

TERMS OF REFERENCE

Project Management and Construction Supervision of Reconstruction of 97 km section of M41 Highway

A. Background

The government of Republic of Uzbekistan is planning to undertake Connectivity and Transport Sector Improvement Project (CTSIP) and seeking finances from the International Bank for Reconstruction and Development (IBRD) of the World Bank Group for this purpose.

As the Committee for Roads (CR) is the line authority for all motor vehicle roads in Uzbekistan, it will have primary responsibility for the management and implementation of the CTSIP, in particular the Road Sector Development Component of the Project.

The Executing Agency (EA) for the Road Sector Development Component is the “Avtoyulinvest” Agency under CR. A Project Implementation Unit (PIU) is functioned under EA to implement this component.

Uzbekistan is located in the middle of Central Asia and is double-landlocked and rely almost exclusively on overland transport for trade within the region and with markets outside. Uzbekistan is a key transit country in Central Asia for trade among neighboring countries. Transport plays a key role in promoting regional and domestic trade, which connects Uzbekistan to Afghanistan, Kazakhstan, the Kyrgyz Republic, Tajikistan, and Turkmenistan. Hence, transport plays a pivotal role in supporting the national economy, therefore development of the transport sector is vital to increasing economy of the region through reduced transport costs and increased transit revenues.

The project is located in Surkhandarya region, which is located in one of the few valleys providing access to the vast mountainous region encompassing Afghanistan, Tajikistan and Uzbekistan. The M41 road plays a key role in the region’s transportation network, connecting it in all directions – north, south, east and west. If the M41 is inaccessible, the resilience of the regional transportation system will be significantly reduced as alternative routes pass through more difficult terrain and are prone to climatic hazards such as floods, landslides and earthquakes. In addition, this section of the M41 road is part of CAREC program corridor 3 and provides a link to corridors 6 and 5. It serves as an important trade route linking eastern Central Asia (Kyrgyzstan, Tajikistan, and parts of Uzbekistan) with Afghanistan, Pakistan ports, and Turkmenistan.

The project section of km 1525-1622 of the M41 highway is a 2-lane road, widening in 3 places to a 4-lane road, with a total length of 91 km, of which about 85.1 km (~94%) are 2-lane sections and about 5.9 km (~6%) are 4-lane sections.

The strength of the existing pavement is currently insufficient for both the existing and forecast traffic flows and the movement of vehicles with increased single axle loads. The pavement roughness assessment also revealed that 90.8% of the project section length has unsatisfactory pavement roughness. 44 km (~45%) of the project road section passes through populated areas, however, most of them lack sidewalks and 30 km (~31%) of the road lacks lighting. Local traffic lanes and equipped bus stops are also lacking in populated areas. The assessment of the condition of bridges and overpasses revealed the need to construct 6 new overpasses and 4 new bridges and to reconstruct 12 bridges.

Widening of 2-lane road sections to 4-lanes and reconstruction of existing 4-lane sections with cement concrete pavement, including, among others, additional longitudinal drainage systems, protective

structures and reinforced embankment slope protection, construction and reconstruction of bridges and overpasses on the road, construction of bypasses around major settlements and interchanges at congested intersections, and measures to separate vulnerable road users and non-motorized vehicles will reduce the accident rate on the M41 highway by 10-30% with a parallel increase in the speed of motor vehicles by 25-30% on average, and increase the capacity of the highway.

The objective of the project is to restore the proper quality of road infrastructure services and increase the capacity of the region with a growing population and increasing economic opportunities. In addition, the section 1525-1622 km of the M41 Bishkek-Dushanbe-Termez highway was selected based on the condition of the road, the needs of the region, and the readiness for project implementation. The investment will be used to upgrade the existing and add new lanes of the highway. The reconstructed section will have a higher functional category. Activities in this section will also be coordinated and complemented by investments in landscaping and non-motorized modes of transport in the rural settlements that the highway crosses.

The reconstruction of the abovementioned highway will be carried out under two lots: **(i) Lot 1 – for the section 1570-1622 km and (ii) Lot 2 – for the section 1525-1570 km.**

The project area falls in three districts of the Surkhandarya region, namely Termez, Djarkurgan and Kumkurgan districts.

The road design was carried out in accordance with the Uzbekistan standard (ShNK 2.05.02-23 and 2.07.06-24). Where appropriate, reference has also been made to relevant clauses of AASHTO standards. The main project design parameters are:

- Design speed: 90 km/h / 70 km/h
- Number of lanes: 4/6
- Lane width: 3.5 m / 3.75 m
- Carriageway width: 15 m - 23 m
- Shoulder width: 0.75 m / 3.0 m unpaved
- Total road width: 16.5 m - 25.10 m
- Min. carriageway cross-fall: 15%
- Min. horizontal curve radius: 800 m
- Min. horizontal curve length: 100 m
- Max. vertical grade: 50%
- Cross slope of shoulders: 40%

The project road will be constructed through a single civil works package, divided in two Lots, where a bidder can apply for a single Lot or two, provided it meets required cumulative qualifications. The Contractor will be selected through international competitive bidding process, following the World Bank's Procurement Regulations for IPF Borrowers.

