Section 7. Terms of Reference

DESCRIPTION OF THE SERVICES

1. BACK GROUND INFORMATION

The Federal Democratic Republic of Ethiopia (FDRE) has launched Road Sector Development Program (RSDP) to enhance development objectives and the living standard of the population all over the country. The Ethiopian Roads Authority (ERA) on behalf of FDRE is implementing various road projects including new road construction, rehabilitation or upgrading of main trunk, link and rural roads to expand the Roads Network all over the country.

In line with this, the Federal Democratic Republic of Ethiopia, in accordance with its road sector strategy, intends to upgrade the Nekemte – Bure Road (~258 km) as part of the Road Sector Support Project.

The project road is located in the Oromia and Amhara Regions in western part of Ethiopia. The project is divided in to three lots as indicated below;

i. Lot 1: Nekemte-Anger Gutin-AndhodeSection (86.10 km)
ii. Lot 2: Andhode-Agamsa Section (87.65 km)
iii. Lot 3: Agamsa-Bure Section (84.56 km)

The description of the service indicated here is for Lot 3: Agamsa-Bure Section (84.55 km).

The project road, Lot-3 starts at Agamsa and passes through Abay gorge town and end at Bure town on the junction with Addis – Bahirdar Road. The most part of Lot-3 lies in Amhara Regional State in the western part of Ethiopia. Lot-3 crosses one major bridge at km 202 which is constructed across the Blue Nile River (Abay River). Except the inner Abay gorge section, the alignment of Lot-3 traverses over flat and rolling terrain till its final reach of Bure town. The existing road is gravel surfaced road having width varying from 5.5 and 7 meters.

The upgrading works will be done through Output and Performance Based Road Contract (OPRC) [Design-Build- Maintain] basis, implementation of associated environmental, safety, and resettlement plans and adverse social impact mitigation measures. The road will be upgraded to an Asphalt Concrete (AC) surfacing on a granular base course. The term of the OPRC Civil Works Contract will be for a period of eight (8) years. This consultancy assignment will be for the Improvement Works phase of the Civil Works Contract, with an expected duration of three (3) years, and will include the monitoring and supervision of the Improvement Works, Management and Maintenance Services and any Emergency Works during that period.

The Client will invite proposals at a later date for the monitoring and supervision of the remaining five (5) years maintenance phase of the Civil Works Contract. Subject to their satisfactory performance during the Improvement Works phase, firms that have provided

monitoring and supervision services during the improvement phase will be eligible to express interest for the provision of services during the maintenance phase.

The Government of the Federal Democratic Republic of Ethiopia has received a credit from the International Development Association (IDA) towards the cost of execution of Road Sector Support Project and intends to apply part of the proceeds of the credit to eligible payments for the consultancy services for monitoring and construction supervision of the works. It is now the intention of the Ethiopian Roads Authority, representative of the Government of the Federal Democratic Republic of Ethiopia, to employ a monitoring and supervision consultant for the **Nekemte-Bure Road Upgrading Project, Lot 3: Agamsa-Bure Section (84.55 km).**

2. BASIC CONCEPTS OUTPUT AND PERFORMANCE BASED ROAD CONTRACTS

The OPRC works contract covers an array of activities needed to achieve and maintain a certain Service Level for road users, including many activities related to the **Management and Maintenance** (including periodic evaluation) of the road network under contract. It can include carrying out **Rehabilitation Works** to bring the Road up to pre-defined standards, **Improvement Works** specified by the Employer aiming at adding new characteristics to the Road in response to new traffic, safety or other conditions and **Emergency Works** needed to reinstate the Road after damage has occurred as a result of natural phenomena with imponderable consequences (such as strong storms, flooding and earthquakes) under the conditions defined in the contract.

Output- and Performance-based contracting for Roads is designed to increase the efficiency and effectiveness of road asset management and maintenance. It should ensure that the physical condition of the roads under contract is adequate for the needs of road users, over the entire period of the contract which is normally several years. This type of contract significantly expands the role of the private sector, from the simple execution of works to the management and conservation of road assets.

In traditional road construction and maintenance contracts, the Contractor is responsible for the execution of works which are normally defined by the Road Administration or the Employer, and the Contractor is paid on the basis of unit prices for different work items, i.e. a contract based on "inputs" to the works. The results of traditional road contracts are in many cases less-than-optimal. The problem is that the Contractor has the wrong incentive, which is to carry out the maximum amount of works, in order to maximize his turnover and profits. Even if the work is carried out according to plan and considerable money is spent, the overall service quality for the road user depends on the quality of the design given to the Contractor who is not accountable for it. In many cases the roads do not last as long as they should because of deficiencies in the original design, aggravated by inadequate maintenance.

The OPRC as a model for road asset management is similar to Design, Build, Maintain, Operate and Transfer (DBMOT) model of contracts which addresses the issue of inadequate incentives. During the bidding process, contractors compete among each other by essentially

proposing fixed lump-sum prices for bringing the road to a certain service level and then maintaining it at that level for a relatively long period. It is important to understand that contractors are not paid directly for "inputs" or physical works (which they will undoubtedly have to carry out), but for achieving specified Service Levels, i.e., the Improvement or Rehabilitation of the road to pre-defined standards, the management and maintenance service necessary to ensure certain Service Levels on the roads under contract, all represented in outputs or outcomes, expressed in Service-Levels criteria. A lump-sum periodic remuneration paid to the Contractor will cover all physical and non-physical services provided by the Contractor, except for unforeseen emergency works which are remunerated separately. In order to be entitled to these periodic payments, the Contractor must ensure that the roads under contract comply with the Service Levels which have been specified in the works contract. It is possible that during some months he will have to carry out a rather large amount of physical works in order to comply with the required Service Levels and very little work during other months. However, his periodic payment remains the same as long as the required Service Levels are complied with.

