TERMS OF REFERENCE FOR CONSULTING SERVICES
FOR DATA COLLECTION AND ESTABLISHING A ROAD ASSET MANAGEMENT SYSTEM
(RAMS)

A.   Objectives

1.   Develop the RAMS component-by-component basis supported by strong institutional development, training and data collection. The initial road network to be included will include CAREC road network in the Kyrgyz Republic. The previous efforts and data of pavement, bridges and tunnels management systems will be incorporated already from the early stage. The aim is to demonstrate the benefits of the system with smaller scale pilot.

B.   Staffing Input

2.   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 47 person-months of international experts and 144 person-months of national experts, and will take place in over a period of 36 months.

i. International Experts	No. of Expert	No. of Months
Team Leader/RAMS Specialist	1	20
Road Database Specialist	1	10
HDM-4 Specialist	1	5
Senior Data Collection Expert	1	8
Capacity Building Specialist	1	4
		47
ii. National Experts		
RAMS Specialist	1	36
GIS Specialist	1	36
Field Data Collection Expert	1	36
Data Management Specialist	1	36
		144

C.   Scope of Work

3.   The specific objectives of the assignment are as follows:

(i)   The comprehensive review of the data collection procedures, data management and usage of data as developed during the previous efforts conducted through World Bank's and JICA's assistance.

(ii)   Agree and prepare the detailed list of the roads (survey network) to be included into the data collection in co-operation with the MOTR.

(iii)   The one off Road Location Survey of the survey network, including the collection of the road, bridge and structure inventory and furniture data, road geometry, GPS and video data. The establishment of the location referencing system.

(iv)   The annual collection of pavement condition data on the survey network, including the collection of roughness, rutting, geometry, GPS, pavement distress, video data, traffic data, bridge data, and tunnel data for two years.

(v)   All associated equipment validation, data processing, compliance monitoring and reporting.

(vi)   Developing a centralized relational Road Data Base (RDB) to include all relevant information on survey network for maintenance planning in one location stored in a logical manner. The RDB must be scalable for future enhancements.

(vii)   Purchasing, installing and calibrating HDM-4[1] software as a budgeting and planning tool for the MOTR. RDB shall be used as a primary input source for the HDM-4 and special attention shall be paid to developing the interface between RDB and HDM-4.

(viii)   Establishing a Geographic Information System (GIS) to analyze and display the RAMS information.

(ix)   Training of the MOTR staff, including top management and other relevant counterparts to manage the RAMS including e.g. data collection, maintenance planning, quality assurance and data visualization after the consultancy assignment.

(x)   Providing remote support for RAMS with some visits to Kyrgyzstan after the initial establishment effort.

D.   Requirement of Key Staff

4.   The key staff should have expertise, knowledge and skills as described below.

(i)   Team Leader / Road Asset Management Specialist (International Key Expert)

The candidate shall have a Master's or higher degree in civil engineering from an accredited university, with a Professional Engineer's license or a membership in a relevant professional association. The candidate shall have relevant experience in developing road asset management systems, and road and bridge data collection. The candidate shall have preferably minimum 12 years of general experience as a project manager or a team leader. The candidate shall have preferably 10 years of the project specific experience in managing similar projects both in developed and developing countries. Regional experience of Central Asia and South Caucasus countries will be an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

(ii)   Road Database Specialist (International Key Expert)

The candidate shall have a Master's or higher degree in information technology, preferably specialized in database technology. The candidate shall have relevant experience in developing road databases and road asset management systems. The candidate shall have 12 years of general experience as a IT specialist and 10 years of the project specific experience in similar projects. The candidate shall have knowledge of HDM-4 model. Regional experience of Central Asia and South Caucasus countries will be an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

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[1] Highway Development and Management Tool.

(iii)   HDM-4 Specialist (International Key Expert)

The candidate shall have a Master's or higher degree in civil or transport engineering or information technology. The candidate shall have relevant experience in developing road asset management systems with HDM-4 model. The candidate shall have 10 years of general experience as an engineer and 6 years of the project specific experience in similar projects in developing countries. The candidate shall have in-depth knowledge of the HDM-4 software, including relevant experience of databases and developing interface between HDM-4 and database. Regional experience of Central Asia and South Caucasus countries will be an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

(iv)   Senior Data Collection Specialist (International Key Expert)

The candidate shall have a Bachelor's or higher degree in civil engineering, specialized in road construction/maintenance management. The candidate shall have 10 years of experience as a road engineer including extensive experience of road and bridge data collection and road maintenance in both developed and developing countries. The candidate shall have preferably 5 years of the project specific experience in data collection. Regional experience of Central Asia and South Caucasus countries will be an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

(v)   Capacity Building Expert (International Key Expert)

The candidate shall have a Bachelor's or higher degree in business studies, communications, marketing, psychology, organizational development or civil engineering. The candidate shall have relevant experience in capacity building and/or developing strategies for road maintenance and administration, and road management system. The candidate shall have 10 and more year general experience as a development and capacity building specialist. The candidate shall have preferably 6 years of the project specific experience in both developed and developing counties. Regional experience of Central Asia and South Caucasus countries will be an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

(vi)   GIS Specialist (National Key Expert)

The candidate shall have a Bachelor's or higher degree in information technology. The candidate shall have 10 year general experience as an IT specialist, preferably on infrastructure sector. The candidate shall have 5 year project specific experience as a GIS specialist. The candidate shall have knowledge of HDM-4 model. International experience will be considered as an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

(vii)   Field Data Collection Expert (National Non-Key Expert)

The candidate shall have a Bachelor's or higher degree in civil engineering, specialized in road engineering. The candidate shall have 10 years of general experience as a road engineer including extensive experience of road and bridge maintenance and road safety. The candidate shall have 5 year project specific experience as a data collection expert. The candidate shall have knowledge of maintenance planning and road asset management systems. Experience of tunnels and international experience will be considered as an advantage. The candidate shall be fluent in English and shall be skilled in report writing.