B. Objectives of the Assignment

The main aim of the consultancy services is to ensure that high quality and timely construction is achieved and that all works are carried out in full compliance with the engineering designs and technical specifications described in the civil works contract. The Consultant will make sure that all efforts are deployed by the Contractors to complete the construction within the contractual time schedule. **The duration of the civil works contracts is 5 years, out of which: 3-year rehabilitation/construction works and 2 years of Defects Notification Period.**

The main tasks of the Consulting Services are:

- a. On-site full-time construction supervision, acting as an “Engineer” in the administering of construction works contracts (Contracts) in accordance with the general and particular conditions, under the International Federation of Consulting Engineers (FIDIC), Conditions of Contract for Construction, MDB Harmonised Edition, June 2010;
- b. Review of prepared by the Employer detailed designs and approving working drawings for road construction prepared by construction contractors (the Contractors);
- c. Ensuring that permanent and temporary works are designed and constructed in accordance with the technical specifications and standards forming part of the construction contracts with the Contractors;
- d. Advising the Executing Agency (EA) on all matters relating to the implementation of construction contracts, including quality control, progress of works, dispute resolution, arbitration or litigation, contract variations, termination, payments certification;
- e. Ensuring the compliance with the environmental and social standards, including environmental management plan, traffic management plan, biodiversity management plan, general labor legislation;
- f. Ensuring implementation of Resettlement Action Plan (RAP);
- g. Compliance with the recommendations set out in the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP), as well as Biodiversity Management Plan (BMP) prepared within the Project;
- h. Ensuring that gender equality principles aimed at increasing benefits and impacts of the project for women in the project area are in accordance with the World Bank Policy on Gender and Development during project implementation, including (a) equal payment for men and women for works of equal value; (b) creation of favorable working conditions for women workers; and (c) taking necessary measures to encourage women living in the project area to participate in preparation and implementation of project activities.
- i. Establishment and measurement at commencement of the civil works contract of the project baseline, and thereafter every year, of various project parameters indicating performance of the Project. These indicators and their values will be agreed upon with the Client and the Bank;
- j. Providing on-site trainings to EA staff on contract administration and other procedures related to construction facilities monitoring and construction materials quality;
- k. To organize study tours on EA necessity topics, in particular, appropriate construction materials selection, road pavement quality, road maintenance and etc. (if necessary);
- l. Any other duties assigned to the Engineer under the contract.

C. Scope of services, duties and expected reporting documentation

Within the project framework, the EA intends to sign 2 contracts for construction works, by one for each lot, for which procurement will be carried out in parallel, and the contracts are planned to be signed simultaneously.

The Consultant shall administer and monitor construction contracts, with a focus on minimizing climate impacts and take measures to reduce greenhouse gas emissions.

The Consultant will perform all functions and duties assigned to the “Engineer” in the general and particular conditions of the civil works contracts.

Design review and approval: During the initial period, the Consultant shall analyze the detailed designs provided by the EA. Prior to the commencement of construction, the Consultant shall also

review and approve the construction drawings prepared by the Contractors. The scope of works shall include, but not be limited to, the following:

- (a) Establish a schedule, methods, and procedures for reviewing the detailed designs provided by the EA and the construction drawings prepared by the Contractors;
- (b) Expertise detailed designs and construction drawings in accordance with design standards / technical specifications, as well as in accordance with the actual site conditions. Review of detailed designs shall be completed within 40 days from the commencement of services. Review of construction drawings shall be completed no later than 7 days from the date of submission, in order to expedite the commencement of works;
- (c) Ensure that technical specifications are properly taken into consideration in the detailed engineering designs and construction drawings;
- (d) Checking and reviewing the project's detailed designs to identify any significant aspects that may require amendment before construction commences, and inform the EA of these for its decision as to whether changes to the designs need to be made;
- (e) On the basis of this review, and the EA's decisions, approving the designs as suitable for construction;
- (f) Prepare reports to the EA and WB within the scope of project review, identify any problems and difficulties that arise, and propose solutions;
- (g) Review and approve the "As-Built Drawings" prepared by the Contractors, latest 2 months after substantial completion of the construction stage of the Project.

During the design review stage, the Consultant shall perform the following tasks, among others:

- Identify any missing, incomplete, or insufficient project documents, including drawings, bills of quantities (BOQ), and standard calculations;
- Verify the designs' compliance with applicable national and international standards, norms, and the Employer's requirements;
- Compare the quantities specified in the project documentation with the BOQ for the Contract(s) to identify any discrepancies;
- Check whether the design requirements comply with the Contract Specifications and technical provisions set out in the Contract;
- Review the design of all engineering structures, including bridges, overpasses/underpasses, crossings, culverts, retaining walls, and other related elements, to ensure accuracy, safety, and compliance with structural design standards;
- Check the completeness, compliance, and accuracy of the BOQ to ensure compliance with the Design Drawings and Specifications.

Supervision over contract implementation and supervision over construction works:

General Provisions

- i. The construction works will be carried out in accordance with the general and particular conditions of the Contract. Accordingly, the EA will act as the "Employer" and the Consultant will function as the "Engineer". The Engineer will act on behalf of the Employer in order to implement the project properly to complete the project in prescribed quality and timeframe, provided that the Engineer will seek the approval from the Employer before taking action in accordance with the specified clauses of the Contract.
- ii. The Consultant will manage the construction contract and supervise the daily construction activities on site in accordance with construction supervision procedures based on advanced international practices in order to: (i) ensure that the Project is constructed in accordance with the

- provisions of the construction works contracts; (ii) supervise the completion of the Project within the agreed program and budget and in accordance with the quality standards and safeguards envisaged in the contracts; (iii) monitor compliance with safeguard requirements (ESIA, ESMP, BMP), ensure RAP implementation, and ensure that adequate financial resources are budgeted in Contractor contracts and mitigation measures are undertaken during the Project implementation; (iv) liaise with local communities and help identify and resolve problems and complaints that arise; and (v) consult the EA on matters relating to the Project implementation.
- iii. The Consultant shall report to the EA and the WB on matters related to the project implementation. The Consultant shall also participate in the WB Field Missions jointly with the EA and take necessary steps to resolve any issues that arise.
- iv. The Consultant shall appoint representative of the Engineer who shall reside permanently in the project site.
- v. The Consultant shall apply a quality control system that governs its activities. The quality control plan shall be in accordance with current practices as published by the International Organization for Standardization (ISO). Within one month of the commencement of services, the Consultant shall submit a draft quality control plan covering the various responsibilities to be performed during the design review and supervision of the construction contract. The Consultant shall amend the draft quality control plan to the extent mutually agreed with the EA. The Consultant shall work throughout the whole term in accordance with the procedures and requirements of the quality control plan.