A fundamental feature of the OPRC is that the "Contractor" need not necessarily be a traditional works contractor, but can be any type of firm or business venture "Contractor" having the necessary technical, managerial and financial capacity to fulfill the contract. In any case, the contractor is responsible for designing and carrying out the works, services and actions he believes are necessary in order to achieve and maintain the Service Levels stated in the contract. The Service Levels are defined from a road user's perspective and from a "strength of the pavement" point of view and may include factors such as riding comfort, safety features, residual strength of pavement, etc. If the Service Level is not achieved in any given month, the payment for that month may be reduced or even suspended.

Under the OPRC, the Contractor has a strong financial incentive to be both efficient and effective whenever he undertakes work. In order to maximize profits, he must reduce his activities to the smallest possible volume of well designed interventions, which nevertheless ensure that pre-defined indicators of Service Level are achieved and maintained over time. This type of contract makes it necessary for the Contractor to have a good management capacity. Here, "management" means the capability to define, optimize and carry out on a timely basis the physical interventions which are needed in the short, medium and long term, in order to guarantee that the roads remain above the agreed Service Levels. In other words, within the contract limitations and those required to comply with local legislation, technical and performance specifications and environmental and social regulations, the Contractor is entitled to independently define (within the limits indicated in the schedule of payment): (i) what to do, (ii) where to do it, (iii) how to do it, and (iv) when to do it. The role of the Road Administration and of the Employer is to enforce the contract by verifying compliance with the agreed Service Levels and with all applicable legislation and regulations. The Contractor will be responsible for the detailed design of the improvement/rehabilitation and other consequent phases included in the life-span of the project. The Contractor is not entitled to any separate payment for the design. The Design Standards and specifications shall be recommended by the Project Manager and meet at least the minimum specified design

standards. The bidder can propose higher standards if it serves better his optimal Programming to meet the contract's performance standards and residual strength requirements at the end of the contract.

The project managing triangle is composed of the Employer, Contractor and the Project Manager from the Monitoring Consultant.

Maintaining a road network includes both routine and periodic tasks. Routine Maintenance consists of many different tasks frequently necessary to maintain the function of the road (such as pothole repairs, cleaning of drainage, sealing of cracks, cutting of vegetation, etc.). Periodic Maintenance consists of predictable and more costly measures of a less frequent nature designed to avoid road degradation (such as grading, drainage work, Resealing, asphalt concrete overlays, etc.). Intelligent management, the timeliness of interventions and the adequacy of technical solutions are critical. It is expected that the use of private specialized firms under output- and performance-based contracts will unleash significant efficiency gains, and stimulate innovation in comparison with traditional road administration practices.

Minimum road conditions and Service Levels are defined through output and performance measures, and these are used under the OPRC to define and measure the desired performance of the Contractor. In the OPRC, the defined performance measures are thus the accepted minimum thresholds for the quality levels of the roads for which the Contractor is responsible.

The performance criteria should ideally cover all aspects of the contract and take account of the fact that different sub-areas within the contract area might require different Service Levels. Criteria can be defined at three levels (although simpler contracts will not use all of the criteria identified below):

(a) Road User Service and Comfort measures, which can be expressed in terms such as:

- Road Roughness
- Road and lane width
- Rutting
- Skid resistance
- Vegetation control
- Visibility of road signs and markings
- Availability of each lane-km for use by traffic
- Response times to rectify defects that compromise the safety of road users
- Attendance at road accidents
- Drainage off the pavement (standing water is dangerous for road users)

(b) Road Durability measures, which can be expressed in terms such as:

- Longitudinal profile
- Pavement strength

- The extent of repairs permissible before a more extensive periodic maintenance treatment is required
- Functionality of drainage facilities

(c) Management Performance Measures, which define the information the Employer requires both to govern the asset during the term of the contract, and to facilitate the next tender round. Requirements should include:

- Delivery of regular progress reports to the Roads Authority
- Inventory updates and other data sharing requirements
- Maintenance history (so subsequent tenders can price the work)
- Compliance with social and environmental standards.

Together the performance measures define the minimum acceptable Service Level for the particular road. In setting the measures various criteria (both technical and practical) need to be carefully considered, such as (i) traffic volume and composition, (ii) urban vs. rural roads (iii) flat, hilly or mountainous terrain, (iv) subgrade quality and type, (v) quality of available construction materials, (vi) capacity of available contractors, (vii) any environmental constraints, such as protected areas, parks, forest reserves, etc. However, probably the most important criterion is the question of what Service Level can be afforded and economically justified for the road in question.

Under the terms of the contract, the Contractor will also be responsible for the continuous monitoring and control of road conditions and Service Levels for all roads or road sections included in the contract. This will not only be necessary to fulfill the contract requirements, but it is an activity which will provide him with the information needed to be able (i) to know the degree of his own compliance with Service Level requirements, and (ii) to define and plan, in a timely fashion, all physical interventions required to ensure that service quality indicators never fall below the indicated thresholds. Under the OPRC model, the Contractor will not receive instructions from the Employer concerning the type and volume of road maintenance works to be carried out. Instead, all initiative rests with the Contractor who must do whatever is necessary and efficient to achieve the quality levels required. This concept is expected to lead not only to significant efficiency gains, as mentioned earlier, but also to technological innovation.

The beneficiaries of the new concept are expected to be the road users, the Road Administration, and the contractors or other private sector enterprises. In a wider sense, future generations will be able to benefit from a better preservation of past investments in roads. Road users will be able to know the Service Level they can expect in return for the payments they make for the use of the infrastructure (tolls, tariffs, user fees, taxes, etc.). The Road Administrations should benefit by obtaining better overall road conditions at the same levels of expenditure. For contractors and other private sector enterprises, the new type of contracts should open up new business opportunities, in which longer contract periods provide a more stable business environment, and for the establishment of true Public-Private Partnership relations. However, it may be the future generations who will perhaps benefit

most, since they will not have to pay for the reconstruction of roads destroyed because of a lack of maintenance today.

