

## **TERMS OF REFERENCE FOR CONSULTING SERVICES FOR ENGINEERING AND CONSTRUCTION SUPERVISION CONSULTANT**

### **1. Background**

The Asian Development Bank (ADB) has assisted the Kyrgyz Republic in the rehabilitation of CAREC Corridors 1 and 3, two regional corridors important for domestic and international travel that connect economic and population centers in the country's north and south via its capital, Bishkek. CAREC Corridors 1 and 3 run (i) from west and south of the Siberian region of the Russian Federation through Afghanistan, Kazakhstan, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan to the Middle East and South Asia, and (ii) north and east from Kazakhstan to the PRC. However, the country does not have an adequate east–west connector road linking the corridors.

The CAREC Corridors 1 and 3 Connector Road will improve national and regional connectivity by rehabilitating an estimated 140 km of road sections in the center of the Kyrgyz Republic. By joining these two CAREC corridors the southern regions of Batken, Jalal-Abad, and Osh with the northern regions of Chui, Issyk-Kul, Naryn, and Talas will be linked through a faster and safer alternative route, and facilitate further access to international markets.

### **2. Objectives of the Assignment**

The Consultant, designated as the Engineer for the civil works contracts as defined in the FIDIC conditions for construction, will assist the Ministry of Transport and Roads (MOTR) of the Kyrgyz Republic, the executing agency for the Project and the Employer for the civil works contracts, in reviewing and approving the contractor's working drawings, supervising the civil works for the road sections, and ensuring compliance with road safety standards, environmental protection measures, and social safeguards.

The Investment Project Implementation Group (IPIG) of MOTR will be responsible for the day-to-day administration of the Project and the Engineer will report to the Director of IPIG and liaise with IPIG staff on day-to-day matters related to the project. IPIG staff are stationed in Bishkek and visit the site periodically for joint review of the works.

### **3. Scope of Services Tasks (Components) and Expected Deliverables**

The scope of services comprises:

- (i) review the contractor's working drawings and oversee the civil works to ensure that the quality and the completed works meet all the standards and specifications, including the environmental protection measures, set out in the works contract documents;
- (ii) ensure that all works comply with the agreed schedule and budget, terms and conditions of the contracts, standard engineering practice, and ADB's safeguards policies;
- (iii) monitor and report on progress and quality of works during the periods and times
- (iv) provide general guidance and issue instructions to contractors;
- (v) make engineering decisions in consultation with the Client, and
- (vi) advise the Client on work progress, quality control, and implementation issues,

if any.

The specific tasks of the Engineer will include, but not limited to the following:

#### **(a) Supervision and Administration**

- (i) Ensure that the construction methods proposed by the contractor for carrying out the works are satisfactory.
- (ii) Inspect contractor's construction equipment, results of material and soil tests, safety of the works, property and personnel, and schedule of mitigation measures for adverse environmental impacts. Notify contractor to remedy works and materials that fail to comply with the specifications.
- (iii) Monitor and supervise (a) progress of contractors' works vis-à-vis contract schedule, and (b) quality of contractors' works vis-à-vis applicable technical specifications and design.
- (iv) Check that 'as-built' drawings are prepared by the contractors for all works as construction progresses.
- (v) Ensure that road safety design requirements are implemented following the contract specifications.
- (vi) Develop quality assurance system and quality control plan for provisions of asphalt-concrete pavement for road and reinforced concrete for bridges.
- (vii) Implement a community targeted awareness raising campaign on trafficking and sexually transmitted diseases, as well as on road safety.
- (viii) Establish procedures to verify contractor performance and report progress and problems on time, including quality control reports, quantity survey records, requests for variation or change orders, and contractor's claims and invoices.
- (ix) Evaluate any proposed changes (e.g., time, scope and cost) by the contractor during the course of the Project.
- (x) Review and certify work volume, and process interim and final payments of the contractor. Ensure timely submission of contractor's interim payment certificates, and release of payment.
- (xi) Ensure project financial management procedures are in place and are strictly followed, specifically relating to payments, financial accounting, requests for time extension, and contractor's claims and invoices.

**(b) Documentation and Reporting**

- (i) Report and update the works implementation schedule, highlight any unforeseen delays, and timely propose corrective measures.
- (ii) Undertake project performance monitoring and evaluation<sup>1</sup> and reporting up to project completion. Collect baseline survey data based on the indicators in the project's design and monitoring framework; and measure the indicators over time during the assignment period. Design a simple MS Excel or similar system for recording the baseline and periodic data.
- (iii) Prepare and submit reports as indicated in Section F (Reporting Requirements) in this TOR.
- (iv) Develop and maintain a storage and retrieval system of records documenting information supplied by the field teams, decisions made at meetings, progress on civil works, certified achievements and milestones, financial records, any deviations from or changes to the contract plans (scope, cost, materials, time), correspondences, site diaries, test data and quality control reports, quantity survey records, as-built drawings, and progress reports.

