction | 3 | 144 |
| NC10 | Electrical Engineer  (Street Light) | * Bachelor degree in Electrical, post graduate degree preferred * More than 7 year experience in planning construction and supervision of buildings | 1 | 03 |
| NC11 | Site Engineer | * Bachelor degree in civil/material engineering. * Min. 2 year of professional experience. | 3 | 180 |
| NC12 | Quantity Surveyor | * Bachelor degree in engineering and construction science * Min. 10 years of professional experience * Min. 8 years in quantity survey, cost estimate and BoQ preparation | 3 | 144 |
| NC13 | Road Safety Engineer | * Bachelor degree in civil engineering, post graduate degree preferred * Min. 10 years of professional experience * Min. 8 years of experience in road safety design | 1 | 12 |
| NC14 | Environment Specialist | * Bachelor degree in environmental engineering or environmental science * Min. 10 years of professional experience * Min. 5 years in environmental impact assessment for infrastructure projects | 1 | 12 |
| **Sub-Total =** | | | **22** | **843** |
| **Support Staff** | | | | |
| SS01 | Topographic Surveyor | * Diploma degree in civil/material engineering * Min. 10 years of professional experience   Min. 5 years of experience in road/highway/bridge surveys | 3 | 72 |
| SS 02 | Site Manager | * Diploma in civil Engineering * Min. 10 years of professional experience * Min. 5 years in site engineer/site supervisor | 3 | 180 |
| SS 03 | Work Supervisor | * Diploma in civil/CAD Engineering * Min. 8 years of professional experience * Min. 5 years in CAD operating | 3 | 144 |
| SS 04 | CAD Technician | * Diploma in civil Engineering * Min. 8 years of professional experience * Min. 5 years in laboratory technician | 2 | 72 |
| **Sub-Total =** | | | **11** | **468** |

**Note: All key expert (International) will be evaluated for technical evaluation and the key expert (national) for technical evaluation will be NC01-NC09 and NC12-NC14.**

1. **OUTPUT AND REPORTING REQUIREMENTS**

The Consultant will prepare and submit reports in a format and contents agreed prior with RHD and AIIB. The Project Director may require the Consultant to perform other tasks consistence with the project scope including preparation of technical appraisals/additional contract documentation, and review and comment on the contractor‘s proposals. The documentation and reporting requirements include but are not limited to the following:

1. Report and update the works implementation schedule, highlight any unforeseen delays, and timely propose corrective measures.
2. Undertake project performance monitoring and evaluation following the project framework and AIIB’s Project Performance Management System (PPMS) Handbook and continue reporting up to the project completion.
3. 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. Design a simple MS Excel or similar program for recording the baseline and periodic data.
4. Develop and maintain a digital storage and retrieval system for all records.
5. Document all information supplied by the field teams, decision to be 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 records, quality control reports, quality survey records, as-built drawings, and progress reports.

The specific reporting requirements under each task are as follows:

**Task 1:**

1. Design reports including plan and profile, civil works drawing, Structural designs, specification of works, cost estimate, construction drawings, Environment Impact Assessment, Land Acquisition and Resettlement Plan, Rate Analysis (if required), detailed bill of quantities (if required), bid documents.
2. Update IEEs, RAP and due diligence reports based on the detailed design if required; and
3. Monthly progress reports on the design, bidding progress, or as requested by client and AIIB.
4. Inception report;
5. Monthly progress reports;
6. Quarterly progress reports;
7. Annual environmental monitoring reports;
8. Semi-annual social monitoring reports;
9. Project performance monitoring reports;
10. Quality assurance manual;
11. Maintenance manuals;
12. Project completion report including a road safety audit report.
13. Inception report describing procedure and approved standards on maintenance quality check;
14. Site Inspection Report;
15. Quality check reports, including remedial measures if any flaw is found; and
16. Additional progress reports as requested by the client and AIIB

**Task 2:**

1. Inception report;
2. Business Models including operation and maintenance Plan and Staffing requirements for the Modified Asphalt and the Emulsified Asphalt Plant;
3. Design reports including plan and profile, civil works drawing, structural designs, specification, cost estimate, construction drawings, environment impact assessment, land acquisition and resettlement plan, detailed bill of quantities, bid documents, etc.
4. Update IEEs, RAP and due diligence reports based on the detailed design if required, and
5. Monthly progress reports on the design and bidding progress, or as requested by the client and AIIB.
6. Project completion report
7. Hard and soft copy of all designs, drawings, plans, maps reports, survey executed under the project.
8. **DATA, LOCAL SERVICES, PERSONNEL AND FACILITIES TO BE PROVIDED BY THE CLIENT**

The Client will provide the Consultant with the following:

1. Access to detailed design report prepared by the TA consultant, data, records, and other information required to perform the assigned tasks;
2. Counterpart staff and engineers to work with the Consultant;
3. Provide the Consultants and each of the personnel with work permits and other documents as necessary;
4. Assist in obtaining necessary visa for the personnel and, if appropriate, their eligible dependent;
5. Assist in getting clearance through customs of any property required for the services and of the personal effects of the personnel and their eligible dependents;
6. 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.

The client will provide the consultant with the following:

1. Office space at site (with utilities, office equipment, and all furnishings) for international and national experts, and for others as-needed for the field/technical support staff;
2. Housing accommodation at site for the National Consultants and field staffs;
3. Necessary survey equipment (Total Station and GPS) and other logistic support. The details of the facilities and logistic support from the client will be outlined in Request of Proposal (RFP) document.
4. **POTENTIAL DOWNSTREAM WORKS**

Subject to satisfactory performance and the employer’s decision, the consultant may be considered for assignments in a similar project in the future.