Output and Performance-based Road Contracts as the model for road asset management transfers a significant burden of risk onto the contractor. It is important that this burden is both equitable and within the capacity of the industry. The contract defines the risk profile carried by the contractor arising from storm events, legislation changes, changes in traffic volumes, and roadside development.

Some emergency works should always be foreseen. Those are meant to remedy unexpected damage which occurs as a result of extraordinary natural phenomena, and which affect the normal use of the road network, or the safety and security of the users. For emergency works, the contract limits the responsibility of the Contractor, establishing that the Employer will approve execution of services and separate remuneration based on specific amounts proposed by the Contractor for each case, on the basis of volume of works estimated at each time and on unit prices included in the bid and in the contract.

Contractors bidding for the OPRC civil works contract will present their financial offer for:

- The **Management and Maintenance Services** in the form of the amount of the monthly lump-sum payment demanded by the bidder according to the conditions of contract (this will be a monthly amount applicable throughout the duration of the contract);

- The **Rehabilitation Works** (if so required in the Bid Data Sheet), in the form of a lump-sum amount, while indicating the quantities of measurable outputs to be executed in order that the road achieves the performance standards specified in the works contract. Payments will be made in accordance with the progress in the execution of those measured outputs;

- The **Improvement Works** in the form of a lump-sum amount for the detailed design, road improvement works, structural and associated ancillary works; payments for improvements will be made in proportion to the length of the road constructed in two stages, (i) to the top of sub-base and (ii) for all works completed, as a pro-rata of the total lump-sum amount for the improvement works; and

- Unit prices for **Emergency Works** in the form of a traditional bill of quantities. Payments will be made for each emergency on a case-by-case basis, in the amount of a lump-sum value estimated by the Contractor and approved by the Employer, on the basis of the estimated quantities and on the quoted unit process.

There is also a price adjustment clause applicable to all prices and activities in order to compensate for increases in cost indices.

The agreed monthly/periodic payment for maintenance works and services will be made to the Contractor if he has complied, during the month for which the payment is to be made,

with the agreed Service Levels on the road network under contract. Together with his Periodic Payment Report, the Contractor will report the result of his own evaluation of compliance with the required Service Levels, based on his own monitoring system which is mandatory. His statement will then be verified by the Employer or his representative (supervision/monitoring consultant) through inspections. If the Service Levels are not met, payments are reduced, based on a schedule given in the contract, payments may even be suspended, and the contract cancelled, if the contractor fails during an extended period to achieve certain minimum thresholds values of Service Levels. The contract describes the formulas used to calculate payment reduction and potential contract suspensions.

3. OBJECTIVES OF THE SERVICE

The Ethiopian Roads Authority wishes to employ a Consultant to assist with the monitoring/supervision of the improvement works phase (initial three years) of an Output- and Performance based Road Contract (OPRC) covering about 86.10 km of road (improvement/rehabilitations is envisaged) including the regular assessment of the Contractor's performance and recommendations to the Client on non-compliance issues. The Consultant will perform the role of Project Manager as defined in the OPRC works contract, being responsible for the overall administration of the Contract on behalf of the Employer, and the supervision of works and services to be performed thereunder.

The term of the OPRC Civil Works Contract will be for a period of eight (8) years. The existing road under the OPRC project includes unpaved roads sections in differing conditions. The road sections will require different treatments/interventions at different times depending on their conditions, level of service requirements and associated costs; with the Contractor carrying out required interventions (improvement and maintenance) in order to achieve the pre-determined level of services during the entire contract period.

In order for the Consultant to fully understand the requirements of the present TOR, it is essential that he has a detailed understanding of both the concepts and operational implementation of Output and Performance-based Road Contracts in general and specifically the implementation of these new contract models.

4. SCOPE OF THE SERVICES

The Consultant shall provide consultancy services for the administration and monitoring of the asset management civil works contract (including, detailed design, improvement works and maintenance of the road before and after completion) as described hereinafter, including the provision of qualified, experienced personnel, management, co-ordination and the efficient execution of these services.

The Consultant shall be responsible for monitoring: the accomplishment of the schedule programmed and presented by the Contractor, the Contractor's fulfillment of the levels of service required for roads, bridges and ancillary items for the improvement works and management and maintenance services, and the review and recommendation for approval or

amendment of all designs and contractual submissions, including the Resettlement Action Plans, Environmental Impact Assessments, Social Impact Assessments, and Environmental and Social Management Plans proposed by the Contractor. The Consultant shall evaluate the whole-life cost effectiveness of designs presented by the Contractor.

The Consultant shall also be responsible for managing the Quality Assurance of the roads and bridges and monitoring of the quality control of the Contractor, monitoring and approval of the Data Collection Reports submitted by the Contractor, review and approval of the quarterly billing presented by the Contractor, including recommendations for deductions from payments due to the Contractor in cases of non-compliance with the required levels of service. This shall be done in cooperation and consultation with the Client and the **Consultant shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract.** The Consultant shall not order works entailing delays or any extra payment by the Client without the authority of the Client.

During and immediately after the Start Date of the works contract, the Contractor will undertake to maintain all roads under the project according to the requirements contained in the Bidding documents for Procurement of Contract under Output and Performance Based Road Contract (OPRC) (Asset Management Contract) for Design and Rehabilitation/ Improvement Works; Section VI. Specifications-Contract Works, Item 13: Road Usability, Road User and Management Performance Measures.

The Consultant is expected to review and become thoroughly familiar with the bid and construction documents for application under an OPRC environment.