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<sup>1</sup> Following the project framework and ADB's Project Performance Management System Handbook.

**Environmental Safeguard Supervision.** The consultant will:

- (i) undertake a cumulative assessment of the potential environmental impact of the Project;
- (ii) update the EMP detailing environmental mitigation measures to address each identified impact, and recommend appropriate environmental mitigation measures;
- (iii) assist IPIG in implementation of EMP to ensure compliance;
- (iv) assess the cost, responsibilities, schedule, location, and monitoring framework associated with the implementation of the mitigation measures and the EMP;
- (v) assist IPIG in incorporating EMP in bidding documents and bid evaluation;
- (vi) provide guidance and quality assurance in undertaking the environmental monitoring as outlined in the EMP;
- (vii) prepare a section in Project quarterly progress report on environmental safeguard compliance;
- (viii) assist IPIG in compiling semi-annual environmental monitoring reports;
- (ix) monitor compliance with environmental mitigation and management plans, contractor health and safety plan;
- (x) conduct consultation with groups to be affected by the project;
- (xi) undertake the environmental monitoring as outlined in the EMP; and
- (xii) prepare related certificates or any relevant papers or documentations.

**Social Development and Resettlement Supervision.** The consultant will:

- (i) conduct the monitoring and reporting of the land acquisition and resettlement plan (LARP) implementation, including drafting Internal and social safeguards monitoring reports in English, Russian and, if needed, Kyrgyz languages on semi-annual and annual basis to be further submitted to MOTR, ADB and disclosed upon approval/no objection;
- (ii) prepare LARP Implementation Report in English, Russian and, if needed, Kyrgyz languages for ADB and MOTR review and approval/no objection;
- (iii) regularly oversee the performance of the grievance redress system for the project and report to MOTR and ADB any project-related concerns, queries and complaints registered from the APs, local authorities and other stakeholders; assist MOTR in addressing LAR related complaints throughout the implementation of the project. This includes also developing/improving the existing Grievance Database (electronic format), that helps consolidating, tracking, collating and analyzing received grievances per type, gender of complainant, solutions, status etc.
- (iv) In the event if an unanticipated LAR impact is encountered, facilitate needed survey, consultations and preparation of LARP (as a supplementary document); and secure all requisite clearances, legal opinions, and agreements as well as compensation to APs prior to commencement of the civil works.
- (v) monitor contractor's compliance with and performance of required actions regarding HIV/AIDS, human trafficking, and labor core standards in accordance with the contract documents, such as awareness and education of laborers and workers; and

- (vi) ensure that the contractor does not involve child or forced labor in the execution of the civil works contracts in accordance with the provisions of the contract agreement.

#### 4. Team Composition & Qualification Requirements for the Key Experts

Inputs. The Client will select an international firm, in association with national consultants, to carry out the tasks in this TOR. The QCBS selection method will be used. Consulting services require a total of 94 person-months of international experts and 207 person-months of national experts, and will cover period of 48 months.

<b>i. International Experts</b>	<b>No. of Experts</b>	<b>No. of Person-Months</b>
Resident Engineer/Team Leader	1	34
Pavement and Materials Engineer	1	12
Structural Engineer	1	16
Quality Assurance Engineer	1	16
Road Safety Engineer	1	3
Contracts Specialist	1	3
Social and Resettlement Specialist	1	4
Environment Specialist	1	6
		<b>94</b>
<b>ii. National Experts</b>		
Highway Engineer/Deputy Team Leader	1	34
Pavement and Materials Engineer	1	24
Structural Engineer	1	24
Quality Assurance Engineer	1	30
Quantity Surveyor 1	1	30
Quantity Surveyor 2	1	30
Road Safety Engineer	1	4
Social and Resettlement Specialist	1	6
Environment Specialist	1	21
Hydrological/Drainage Specialist	1	4
		<b>207</b>

**Requirements for Key Staff.** The key staff should have expertise, knowledge and skills as described below:

##### **Team Leader / Senior Highway Engineer**

The team leader must have expertise in all aspects of road design and construction supervision with experience in leading a team of multi-discipline experts. The team leader will have overall responsibility for implementing the project and managing the team of consultants with expertise in bridge and road engineering, cost estimation and contract documentation, geology, traffic engineering, road safety, social development, environment, and construction supervision. He/she should be a senior engineer with preferably of 15 years of relevant experience covering road design and construction projects He should have good communication and reporting skills.

##### **Highway Engineer**

Should be familiar with the design of urban and rural highways or other major road schemes incorporating major bridges, tunnels and major grade separated interchanges, should have preferably of 5 years' experience and preferable having experience in the region. He/she should

be familiar with highway design software as well as detailed electronic designs for contract drawings.

### **Pavement / Materials Engineer**

The Pavement / Materials Engineer should be a senior engineer with university degree in his/her field, or higher with preferably of 10 years of relevant experiences in pavement design and works supervision of road projects with extensive knowledge in materials of roads and pavement and materials investigations. He/she should be familiar with international pavement design guidelines and state-of-the art pavement construction technologies. He/she should be familiar with the preparation of Contract Specifications for materials and testing.