Supervision over construction progress

- vi. The Consultant, as Engineer, shall be responsible for the performance of all duties specified in the general and particular conditions of the contracts. The duties of the Engineer shall include, but not be limited to, the performance of the following tasks:
- Cause Contractors to prepare and cost breakdown the Site-Specific Environmental and Social Management Plan (Contractor ESMP, C-ESMP). This task must be completed before the commencement of construction;
 - Ensure that notices of commencement are issued to Contractors, clearly stating the project commencement dates;
 - Monitoring land acquisition and resettlement activities undertaken by the EA and providing necessary support whenever required;
 - Liaise with relevant authorities to ensure that all affected communication utilities are relocated promptly to avoid any operational disruption;
 - Ensure that the project area/lane, free of all interference, is handed over to the Contractors in accordance with the agreed schedule, otherwise notify the Contractors of possible delays in handing over the project sites;
 - Ensure that Contractors provide all necessary bank guarantees (performance security, advance payment security and retention money security, if any) and insurance policies required in accordance with the contracts;
 - Review the Contractors' work schedules (or revised work schedules) and issue permits to the Contractors for performing works. Wherever necessary, facilitate in reaching agreement between the Employer and the Contractors on work schedules and ensure that the construction works are carried out in accordance with the agreed work schedules. The Engineer will inform the Employer on any delays or potential delays in the work schedules within contracts and will take all necessary actions to avoid potential delays;
 - Review and approve the Contractors administrative obligations, including the contractor's site-specific ESMP and its sub-plans, traffic management plan, as well as quality assurance plan;

- Ensure that all the Contractors' construction equipment is mobilized in accordance with work schedules/contracts and inspect and approve Contractors' equipment;
- Approve and/or develop workshop (working) drawings / qualified drawings for construction works and instruct the Contractors in accordance with the contract requirements and the Contractor's quality management plan;
- Issue explanations and additional drawings to the Contractors and/or approve alternative drawings, provide the Contractors with all necessary surveys and reference data to facilitate the works and avoid possible delays in the performance of the works;
- Inspect and approve all material sources identified by the Contractors;
- Inspect materials and soils test results to ensure that they comply with the specifications and notify the Contractors immediately if such materials and works do not comply with specifications;
- Keep records of all tests, including cross-references to the work items referenced by each test and the location from which the test samples were obtained;
- Supervise Contractors on all matters related to the safety of workers and public, as well as the safety of construction works, including the provision of necessary personal protective, lighting, fencing and security equipment in compliance with the ESMP, its subplans, and the traffic management plan. The Consultant shall establish written procedures for monitoring and reporting OHS as well as community and traffic safety;
- Regularly monitor and audit the Contractors' quality control and assurance programs to ensure that the quality of the completed works complies with the standards and specifications of the Contract. This includes regular audit of materials testing programs;
- Conduct regular audits of the Contractors' and the subcontractors' quality systems in order to ensure that the system requirements and the EA's quality objectives are achieved. Quality assurance audits shall be conducted at least every six months and documented in the relevant monthly/quarterly reports. The Consultant shall report all non-conformities to the EA after each audit and explain what actions are to be taken by the Contractors to correct each non-conformity.
- Evaluation and verification of laboratory and field tests conducted by Contractors and conducting independent tests;
- Prepare non-conformity reports and propose corrective actions or solutions to them;
- Monitoring the progress of construction work using computer project management technologies;
- Conduct regular meetings with Contractors to discuss issues and problems affecting progress and keep the Employer informed;
- Coordination with relevant local authorities/agencies to minimize disruptions in the works schedule;
- Review and comment on monthly progress reports submitted by the Contractors, with the detailed description of the works completed during the previous month, progress against the approved schedules, problems and difficulties encountered by the Contractors, and other matters requested by the Employer;
- Assistance to the EA in processing the Contractors' applications for subcontracting part of the works and eliminating ambiguities in contractual documents, if any;
- Measure the completed works and keep the detailed records, including a measurement log;
- Keep permanent records which shall include, but not be limited to, site compliances, survey data, work programs, material test results, quality acceptance data, daily site progress logs, plant, labor and material records, measurements and certifications, meeting minutes and records

of all data/reports/certificates/statements etc. as required by the contracts. These permanent records must be handed over to the EA after the expiration of the consulting contract;