The services are Monitoring of Performance during Mobilization, Design, Improvement, and Rehabilitation Stage, which are described below but not limited to the following:

A. Responsibilities of the Project Manager

The Project Manager is responsible to carry out all duties assigned to the Project Manager under the Contracts, including, but not limited to:

i. recommending the Contractor's subletting parts of the work;
ii. recommending the replacement of any of the Contractor's Key Personnel;
iii. recommending approvals for the Contractor's insurances;
iv. clarifying any queries on the Contract Data;
v. recommending the proposed centre-line reference levels for the roads as proposed by the Contractor;
vi. recommending approvals of the Contractor's programme and updates thereof;
vii. issuance of Work Orders in respect of the Improvement Works;
viii. extending the dates for achieving compliance with Service Level Criteria if warranted by the occurrence of unforeseen events or by the issuance of changes to the contract;
ix. attending contract Management Meetings and recording the proceedings thereof;

x. checking the Contractor's work, notifying the Contractor of any defects found and requesting additional testing as considered necessary;
xi. monthly verification of Service Levels achieved in relation to maintenance services for performance evaluation purposes;
xii. checking the Contractor's payment requests and recommending for the amounts due to be paid to the Contractor, including any applicable payment reductions. and noting that payments for Improvement Works shall be conditional on compliance with the Environmental and Social Management Plan;
xiii. responding to requests for contract changes as made by either the Contractor or the Client;
xiv. assessing quotations provided by the Contractor for carrying out variations and instructing variations and issuing Work Orders for additional Improvement Works after approval by the Client;
xv. determining the justification for Emergency Works and the issuance of Work Orders in respect thereof;
xvi. Provide written decisions within a reasonable time, on all claims, disputes and other matters in question relating to the design, execution or progress of work or the interpretation of the contract documents;
xvii. recommending the completion of the works and issuance of Certificates of Completion and Taking Over Certificates;
xviii. recommending the payment due upon termination of the contract;

B. Mobilization and Design Period

- **Contract Preliminaries**

a. The Consultant shall review the qualifications of the proposed key management personnel of the Contractor and make appropriate recommendations to the Client;
b. The Consultant shall receive from the Contractor, check for compliance with contract requirements and make recommendations on all performance bonds, insurance certificates or policies and guarantees relating to the contract, before submitting them to the Client for acceptance.
c. The Consultant shall assist the Client with the review of Contractor's Quality Assurance Manual which will contain, among others, Method Statement for each item of work, flow diagram depicting the self control mechanisms to deliver the work in compliance with the specifications, procedure for rectifying defective works, forms for laboratory and field tests, Request for Inspection and other related forms.
d. The Consultant shall review the Quality Assurance Plan (CQAMP) and other Quality Management Systems as stipulated under Section VI Specifications-Contract Works: Item 11, Quality Management Systems of the Civil Works Contract. It must clearly describe the systems, procedures and methods to be implemented by the Contractor and verified during contract period, in order to achieve the engineering parameters, which will be used to deliver/monitor compliance to the specified requirements and service levels of the work described by the technical specifications and quality standards.

e. The Consultant will review the Contractor's Traffic Management Plan including at least a documented process for preparation, review and approval of the Traffic Management Plan, layout diagrams, method statements, control measures, etc.
f. The Consultant will review the Health and Safety Management Plan and Emergency Procedures and Contingency Plan presented by the Contractor during the first 60 days after the Start Date.
g. The Consultant shall develop (together with the Contractor) contingency plans for necessary protection/diversions or otherwise and incorporate safeguards to protect the existing services against damage or destruction during construction.

- **Works Programme**

The Contractor is required to submit his work program to the Client. The program shall assist the Project Manager in monitoring the Contractor's progress and his future planning. This program shall form the basis of the assessment of any applicable extensions of time and effect of delays on the completion of work activities. These programs must indicate all milestones required to be met during the contract period as stipulated under Section VI; Specifications – Contract Works, Item 7.1: General, of the Civil Works Contract.

The Consultant shall:

a. Verification and agreement to the Program of Performance to be provided by the Contractor no later than his Start Date under General Conditions, that shows the proposed sequence in which the Contractor will design and carry out the Works and Services.
b. Review the programmes submitted by the Contractor for the execution of the Works as per Section VI; Specifications – Contract Works, sub-item 7.4: Program Development; sub-item 7.5: Acceptance of Programmes; sub-item 7.6: Forward Works Program; sub-item 7.7: Non-Compliance of the Civil Works Contract to ensure that the Contractor is able to meet the required Service Levels within the timeframes defined in the contract,
c. Review the Contractor's work plan and work method statements for carrying out the design, improvement, construction and rehabilitation activities and requirements in relation to the rate of progress and recommend the modification of the program accordingly,
d. Ensure that adequate time is provided in the Contractor's programmes to allow for design preparation, review and approval, updating, reviewing, approving and implementing Resettlement Action Plans, and for the relocation of utilities,
e. Identify from the approved programmes the information needed (if any) by the Contractor for the execution of the Works and ensure that such information is made available to the Contractor in a timely manner,
f. Draw to the attention of the Client, any risk of delay in meeting the approved programmes.

- **Design of the Works**

Although the Contractor bears ultimate responsibility for the design of the works, the Consultant is required to agree and recommend for approval of the design by the Contractor to assess whether, once achieved, such levels will be adequate to ensure the long term durability and stability of the road