(viii)   Data Management Specialist (National Non-Key Expert)

The candidate shall have a Bachelor's or higher degree in information technology, preferably specialized in database engineering. The candidate shall have 5 years of experience as an IT specialist. The candidate shall have knowledge of HDM-4 model, GIS and road asset management systems. The candidate shall be fluent in English and shall be skilled in report writing.

E.   Reporting, Deliverables, and Payment

5.   The Consultant shall prepare the following reports/deliverables (recommendations, instructions, manuals for data collection / database operation / RAMS) in English and Russian languages and submit them in the numbers of copies indicated in below to the MOTR and ADB.

6. The Consultant shall provide fully licensed copies of multi-user HDM-4 software and GIS software. When commercial software for data collection and/or database management has been used, the fully licensed copies shall be submitted to MOTR.

(i)   Inception Report

Inception report shall be submitted within four weeks from the mobilization. The report shall confirm the: (i) equipment to be used, (ii) calibration certificates and validation methodology, (iii) short list of validation sections, (iv) final survey methodology, and (v) resources and updated schedules. The purpose of the inception report is to fine tune the proposed methodology specific to project conditions which were not possible to identify and/or quantify at the time of the proposal. However, the Consultant shall not reduce the scope of work and/or resources specified in their proposal.

(ii)   Calibration and Validation Report

The calibration and validation report shall be produced as a part of the equipment calibration and validation process as discussed above in the validation section. The purpose of the calibration and validation manual is to summarize the calibration and validation procedures adopted on this contract and their results. The manual shall include: (i) Description of calibration procedures adopted, (ii) Summary of calibration surveys and their results, (iii) Description of validation procedures adopted, (iv) Details of validation sites so that these sites are located easily in the future, and (v) Summary of validation surveys and their results. This report shall be submitted within the 14 days of the completion of the initial validation and no later than six weeks after the mobilization.

(iii)   Data Management Manual

The purpose of the data management manual is to provide precise, clear and consistent instructions to the data management staff. The manual shall include: (i) Procedures for audit of survey log and field notes, (ii) Procedures for receiving data from field teams including data backup and data archiving, (iii) Procedures for the audit of raw data and for its completeness, (iv) Procedures for data processing, and (v) Procedures for validating processed data. The data management manual shall be submitted within 30 days from the start of the actual surveys.

(iv)   Survey Procedure Manual

The purpose of the survey procedures manual is to provide precise, clear and consistent instructions to field team(s). The manual should at least include: (i) Description of the system installation, operation and maintenance, (ii) Description of the field data to be collected, (iii) Definition of the data, distresses and other terms used, (iv) Visual images of the pavement distresses to be recorded and their classification, (v) Contingency measures including data back up and daily post survey data processing, (vi) Daily and weekly validation checks as required by this Contract, and (vii) Format of field notes and instructions to complete field notes. The survey procedures manual shall be submitted at least 7 days before the start of the actual surveys for Client approval.

(v)   Capacity Building Report

The Capacity Building Report shall demonstrate the capacity building activities conducted during the project. The purpose of the report is to summarize the system components, including training material used, overall description of the system, lessons learned and future recommendations both from the institutional and technical development point of view. Training events and their dates and participants shall be documented. The report shall also include the description of the hands-on training conducted both in the office and on the field as well.

(vi)   Monthly Progress Reports

Progress reports shall briefly outline the progress to date and give an updated survey program at the end of each month.

(vii)   Final Report

The final report summarizes all tasks undertaken as part of the contract. This report shall contain the lessons learnt and recommendation for future data collection contracts. This report shall include a brief summary with outputs for distributing to wider community.

(viii)   Survey Data

Survey data shall include video files, raw data (2 copies) and processed data (2 copies).

(ix)   Traffic Management Plan

Traffic Management Plan (TMP) establishes the minimum requirements for traffic management that shall be implemented during the field survey operations. A generic TMP shall be developed by the Consultant and agreed by MOTR and ADB. This shall cover all aspects of the work including calibration and validation and all other field operations. The TMP shall also include work hours and details of non-working days (such as weekends and holidays). The Consultant shall provide TMP at least one week before the start of the equipment calibration and validation.

(x)   Traffic Management and Safety Database

The Consultant shall maintain a traffic management and safety database (spreadsheet or similar). This database shall include incidents, accidents and comments/issues raised by the community.

(xi)   Quality Management Plan

The purpose of the Quality Management Plan (QMP) is to detail the processes, procedures and systems to be used to ensure the integrity, accuracy and