- Prepare quarterly cash flow forecasts for the Employer in an acceptable format in which the cash flow should determine the budget estimate for all remaining works;
- Evaluation of works and certification of interim and final payment certificates, which are to be provided to the Employer;
- Evaluate and provide the necessary recommendations to the EA on the Contractors' requests for extension of the completion period, claims for additional payment, contract variations, changes in the scope of works, any disputes, etc.;
- Review all claims submitted by the Contractors, prepare draft replies and provide the Employer with recommendations regarding the validity of the claims, the impact of such claims on the construction schedule and the cost of the project;
- Advise and assist the Employer regarding arbitration or litigation relating to the works, whenever it is necessary;
- Issuance of certificates of substantial completion (taking-over certificates) and final completion of works (performance certificates) in accordance with the terms of the contract;
- On completion of the works, examine the Contractor's "as-built drawings" as a reliable record of the works performed and ensure that the works have been carried out in accordance with all provisions provided in the contracts, including those relating to manufacturing quality standard, safety requirements and security compliance;
- Conduct environmental, health and safety monitoring in order to ensure compliance with all requirements of the ESMP and its sub-plans, and that the construction methods proposed by the Contractors for carrying out the works are satisfactory, with specific reference to the technical requirements of modern environmental, health and safety standards based on the WB Statement of Safety Policy.
- Prepare regular monitoring reports at quarterly intervals on monitoring of land acquisition and resettlement activities (including livelihood restoration activities and monitoring over employment of members of severely affected and vulnerable households);
- Ensure that the grievances raised by the affected people and community are reported to the EA and follow-up with respective agencies for their addressal;
- Ensure minimal damages to local communities by approving the Contractors' work schedule, including monitoring the impact of construction works on local communities, and by submitting an impact monitoring report to the Employer;
- Ensure that child labor is not used for construction works or any other activities related to the project;
- Promote employment of qualified female population;
- Monitoring the implementation of Health and Safety programs in construction camps (with a focus on construction workers) and local communities in the project area, including an information and educational campaign in the form of seminars and meetings aimed at raising awareness in collaboration with the Ministry of Health, the women's Committee of Uzbekistan (regional branches) on sexually transmitted diseases and HIV/AIDS (human immunodeficiency virus/acquired immunodeficiency syndrome) with dissemination of relevant publications and gender-sensitive materials as required by construction contracts; and
- Ensure training without interrupting the work of personnel of the EA on the project site in areas such as construction oversight, contract management, quality control and assurance, safety measures, PPMS, monitoring and evaluation, and other activities.

Project Performance Monitoring / Benefit Monitoring and Evaluation

- vii. The Consultant shall establish a system for monitoring the project implementation in accordance with the terms of the project. In doing so, the Consultant shall:
- Define, on a project-based basis, performance indicators and targets to be monitored during project implementation and establish data collection and statistical systems for such monitoring;
 - Conduct a baseline performance survey and establish a set of baseline data against which to reassess the impact of the project;
 - Collect necessary data and conduct other relevant surveys prior to commencement of construction, after 1st and 2nd year from the commencement date and immediately after completion of the Project;
 - Assessment of the socio-economic impacts and environmental sustainability of the Project;
 - Include findings and supporting evidence in the project completion report; and
 - Conduct training in operational social research methods and build the capacity of EA.

D. Actions requiring special approval from the Employer

The Consultant must obtain prior approval from the Employer on the following issues:

- Approval of the reassignment of any part of the work;
- Certification of additional costs;
- Determination of extension of time;
- Issuing an order for additional work that has any financial implications in any way; and
- Rate fixation or prices for any new work unit.

E. Contract effectiveness duration

Consultancy services are required for **62 calendar months**: 38 months for design review stage and construction supervision, and 24 months (with reduced number of staff) during the defects notification period under construction works contracts.

F. Team composition and qualification requirements for Experts

It is estimated that **347 person-month inputs of Key Experts** and **344 persons-month Non-Key National Experts** will be required to implement this assignment timely and orderly.

The need for various international and national consultants, as well as additional staff to perform the tasks, is determined within the budget for construction supervision consulting services.

Reminder: When proposing team members, the Consultants shall ensure that the proposed personnel are available and recognize the intensity of the work required. Any changes in the composition of Key personnel shall be authorized by the EA only in exceptional circumstances, when justified and when there is evidence that the replacements proposed are as good as or better than those originally approved.

The required team composition and time-input are as follows:

No.	Position	Input (person-months)
A	Key Experts	
1	Team Leader/ Project Manager/ Senior Highway Engineer – International	38
2	Resident Engineer/ Road Engineer (one for each of 2 Lots) – International	72
3	Deputy Team Leader/ Road Engineer (one for each of 2 Lots) – National	78
4	Pavement/ Quality Assurance and Materials Engineer – International	24
5	Pavement and Materials Engineer (one for each of 2 Lots) – National	72
6	Bridges and Structures Engineer – International	24
7	Environmental, Health and Safety Specialist – International	15
8	Social Safeguards Specialist – International	15
9	Road Safety Specialist – International	9
	Sub-total (A)	347
B	Non-Key National Experts	
10	Bridges and Structures Engineer	30
11	Environmental Specialist	24
12	Social Safeguards Specialist	35
13	Site Inspector (one for each of 2 Lots)	76
14	Quantity Surveyor (one for each of 2 Lots)	72
15	Road Safety Specialist	48
16	Occupational Health and Safety Specialist	35
17	Road Design Engineer	24
	Sub-total (B)	344
	TOTAL (A+B)	691

Tasks and qualification requirements

Key Experts

(i) **Team Leader/ Project Manager/ Senior Highway Engineer:** The Team Leader/ Project Manager/ Sr. Highway Engineer will be responsible for the overall management of the project in executing the works specified in the Terms of Reference for Consultancy Services, namely the overall successful completion of the design review and supervision tasks. The Team Leader/ Project Manager/ Sr. Highway Engineer shall act on behalf of the Employer in accordance with the FIDIC Conditions of Contract. The specific focus of the Team Leader/ Project Manager/ Sr. Highway Engineer will be the early identification of problems and proposals for mitigation or preventive measures in all aspects of the works; shall be responsible for resolving technical problems during the design review stage and for resolving problems that may lead to claims and increased costs under the civil works contract during the supervision stage, through effective management of both the design review and construction supervision stages. Particular emphasis will be placed on claim/dispute resolution actions and the prevention of delays during the construction supervision stage. The Team Leader/ Project Manager/ Sr. Highway Engineer will be responsible for preparing variation orders and submitting them to the EA and the World Bank for approval (if required). The Team Leader/ Project Manager/ Sr. Highway Engineer will also act as an advisory role on potential anticipated or actual claims. He/she will prepare monthly, as well as all other required reports and all types of documents specified in the terms of reference for the consulting services. During the construction supervision phase, the Team Leader/ Project Manager/ Sr. Highway Engineer will conduct formal meetings with the Contractors such as monthly meetings and will also be present during formal tests such as formal concrete pavement tests and others.