- The Consultant is required to review and make recommendations to the Client for acceptance on all of the Contractor's design submissions including pavement designs and assessments, structures and all the road furniture design to be provided by the Contractor within a period not exceeding 14 days following receipt. These reviews shall take into account the basis for the option selected, implication of the proposed design life and its impact upon the 8 years life span of the project and design period of 15 years.
- The Consultant shall agree with the Contractor a list of all design submission that are required in accordance with Section VI – Specifications for OPRC, and check that all submissions are received and duly approved.
- The Consultant shall liaise with the Contractor to resolve any issues as quickly as possible, providing interpretations as necessary for the proper execution and progress of work. The Contractor shall not commence works prior to receipt of approval from the Client.
- The Consultant shall check the control points established by the Contractor, so that road levels can be accurately checked against the reference values during the course of the contract. In doing this, the Consultant shall:
    - Check all alignment and elevation control provided by the Contractor;
    - Check all setting out of the works undertaken by the Contractor; and
    - Carry out checks on centerline levels twice per year at times determined by the Project Manager during the course of the contract, to establish compliance with the tolerance given in the Service Level criteria.
- The Consultant shall carry out Road Safety Audits of the Contractor's road improvement designs. Road Safety Audits will be conducted by a qualified and experienced Road Safety Auditor at four stages during the Contract: Stage 1 - preliminary design; Stage 2 - completion of the final design; Stage 3 - substantial completion of construction prior to opening the road section to traffic, and Stage 4: road crash monitoring 12 months and 36 months following opening of the road to normal traffic operations.
- Review and recommendation for approval (either in total or part by part) of the detailed designs for Improvement Works (new construction) and rehabilitation, in accordance with this Contract document including the review of detailed specifications and drawings for compliance with the Civil Works Contract documents; Section VI. Specifications-Contract Works, Appendix 3 Specifications. The Consultant will verify all required rehabilitation/ improvement details with associated drawings necessary for the rehabilitation/ improvement, prior to commencing of any part of the related Works. The detailed designs will be based on the need to implement all activities to achieve the engineering parameters/service levels specified in the Contract documents. The Consultant shall verify the compatibility of the designs at the interfaces between adjacent contracts, and shall liaise with ERA and their consultants in this regard. Once

design documentation has been accepted, the Project Manager will sign and stamp "Released for construction" on the final signed drawings in accordance with Section VI – Specifications for OPRC.

- The Consultant shall provide responses, to be coordinated and agreed with the Client, to the Contractor's submissions within the time for review specified in the Works Contract, with due allowance made for review by the Client. The consultant shall be responsible for the mobilization of sufficient technical resources to allow completion of these reviews.
- The Consultant shall prepare and submit a Performance Program no later than the start date. The Program will show the sequence for design proposal submissions, as presented by the Contractor in which he will design and carry out the Works and Services, their review by the Project Manager and recommendation for approval. It is important to note that during this period, the program for the main activities or stages of this Contract shall be coordinated with the Contractor's programs as per Section VI; Specifications- Contract Works, Item 4.2: Scheduling of Improvement Works and Chapter 7: Programming of Works of the Civil Works Contract (Lot 3: Agamsa-Bure Section (84.55 km)).

➢ **Relocation of utility services and removal of encroachments**

- Review, comment on and recommend for approval the Contractor's Resettlement Action Plans (RAPs), ensuring that it complies with the Resettlement Policy Framework (RPF)and Social Impact Assessment (SIA)documents prepared for the project.
- In conjunction with the Contractor and Client, the Consultant will make a survey of existing utility services and encroachments within the right-of-way (ROW) and liaise closely with the responsible authorities concerned regarding any proposed relocation of such services. Detailed plans and proposals will be drawn up for their relocation only if the scope of the Contract is adversely affected. All official dealings with any service agency shall be done through the Client.
- Where practical, the Consultant will assist the Contractor in ascertaining from the relevant service authorities, the layout and nature of existing services, both over-ground and under-ground and together shall develop contingency plans for necessary protection/diversions or otherwise and incorporate safeguards to protect the existing services against damage or destruction during construction.
- The Consultant shall support the Client during the implementation of the RAPs to ensure compliance with all requirements of the Resettlement Policy Framework.

➢ **Environmental and Social Management Plan**

- The Consultant shall assist the Contractor to provide a Detailed Environmental and Social Management Plan (ESMP) of the project road with a timeframe for actions to be taken. The ESMP should be prepared in line with ISO 14001 requirements with specific management plans for all major work sites. The ESMP should cover management of

environmental and social safeguards, the general STD and HIV/AIDS alleviation campaign and operational health safety requirements.

- The plan should be reviewed by the Consultant and then submitted to ERA for finalization prior to the commencement of any construction works, and shall be updated as required during the construction phase. The plans shall confirm and reflect (those actions identified in the EIA and in the environmental mitigation plan, and RAP and also strictly consider the actual situations at the construction sites) and recommend necessary mitigation measures.
- The Environmental and Social Management Plan (ESMP) should contain, but not be limited to, the following issues; (1) detail description of the adverse environmental and social impacts, and recommended mitigation measures, (2) specific time of the actions to be taken, (3) assignment of responsibilities for plan implementation, (4) programs for monitoring the agreed targets, (5) reporting, Audit & review procedures, and grievance procedures.

C. Improvement and Rehabilitation Period

- The Consultant shall evaluate the Contractor's achievement of the levels of performance during these stages according to the requirements contained in the contract documents for Design, Improvement Works and Management and Maintenance Services for the Nekemte-Bure Road Upgrading Project, under an Output and Performance Based Road Contract (OPRC) (Design-Build-Maintain) for Lot 3: Agamsa-Bure Section (84.55 km) (hereafter referred to as the Civil Works Contract); Section VI. Specifications-Contract Works, Appendix C1- Technical Specifications and other approved specifications prepared as part of the Contractor's design.
- The Consultant shall verify all the survey ground control stations which have been established during design stage, verify the accuracy of the survey stations and advise the Contractor to re-establish any out of position, damaged or missing stations.
- Survey data verification: for centerlines, structures, earthwork setting out, invert level and alignment of underground utilities, kerbs, walkways, covers, gratings and control bench marks. Sufficient topographical survey data will be checked to ensure complete compatibility with Contractor's working drawings.
- Materials survey verification: Conduct joint examination of quarry sources and borrow pits and witness field and laboratory tests for verification with the specified qualities.
- The Consultant shall inspect and measure all level of service achieved and recommend the application of penalties, payment reductions, liquidated damages or bonds (guarantee) for any non-compliance with the requirements.
- The Consultant shall review that the compliance with any service level criteria is according to the variations and gradual compliance during improvement and rehabilitation stages.
- The Consultant shall liaise with ERA and their consultants to coordinate construction activities at the interfaces between adjacent works contracts.