### **Soil / Geotechnical Engineer**

The Soil / Geotechnical Engineer should have preferably 10 years' experience in geotechnical engineering and soil Mechanics. He should be familiar with local condition, slope and embankment construction, laboratory and in-situ testing, and foundation investigations.

### **Bridge/Structural Engineer**

The Bridge/Structural Engineer should be a civil engineering degree with preferably 15 years of work experience including preferably of 7 years in structural engineering, design and supervision of Construction of bridges, culverts and other structures. The Bridge/Structural Engineer should possess knowledge and skills in bridge and structural engineering, seismic retrofitting, bridge loading tests, investigations of bridge failures, bridge design review, and bridge assessment and maintenance. Shall have experience in similar geographic areas, and is proficient in both written and spoken English.

### **Hydraulic/Drainage Engineer**

The Hydraulic/Drainage Engineer should have a civil engineering degree with preferably 15 years of work experience including preferably of 7 years in hydrological and drainage engineering, and design and supervision of drainage structures. He/she should have experience in similar geographic areas and should be familiar with local condition, calculation and design methods.

### **Road Safety Engineer**

The international Road Safety Engineer should has a bachelor degree in civil engineering, road safety or related field with preferably 10 years of work experience including preferably of 5 years in implementing and monitoring road safety in road construction projects. The Road Safety Engineer should have knowledge and skills in road safety aspects in design, road safety standards, preparing a road safety and traffic management plan in road construction sites, and development of road safety campaigns. Shall have experience in similar geographic areas, and is proficient in both written and spoken English. Knowledge of local languages is an advantage, but not required.

### **Quality Assurance Engineer**

The international Quality Assurance Engineer should have a civil engineering degree or related field with preferably 15 years of work experience including preferably of preferably 7 years in quality assurances and quality control in construction works, and materials testing. The Quality Assurance Engineer should possess knowledge and skills in supervision of works, and laboratory and in-situ testing. He/she should have experience in similar geographic areas, and is proficient in both written and spoken English. Knowledge of local languages is an advantage, but not required.

### **Electrical / Street Lighting Specialist**

The Electrical / Street Lightening Specialist should have preferably 5 years relevant experience in road and street lighting design and installation.

### **Contracts Specialist**

The Contract Specialist should have preferably of 5 years' experience in the preparation of Contract Documents and Specifications for major road or infrastructure projects using FIDIC. He/she should be familiar with ADB standard bidding documents and procurement guidelines. The Contracts Specialist shall possess knowledge and skills in contractor's claims management, resolution of disputes, arbitration proceedings in any project involving FIDIC general conditions, and application of price adjustment provisions. Shall have experience in similar geographic areas, and is proficient in both written and spoken English.

### **Social Development / Resettlement Specialist**

The specialist should have a master's degree in social science with preferably 10 years of work experiences. Up- to- date knowledge of ADB's safeguards policies and procedures, particularly on social impact assessment, poverty assessment, core labour standards, land acquisition, and resettlement, and its implementation are desirable. Experiences in ADB funded projects or projects funded by multilateral agencies in the transport sector will be preferable. The specialist shall also have experience in working in multidisciplinary teams with good communication skill.

### **Environmental Specialist**

The Environmental Specialist should have preferably 10 years' experience and familiarity with all aspects of environmental management and with significant experience in environmental management and monitoring of projects, environmental assessment and/or implementation of environmental mitigation measures on construction projects. The Environmental Specialist shall also have experience in working in teams of multi-discipline experts.

## **5. Reporting Requirements and Time Schedule for Deliverables**

The Consultant shall prepare the following reports in English and Russian and distribute them in the number of copies indicated below to MOTR and ADB. The format and content of each report is to be agreed with MOTR and ADB. For each report submitted an electronic copy will be provided. Standard software shall be used for preparation of the reports.

- (i) a traffic management and road safety plan within 2 months after commencement,
- (ii) Monthly progress reports by 10<sup>th</sup> day of each following month,
- (iii) Detailed quarterly progress reports by 15<sup>th</sup> day of each following quarter, reflecting safeguard compliance,
- (iv) Semi-annual safeguard monitoring reports (environment, social and land acquisition and resettlement), during project construction, within one month after each reporting period,
- (v) Performance monitoring and evaluation reports as required under the Loan Agreement,
- (vi) Road safety audits reports at issuance of construction and traffic management drawings, at about 50% physical completion, and at preopening of the project road,
- (vii) A detailed draft project completion report at 90% physical completion and a final project completion report within 2 months after physical completion of the Project, or on an alternative date as agreed with MOTR, and
- (viii) Taking any action under a civil works contract designating the Consultant as "Engineer", for which action, pursuant to such civil works contract, the written approval of the Client as "Employer" is required.