Required qualifications: Degree in Civil Engineering, preferably with a Master's degree in Road Engineering. A minimum 20 years of similar experience in the design and/or supervision of highway construction is preferred, of which minimum 10 years of experience in the design and/or supervision of rigid pavement construction, with FIDIC Conditions of Contract, including 10 years of international experience in road project management. He/she will have proven experience in managing and operating at least 4 similar road contracts, since he/she will act as the Engineering Representative in field. He/she should have excellent communication and reporting skills. He/she will have an excellent knowledge of the English language. Knowledge of Russian language and experience in CIS countries are preferred.

(ii) **Resident Engineer/ Road Engineer:** The Resident Engineer/ Road Engineer will be responsible for the overall management of the project in all technical aspects, implementing the scope of works specified in the Terms of Reference for the consultancy services. The Resident Engineer/ Road Engineer will be responsible for performing the tasks at the design review stage as well as the supervision stage within the FIDIC conditions of contract on behalf of the Engineer. During the control stage, he/she shall supervise all construction works, be constantly informed of the daily progress of construction as well as present problems and propose immediate solutions in consultation with the Team Leader. The specific focus of the Resident Engineer/ Road Engineer will be prompt and timely identification of technical problems and proposal of mitigation or preventive measures in all technical aspects of the scope of works associated with the various project activities. He/she will be responsible for the prompt and timely identification of technical problems that may lead to claims

and cost increases (especially in civil works contracts) through proper management of the construction supervision component and personal review of the progress of the Contracts' implementation. Special emphasis will be on the actions to resolve claims / disputes related to price increases and to prevent delays possibly caused by traffic lane issues (if any), structural deficiencies (if any), construction specifications and others. The Resident Engineer/ Road Engineer will be responsible for preparing variation orders and submitting them to the EA for approval. The Resident Engineer/ Road Engineer will also act as an advisory on potential anticipated or real claims. He/she will assist the Team Leader in preparing monthly as well as all required reports and all types of documents specified in the Consulting Services' Terms of Reference (ToR). During the construction supervision stage, the Resident Engineer/ Road Engineer shall be present and assist the Team Leader in conducting formal meetings such as monthly Contractor meetings, formal paver testing and others. The Resident Engineer/ Road Engineer shall be responsible for all technical issues specified in this Consulting Services' ToR.

Required qualifications: Degree in civil engineering, preferably a Master's degree in Road engineering. 15 years of similar experience in design and/or construction supervision of highway projects, including 7 years of experience in the design and/or construction of rigid pavement, 6 years of international work experience in road projects. Managing site operation under 3 road contracts based on Red FIDIC conditions will be preference. He/she will have an excellent knowledge of English language. Knowledge of Russian and local languages and experience in CIS countries will be preferred.

(iii) **Deputy Team Leader/ Road Engineer:** He/she will assist the Team Leader in coordinating and supervising the execution of construction works on the construction site, including coordination with the Employer. Assist the Resident Engineer and Team Leader with project management and daily construction supervision, whilst leading and covering all engineering disciplines across the project's requirements, during supervision, direct the supervision, coordination, compliance of all works including land development, site improvements. Check the Contractor's submission and prepare draft for respond to their request. Actively monitor the implementation of contractor's quality procedures and raise non-conformance reports, as required. Prepare draft technical reports and presentations to update the Employer on progress.

Required qualifications: Bachelor's degree in Civil Engineering. Demonstrable 10 years of similar experience of large infrastructure projects, in the design and/or supervision of highway construction. 5 years' experience in road projects with rigid pavement is desirable. Experience in road contracts based on Red FIDIC Conditions will be preferred. Knowledge of English language is highly desired.

(iv) **Pavement/ Quality Assurance and Materials Engineer:** The Pavement/ Quality Assurance and Materials Engineer will be responsible for the execution of the scope of works specified in the terms of reference for consulting services. During the construction supervision stage, the specialist will be responsible for: supervising the establishment, organization and layout of the Contractors' field laboratories; supervising the mobilization of testing equipment to ensure that the laboratories are adequately equipped and capable of fulfilling all specified testing requirements in accordance with the contract; and supervising the installation of the Contractor's rock crushers and concrete mixing plants to ensure that all specified requirements for such equipment are fully met. The specialist shall monitor the construction and operation of the crushing and concrete mixing plant. The specialist shall prepare a quality assurance plan and participate in the preparation of the supervision manual.

During the supervision stage, the specialist shall supervise the testing and evaluation of road construction materials used in modern road construction technologies. Reviewing the mix designs for cement and asphalt concrete pavement submitted by the Contractor. Monitoring and checking the Contractor's quality control and assurance program to ensure that the quality of the works performed complies with the standards and specifications specified in the contract. This shall include regular verification of the materials testing program. Conduct regular audits of the Contractors' and Subcontractors' quality systems to ensure that the system requirements and EA quality objectives are met. Assess and review Contractor's laboratory and field tests and conduct independent tests.