- Conduct systematic verification and inspections of Service Levels achieved in relation to maintenance services on the un-improved road and temporary diversions for performance evaluation purposes;
- The Consultant shall monitor the financial, administrative and environmental aspects in addition to technical specifications.
- The Consultant will review and check the Contractor's Payments applications and after verifying compliance with the payment schedules, the absence of arithmetical errors, the accuracy of the measurement and the sufficient of the supporting documentation, including accounts, invoices, claims and other statements;, prepare and issue interim payments certificates for processing by the Client.
- The Consultant shall review and analyze all the Contractor's applications for extensions of time or claims and furnish the Client with the Engineer's detailed analysis of such applications and recommendations and, subject to the Client's approval, advise the Contractor accordingly.
- Organize and conduct monthly site meetings and such special purpose meetings organized as necessary for monitoring of implementation of the contract, including traffic management by the Contracting Entity as stipulated under the Civil Works Contract Section VI: Specifications-Contract Works, Item10 : Traffic Management, relocating utilities, removal of obstructions and encroachments by the Contractor as and when needed.
- Ensure all environmental and social issues are included on monthly meeting agenda, and that these points are addressed at the meetings.
- Confirm proper implementation of environment impact mitigation measures in accordance with the Environmental and Social Management Plan prepared by the Contractor, and that they are in compliance with the requirements of the Environmental and Social Impact Assessment (ESIA), Resettlement Policy Framework (RPF), Environmental Impact Assessment (EIA) and Social Impact Assessment (SIA)documents prepared for the project, and the relevant Environmental Protection Authority.
- Confirm implementation of the Resettlement Action Plan in accordance with the Resettlement Policy Framework prepared and disclosed for the project and related Federal Democratic Republic of Ethiopia Policies with the assistance of the Client.
- Recommend for approval action required by the Traffic Action Plan presented by the Contractor (e.g. Notification of the Public through mass-media and television) for smooth progress of the works and for minimal disruption to traffic and advise the Client on the actions required to notify the road user about these planned actions.
- Assist the Client in resolving any claim or dispute as the result of the contract and to make recommendations thereon, including possible recourse to the Disputes Resolution Expert (DRE).
- Review the work program of the Contractor as amended from time to time.
- Submit requests from Contractor to the Client for extension of the dates for achieving compliance with Service Level Criteria when warranted by the occurrence of unforeseen events or by the issuance of changes to the contract;

- Monitor the Contractor in all matters concerning safety and care of the Works and if required to request from the Contractor the necessary lights, guards, traffic control measures, dust suppression, fencing and watching required in this regard;
- Direct the Contractor to carry out all such work or to do all such things the Project Manager considers necessary to avoid or to reduce the risk in case of an emergency affecting the safety of life or of the Works or of adjoining property;
- Review of technical proposals, specifications and rates and prices quoted by the Contractor for items under any "Provisional Sums", variations or Changes in Contract Elements, make recommendations concerning acceptance to the Client and prepare any Work Orders.
- Recommend for approval of "as built" drawings of the complete Works presented by the Contractor.
- Shall carry out seven day Traffic and Axle load surveys on a yearly basis in accordance with ERA standard procedures.

- **Modifications**

The Consultant shall:

a. Consider and evaluate proposals for modifications to the Concept Design, or to drawings or specifications, whether originating from the Client or the Contractor, and report findings on them to the Client with recommendations;
b. Examine the proposals for changes and provide recommendations to the Client for approval when changes affect cost. Changes which do not affect cost or quality may be approved on-site and recorded in the monthly progress reports. Such changes shall be effected by written orders issued by the Consultant.

- **Road Management and Maintenance, Road Usability, Road User and Road Durability Performance Measures**

In addition to the verification of the Improvement Works, the Monitoring Consultant shall verify the following road performance measures. If faults or deficiencies are noted, the Consultant must inform the Contractor in writing as soon as possible.

- Management and Maintenance Performance Measures as stipulated under Section VI; Specifications- Contract Works, Chapter 5.3 of the Civil Works Contract.
- Road Usability, Road User and Management Performance Measures as stipulated under Chapter VI; Specifications Contract Works, Item 13 of the Civil Works Contract.
- Road Durability Performance Measures as stipulated under Section VI; Specifications Contract Works, Chapter 14 of the Civil Works Contract.

D. Improvement and Rehabilitation Works Quality Management

The Consultant shall recognize that the Contractor is responsible for his own designs which must be reviewed, commented on and recommended for approval by the Consultant. Since the liability rests fully with the Contractor, the Consultant may only suggest necessary

improvements to meet the level of engineering specifications/specified level of service conditions. The remedy for noncompliance, if the specifications/service levels are not met, would be that the payment to the Contractor will not be made or part of it will be deducted.

The following represents (but not limited to) typical tasks to be undertaken by Consultant to be carried out during improvement/rehabilitation works:

a. Check the quality of materials and construction and verify compliance to all specified requirements through intermittent random testing and inspection of the Works as is specified in the Civil Works Contract Section VI; Specifications, sub- item11.2: Contract Quality Assurance Management Plan (CQAMP).
b. Verify the laboratory equipment used by the Contractor is sufficient and suitable for ASHTO 27th edition/American Society for testing and Material volume 4 of 2001 (ASTM) tests.
c. Check setting out of works and recommend for approval.
d. Review and recommend for payments to the Contractor.
e. Verify and recommend for approval of all the reporting specified under the Civil Works Contract Section VI; Specifications-Contract Works, under Item 15: Reporting. The verification and recommendation per each report shall reach the Client in due time after submittal of each report by the Contractor.
f. Verify compliance of Environment and Social Management Plan to the extent relevant in the construction contract as per the Civil Works Contract Section VI; Specification- Part – B: Specifications for Environmental and Social Management.
g. Verify the completed works as stipulated under the Civil Works Contract Section VI; Specifications- Contract Works, Item 12: Measurement and Inspections.
h. Hold annual meetings with representatives from the Client, Contractor and road users in the project areas to discuss the impact of the project on operating conditions so as to determine the appropriateness of service level criteria and any modifications to the contracts that may need to be considered for future OPRC projects;
i. The Consultant shall give advice and assistance to the Client on any issue relating to changes to the contract and services required in relation to any litigation or arbitration related to the conduct of the works;
j. Specialized technical advice or services related to any abnormal aspects or circumstance related to the works;
k. Additional surveys, special inspections and/or tests, where required;
l. Review of claims submitted by the Contractor during the construction period whose resolution was not accomplished during this period due to factors beyond the control of the Consultant, or claims of such complexity or extent that could not be evaluated during the construction period with the estimated manpower on hand.
m. Prepare the following reports: Inception Report, Annual Work Program Report, Design Review Report, Contractors' Mobilization Report, Monthly Progress Report, Quarterly Progress Report, Annual Progress Report, Final Design Review Report, Periodic Payment Report, Consultancy Completion Report, Consultant's Quality Assurance Manual, Environmental Management Report, and Special Report as detailed in item 12 (Reporting