Required qualifications: Degree in Civil Engineering, preferably in Geotechnical Engineering or Materials Science and experience in Quality Assurance/Quality Control in Road Engineering. At least 10 years of similar experience in establishing and managing quality assurance for construction materials control, laboratory and field testing of rigid pavement materials in accordance with ASTM, AASHTO standards and in all phases of rigid pavement design, quality assurance process and construction control is desirable. 6 years of international experience in assistance in all the phases of quality assurance process of Construction, specifically related to flexible and rigid type of pavements. Proven knowledge of laboratory and other testing's is required as well as quality control processes and methods. The candidate should have a thorough understanding and experience with international standards and "Best Practices" of modern Quality Control methodology/ technology ad applications.

(v) **Pavement and Materials Engineer:** Under the supervision of the International Pavement/Quality Assurance and Materials Engineer, he/she will perform site supervision, inspection and all necessary assistance to the construction team with respect to the materials submittals, approvals, materials selection, sampling and testing processes (including all laboratory and field testing) of construction materials to ensure that these materials are in accordance with the approved construction drawings, contract documents, specifications, applicable standards, the contractors design and material deliverables are as per project requirements. Inspection of plants and independent material testing laboratories. Review the mix designs for cement-asphalt concrete pavement submitted by the Contractor. Monitor and audit the Contractor's quality control and assurance program to ensure that the quality of the works performed complies with the standards and specifications specified in the contract. Also identify non-conforming materials, and make sure those material samples collected from suppliers are met with the project requirement. Review all technical submittals including method statements, material approvals submittals, subcontractors' approval etc.

Required qualifications: Bachelor's degree in Civil Engineering and experience in quality assurance/quality control in road construction. 5 years of similar experience in supervision of construction works, as well as in laboratory and field testing of rigid pavement materials. Knowledge of English language is preferable.

(vi) **Bridges and Structures Engineer:** During the design review, this specialist will be responsible for reviewing the design of bridges and structures. During the construction supervision stage, this specialist will supervise and inspect construction, reconstruction, and repair of bridges, interchanges, overpasses, underpasses, pipes, culverts, and any other engineering structures to assess and determine the need for adjustment of the works, and, if necessary, provide working drawings, specification details and instructions to Contractor for any structures within the construction site for works that require reconstruction during construction, but have not yet been included in the reconstruction plan under the contract. The Bridge and Structures Engineer will report regularly to the Team Leader on

the progress of the works and any issues that may arise and advise on appropriate action to be taken. **Required qualifications:** Must be a certified Structural Engineer with degree in civil or Structural Engineering, preferably with a Master's degree in Structural Engineering or similar disciplines. 15 years of similar experience in the design and/or supervision of construction of road interchanges, overpasses, bridges, culverts, and other structures is preferred. At least 7 years of international work experience is preferred. Knowledge of Russian language and experience in CIS countries is preferred.

(vii) **Environmental, Health and Safety Specialist:** During the supervision stage, the specialist will prepare a detailed action plan, including environmental monitoring checklists, to be completed by the national specialist to ensure that the environmental management system is established, implemented, maintained and monitored. He/she will also be responsible for all environmental issues during construction works. The duties include: collecting additional baseline data on the state of the environment and updating the Environmental Impact Assessment Report (EIA) data, if needed, in accordance with the requirements of the EA and the World Bank, as necessary, for example, in the event of changes in the scope of work, technical design or unexpected impacts; Providing guidance to contractors in implementing mitigation measures and preparing Contractor's Environmental and Social Management Plans (CESMPs) for construction sites in accordance with the EIAs; approving CESMPs for construction sites for confirmations by the PIU prior to the start of the relevant works; monitoring Contractor's compliance with the Environmental Management and Mitigation Plans, Health and Safety plans; Conducting environmental monitoring in accordance with the CESMPs; preparing relevant sections of the project's quarterly progress reports on environmental compliance; preparation of the Semi-Annual Environmental Monitoring Report (EMR) for submission to the WB and the EA within one month of each reporting period – in January and July of each year; Conducting post-construction environmental audit and preparation of the final EMR within one month of project completion; Preparing relevant certificates or any other relevant documentation as required by the WB and the governmental authorities; assisting the PIU in consultations with project-affected individuals and provide technical support to the Grievance Redress Mechanism (GRM) in addressing grievances related to environmental impacts; assisting the PIU in reviewing noise and vibration diagnostics on the sites;

In addition, the Environmental Specialist will develop training materials and conduct training on Environmental Protection, Health and Safety, Transport Management, and conduct public consultations for the PIU environmental specialist and Contractors; provide technical guidance and monitor the quality assurance of excavation works and the work of the National Environmental Specialist; review the ESMP provided by the Contractors.

Required qualifications: Master's degree in Environmental Science is preferred. Preferably 12 years of experience in conducting environmental impact assessments and implementing environmental mitigation plans and/or monitoring the implementation of environmental mitigation measures and health and safety plans during the implementation of projects. Road construction projects financed by international development banks, preferably for projects financed by the World Bank, 8 years of international experience in road projects are preferred. He/she will have fluency in written and spoken English. He/she will have the ability to effectively communicate and produce good quality reports and documents in English. Knowledge of Russian language and experience in CIS countries is preferred.