Requirements and Time Schedule for Deliverables to be prepared by the consultant) below.

For verification of the of level of service during design, improvement/ rehabilitation and management and maintenance services, the Consultant shall follow the procedure established in the relevant sections of the Civil Works Contract.

E. Special meetings

The Consultant shall:

a. Arrange a schedule of management meetings, site inspections and other job conferences in liaison with the Client and Contractor and notify those expected to attend. In arranging these meetings, he is expected to maintain and circulate minutes thereof;
b. Maintain liaison with the Contractor - principally through the Contractor's Road Manager, and give assistance in the understanding and interpretation of all aspects of the contract documentation; and
c. Work closely with Client staff to ensure that as much knowledge, skills and experience is imparted to staff. This will be achieved through regular communication and meetings. The Consultant will be expected to make presentations to explain the systems and procedures established on site for measuring the Consultant's performance and general contract management.

F. Records

The Consultant shall:

a. Maintain at the project site orderly files for correspondence, reports of site meetings, product and material submissions, reproductions of original contract documents including all addenda, variation orders, site instructions, information and drawings issued subsequent to the start of works contract, as well as Consultant's clarifications and interpretations of the contract documents, Contractor's draft, approved and revised design submissions, records of performance inspections, payment certificates, details of claims, progress reports and other related documents;
b. Keep a diary or log book, recording Contractor's hours on the job site, weather conditions, availability and utilization of plant, data relative to questions of extras or deductions, list of visiting officials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and
c. Maintain a set of drawings ("as-built" drawings) recording all details of the work as actually executed with reference to chainage along the roads.

G. Inspections to be carried out by the Monitoring Consultant

In addition to the services described above, the Consultant shall:

a. Undertake or participate in contract inspection as stipulated under Section VI; Specifications- Contract Works, Chapter 12: Measurement and Inspections; Item 12.2: Inspections for Environmental and Social Assessment; Item 12.3: Inspections of Road Usability and Road User Service Levels; Item 12.4: Inspections for Confirming Damage; Item 12.5: Inspections to Addressed Complaints; Item 12.6: Monthly Combined Inspections; Item 12.7: Inspection of Service Levels by the Project Manager; Item 12.8: Inspections at Substantial Completion of Improvement Works; Item 12.9: Inspections at the End of the Contract, and Item 12.10: Inspections to be carried out by Independent Auditor.
b. Verify completeness and construction quality of all improvement/ rehabilitation, Network Performance (routine maintenance), Periodic Maintenance\Resealing and Emergency works prior to any payment request certification.
c. The Consultant will undertake specific inspections where the Contractor's conformance management system audits identify areas of repeated non-conformance.
d. Monitor the Contractor's progress and performance pertaining to ESMF/EMP compliance.
e. The Consultant must inform the Contractor of his intention to carry out a formal inspection at least 24 hours in advance, indicating the exact date, hour and location where the formal inspection is to begin. The Contractor is obliged to be present at the date, hour and location specified by the Consultant, providing the physical and technological means needed for the inspection where necessary.
f. The Consultant will inform the Contractor in writing on specific issues of concern or actions to be undertaken that have arisen from these inspections as soon as practicable following the inspections.

H. Review of Payment Certificates

The Consultant shall review applications for payment made by the Contractor in accordance with the Conditions of Contract. Upon review and verification, and within a maximum of two weeks of receipt from the Contractor, the Consultant shall forward four (4) copies of the applications to the Client together with recommendations regarding payment. The Client shall then approve the applications taking into account the recommendations made by the Consultant and arrange for payment to be made.

The Consultant shall ensure that applications properly account for payments due to the Contractor for:

i. Improvement/Rehabilitation Works
a. The Payment shall be made as stipulated under the Schedule A of Appendix II to the Financial Bid and Section VI; Specifications Contract Works, Item 16.3: Payments for Improvement Works for the Civil Works Contract (Lot 3: Agamsa-Bure Section (84.55 km)).

b. Payment for Improvement/Rehabilitation Works shall be made based upon the staged completion of assessed centerline kilometers claimed by the Contractor and verified by the Project Manager, and shall be conditional on compliance with the Environmental and Social Management Plan. Verification includes all required post construction testing.

ii. Management and Maintenance Services

a. Payment shall be made in accordance with the Schedule Bin Appendix II to the Financial Bid and Section VI; Specifications- Contract Works, Item 16.5: Payments for Management and Maintenance Services Network for the Civil Works Contract (Lot 3: Agamsa-Bure Section (84.55 km)).

iii. Emergency Works

a. Payment shall be made as stipulated under the Schedule C in Appendices to the Financial Bid and Section VI; Specifications- Contract Works, Item 16.6: Remuneration for Emergency Works of the Civil Works Contract (Lot 3: Agamsa-Bure Section (84.55 km)).
b. Where items of Emergency Work carried out by the Contractor are not covered under the Bill of Quantities rates then the work will be valued as provided for under GC Clause 63.2.4.
c. Quantities of Emergency Works that fall below the thresholds given in Section VI; Specifications- Contract Works, Item 6.7 shall be deemed to be included under the Contractor's normal obligations for maintenance works and no additional payment under Emergency Works shall be made in such cases.