(viii) **Social Safeguards Specialist:** The Specialist will monitor the implementation of RAP, review

micro-plans and check its compliance as per Resettlement Policy Framework (RPF). The Specialist will also conduct consultations with the affected people and community to understand the resettlement and reconstruction and other social issues due to construction activities and will follow-up with the Contractor and other relevant agencies on the measures taken to address the issues. Conduct household sample surveys and participatory surveys to monitor socio-economic and gender impacts on beneficiaries during construction supervision. Awareness campaign on HIV and human trafficking. Implement resettlement plans, conduct socio-economic surveys and monitor project benefits. Conduct regular field visits to ensure that impacts due to the project on the surrounding population is limited and/or avoided. The Consultant shall assist and facilitate aggrieved PAPs to report their grievances to Grievance Redressal Committee (GRC) or Implementing agency. The Consultant shall carry out any other activities that may be required for the implementation of RAP and address social issues during project implementation. The Specialist will coordinate with the Environmental Specialist and be responsible for E&S reporting required for the Consultant.

Required qualifications: Master's degree in Social Science is preferred). Preferably, 12 years of experience in developing and/or implementing resettlement plans, conducting socio-economic research (including gender issues) and monitoring benefits associated with the implementation of projects, including highways, financed by international financial institutions 8 years of international experience in road projects are preferred. Should have up-to-date knowledge of the WB Environmental and Social Framework (ESF) and procedures, particularly on social impact assessment, poverty assessment, land acquisition, and resettlement. He/she will have fluency in written and spoken English. He/she will have the ability to effectively communicate and produce good quality reports and documents in English. Knowledge of Russian language and experience in CIS countries is preferred.

(ix) **Road Safety Specialist:** The Road Safety Specialist is responsible for analyzing, developing and implementing strategies to improve road safety and reduce road accidents. Analyzing designs, specifications, construction methods, etc. from a road safety perspective, analyzing traffic management plans prepared by the Contractor during construction, reviewing temporary bypass roads and traffic management designs, conducting regular road safety audits in work zones under traffic, conducting post-construction road safety audits, identifying road safety problems and providing recommendations on how to solve them, improving the potency of the road safety management plans, and providing recommendations on how to solve them.

Required qualifications: Master's degree in Civil Engineering/ Highway Construction or Transportation Safety. At least 12 years' experience in road projects and 5 years of relevant experience in road safety audit. Preferably, completion of road audits for 2 international road projects. Knowledge of road traffic and road safety legislation and the Government's road safety strategy. Demonstrated good communication and influencing skills, including the use of social media. Knowledge of Russian language and experience in CIS countries is preferred.

Non-Key National Experts

(x) **Bridges and Structures Engineer:** Bridge and Structures Engineer, under the guidance of an international specialist, will study the bridge design submitted by the Contractor. He will carry out daily inspection of the bridges and other engineering structures construction works.

Required qualifications: Degree in Civil Engineering. 10 years of similar experience in the design

and construction of road interchanges, overpasses, bridges, culverts, dams and other structures is preferred.

(xi) **Environmental specialist:** Under guidance of International Environmental, Health and Safety Specialist develop site specific, Contractor Environmental (and Social) Management Plans (C-ESMPs). Advise project managers on environmentally sustainable practices and technologies to minimize the environmental footprint. Monitor and evaluate environmental performance throughout the project life cycle, identifying any deviations from established environmental standards and recommending corrective actions. Ensure the implementation of the Biodiversity Management Plan (BMP).

Required qualifications: At least 5 years of experience in environmental management, preferably with experience in large construction projects. Proven experience in implementing EIAs, developing and implementing ESMPs and implementing environmental monitoring programs. Knowledge of World Bank environmental policies and procedures is highly desirable. Knowledge of English language is highly required.

(xii) **Social Safeguards Specialist:** Provide professional and logistical support to the Team Leader/and the International Social Safeguards Specialist. Conduct regular site visits and monitor RAP implementation. The Consultant shall assist and facilitate aggrieved PAPs to report their grievances to Grievance Redressal Committee (GRC) or Implementing agency. The Consultant shall assist International Social Safeguards Specialist to carry out any other activities that may be required for the implementation of RAP and address social issues during project implementation. Prepare required reports with International Expert. Monitor, evaluate and ensure compliance social performance throughout the construction period to mitigate potential negative social impacts during construction and operation.

Required qualifications: Degree in sociology or social sciences, or equivalent. 5 years of experience in developing and implementing resettlement plans, conducting socio-economic research and monitoring positive impacts in the implementation of projects, including road projects, financed by international financial organizations is preferred. Knowledge of English language is highly required.

(xiii) **Site Inspector:** Coordinate and conduct site inspections. Review Contractor/subcontractor inspections as necessary. Interpret construction drawings and construction project specifications. The Site Inspector communicates with Contractors, supervisors and other inspectors regarding specifications and qualification test results, and site progress. Maintains field records and relevant documentation, and must prepare daily reports including a description of Contractor works activities, identification and quantity of labor and equipment, and take various measurements for pay. Review traffic maintenance and protection, ensure that the Contractor provides safe working conditions for workers and travelers. Recommend approval of inspected works (in accordance with contract specifications). Advise Contractors of violations and recommend adjustments to operations.

Required qualifications: Degree in Civil Engineering, preferably with 5 years of experience in road experience, including quality control/quality assurance procedures, construction inspection.

(xiv) **Quantity Surveyor:** He/she will assist the Team Leader, his Deputy and Resident Engineer in daily supervision, collecting and checking volumes, changes in works, reviewing variation orders, checking payment applications/certificates.

Required qualifications: Degree in Civil Engineering. 5 years of experience as a Surveyor in road construction projects carried out under FIDIC contract is desirable. Knowledge of English language is preferable.

(xv) **Road Safety Specialist:** Assist the International Road Safety Specialist in reviewing the Contractor's traffic control plans during construction, checking the designs of temporary interchanges and traffic control mechanisms. Regularly inspect the roads for compliance with road safety requirements. Assist the International Road Safety Specialist in conducting a post-construction road safety audit, identify road safety issues and make recommendations for their resolution. Enhance the PIU's capacity and awareness of international road safety standards.

Required qualifications: Degree in Civil Engineering or Highway Engineering, preferably with 6 years of experience in road construction projects financed by international financial organizations.

(xvi) **Occupational Health and Safety Specialist:** He/she will develop and implement health and safety plans and procedures, inspect workplace premises and equipment to identify potential hazards, conduct risk assessments and enforce preventive measures, train employees in health and safety, monitor compliance with health and safety regulations, investigate workplace incidents and accidents, analyze data to identify potential safety issues, prepare reports and presentations on the issues. The specialist will be responsible to the Team Leader for ensuring that all aspects of the project comply with the health and safety provisions for FIDIC contracts or similar construction works, as well as with the relevant laws and regulations of the Republic of Uzbekistan.

Required qualifications: Bachelor's degree in Occupational Health, Safety or related scientific or technical fields. 5 years of experience in coordinating Health and Safety compliance during project implementation, including road construction projects financed by international financial organizations is preferred. Knowledge of health and safety standards and best practices, understanding of relevant laws and regulations. Working knowledge of English is required.

(xvii) **Road Design Engineer:** He/she will be responsible for reviewing all detailed designs at initial stage and prior to commencement of construction works and approving them for construction. Coordinate the International Road Design Engineer in all aspects of designs and drawings. Responsible for proper development of 'as-built' drawings.

Required qualifications: Shall be a qualified Civil Engineer with minimum Bachelor's degree from a recognized university. Experience in designing highways/roads and interchanges/intersections using cement and asphalt type pavements for at least 3 projects, with minimum 12 years of relevant experience.

G. Reporting requirements and reporting schedule

The Consultant will submit reports to the EA in two hard copies in English and one hard copy each in Russian. All documents must also be provided in an electronic format agreed upon with the EA. At a minimum, this will require one electronic copy in the appropriate format and a second copy in PDF format.

All correspondence with the EA must be conducted in English and Russian.

The Consultant will submit the following reports:

- (a) **Design Review Report**, which will describe in a nutshell information clearly outlining any deficiencies, errors, inconsistencies, or potential issues identified in the designs that could adversely affect project implementation, quality, safety, cost, or construction/implementation schedule. The report shall contain detailed technical comments, recommendations, and, where necessary, proposed corrective measures. The Design Review Report shall be submitted within 40 days from the commencement of services;
- (b) **Inception Report**, which will illustrate the planning process that the Consultant has established for the assignment. It will describe the staffing and remarks of the Consultant regarding the assignment as deemed appropriate. This report will outline how the Consultant intends to implement the project, clearly differentiating between the activities for supervision of the construction. The Inception report must be submitted within 2 months from the commencement of supervision services and based on the work plan of the civil works Contractor.
- (c) **Weekly one-page Report** on the progress of work and any issues requiring immediate attention from the EA;
- (d) **Monthly Reports** to be submitted within 7 days of the end of each month, covering progress monitoring, quality assurance/quality control, contract payment schedules and variation orders, graphical data of progress against the planned agreed contract schedule, physical progress tables for key items, status of any delays, contract claims, summary of social and environmental issues with relevant photographs, details of all financial forecasts and constraints and proposals to overcome them;
- (e) **Quarterly Environmental and Social Report**. The Consultant will prepare a comprehensive report summarizing all supervision activities at the end of each quarter and not later than the 20th day of the month following the end of the report quarter, including the progress of the Contract, contract variations and change orders, ESHS and training activities, the status of Contractor claims, if any, brief descriptions of problems encountered, RAP implementation and compensation disbursement status, addressal status of grievances received in the project and other relevant information;
- (f) **Semiannual Environmental and Social Monitoring Report** will be a summary of the reports for past two quarters. The half-yearly report shall specifically focus on (a) any environmental and social non-compliance observed in the 6 month's period, (b) a corrective action plan for any non-compliance, (c) detailed summary on the functioning of the GRM and complaints received/resolved in the 6-month period, and (d) any issue raised by civil society organizations;
- (g) **Annual Evaluation Reports** covering all aspects such as progress monitoring, quality control, status of all delays, contract claims and details of financial forecasts, to be submitted within 14 days of the end of each year;
- (h) **Project Completion Report**, in the format acceptable to the WB, for submission to the EA for revision and subsequent transfer to the WB within 3 months after substantial completion of construction works.

H. Employer Contribution and Partner Personnel

The EA staff involved in project implementation will serve as a liaison between the EA, Consultants and Contractors, and will be responsible for the overall management of the project.

The EA will provide all relevant project reports, documents and other items related to the project and

partner personnel to work in close collaboration with the Consultant.

Provisions for the Consultant: The Consultant will be provided with logistical support in the form of equipment, vehicles, and office premises to be purchased under the works contracts. The Contractors will be directly responsible for these.

The logistical support will include:

- offices on the construction site, including buildings, maintenance and insurance, utilities, furniture, air conditioning, computer equipment, printers, scanners and photocopiers;
- vehicles corresponding to the number of construction supervision personnel, maintenance, taxes and insurance of motor vehicles;
- equipment, including equipment for conducting surveys and inspections;
- accommodation in the area of the construction site, corresponding to the number of construction supervision personnel, including maintenance, insurance and utilities, etc.

Annexes:

- i) Road Alignment;
- ii) ESIA, ESMP, BMP, RAP and RPF.