iv. Payment Reductions for Non-Compliance and Liquidated Damages

a. Payment Reductions are applied in case of non-compliance with Service Level requirements, while Liquidated Damages are applied in the case of non-compliance with required Improvement/Rehabilitation works. The Consultant shall review and evaluate the liquidated damages and or determination of payment reduction and recommend to the Client the amounts to be deducted from payments and the procedure to follow.
b. **Liquidated Damages** are applied in the case of non-compliance with required Improvement/Rehabilitation/periodic maintenance works as stipulated under Section VII; General Conditions, clause 39.3 and Section VIII; Particular Conditions, clause 39.3 of the Civil Works Contract (Lot 3: Agamsa-Bure Section (84.55 km)).
c. **Payment Reductions for non-compliance** are applied in case of non-compliance with Service Level requirements as stipulated under Section VI; Specifications- Contract Works, Chapter 17: Payment Reductions; Item 17.4: Payment Reductions for Road Usability and Road User Non-Compliances, 17.5: Payment Reductions for Road Durability Non-Compliances, 17.6: Payment Reductions for Management Services Non-Compliances of the Civil Works Contract (Lot 3: Agamsa-Bure Section (84.55 km)).

I. Training

The Consultant will contribute actively to the learning process of Government staff and the personnel of Contractor in the technical aspects of the OPRC contract and the use of database and document management systems. This aspect constitutes an essential element of the consultant's assignment, and should be complied with through the organization of formal training sessions and workshops. All the associated costs required for annual meetings, formal training sessions and workshops shall be covered from the Provisional Sum (PS) amount indicated under Item (b) of Section 4: Financial Proposal - Standard Forms, 2. Form FIN-2 Summary of Costs.

The Client will assign up to 2 (two) technical staff/Engineers that will follow all the stages of the Project. Such personnel will have to be trained by the contracted monitoring consulting firm. These personnel will be trained "on-the-job" through transfer of technological knowledge on the main functional characteristic of the project process. The Counterpart Engineer's facility shall be shared with the 2 (two) technical staff/Engineers.

5. LIAISON WITH ERA

The Consultant shall maintain close liaison with a project Counterpart Engineer to be designated by ERA. A formal joint meeting shall be arranged by the Consultant at least once a month to facilitate monitoring of the services; the Consultant is also responsible for the formal minutes of such meetings. The Counterpart will convene these meetings. The consultant shall nominate a project coordinator for this purpose.

6. ADDITIONAL RESPONSIBILITIES OF THE CONSULTANT

The Consultant shall undertake full time project administration during the course of the contract and shall appoint an authorized representative(s), Project Manager, key professionals and other staff acceptable to the Client for the continuous monitoring of the Contract. The Project Manager and staff shall have the responsibility to duly perform the above listed tasks in Item 4 (Scope of the Services).

The provisions of the Services are all to be executed in Ethiopia, with the sole exception of: (a) finalization of the Final Report to incorporate ERA and IDA comments together with preparation and submission of the Consultant's final invoice, (b) some of the Consultant's headquarters back-up services as formally agreed and approved by ERA, and (c) The reproduction and binding of the finalized as built drawings.

Under the terms and conditions of the Civil Works Contract, the Consultant shall be provided in Ethiopia with his own site offices and laboratory facilities, site accommodation, site transport and other site facilities, equipment, utilities and consumable necessary for the complete execution of the services.

The Consultant is advised to inspect the bidding documents for the civil works contract in preparing his financial proposal regarding the site facilities, transport and equipment to be

provided to him under the Civil Works Contract. Anything, which is not covered by the Civil Works Contract, is deemed to be included in the financial proposal of the consultant.

During the period of the Construction Supervision Services the Consultant and all the Consultant's billable staff employed for the provision of the Services are required to reside permanently on site and, during working hours, shall only leave site on official business. None of the Consultant's billable staff shall reside in Addis Ababa or elsewhere off the Site, except during the period of construction of the Engineer's Facilities on Site, when the Contractors will provide temporary housing or accommodation in the vicinity of the Works.

In the event the Consultant wishes to establish and utilize additional non-site office facilities, accommodation, transport, equipment, utilities and consumable, and any other resources deemed necessary off-site for the complete execution of the Services, in Addis Ababa or elsewhere, then the cost of provision of such facilities and the related additional staffing shall be detailed in the Consultant's proposal.

During Contractors' mobilization period, the consultant shall include the cost of rent surveying equipment for the Right-off-Way obstruction identification and surveying work.

7. DUTIES AND RESPONSIBILITIES OF COUNTERPART ENGINEERS

In order to administer the monitoring and supervision services and civil works contracts, ERA will designate a Counterpart Engineer from their staff. The Counterpart Engineer's main duty is to follow up and assist the contractor and the consultant in issues which need the Client's intervention.

The Counterpart Engineer will receive from the Consultant requests from the contractors for clearance of right of way obstructions and land acquisition, and issue instruction to the Right of Way Agent assigned on site, after prioritizing the obstruction lists taking into account the Contractor's work program.

The Consultant shall make available all correspondences, reports, communication and other relevant documents for review, comment and report to ERA, as appropriate, of any key issues requiring attention and subsequent follow-up as necessary to ensure the actions required for contract implementation are realized.

The Consultant shall provide all the necessary documents and information to enable the Counterpart Engineer review the monthly statements and computation of the payments and any deductions and check the Contractors' interim payment certificates for conformity with the contract and the actual works executed on the site.

The Counterpart Engineer shall check the attendance of the Consultant's staff on and the corresponding monthly payment invoice.

The Counterpart Engineer shall check whether or not all environmental and social factors are in the list of monthly meeting AGENDA and include them in the AGENDA.

The Consultant shall provide the Counterpart Engineer one copy of each monthly, quarterly and annual progress reports for review and comments.

The Consultant shall provide the Counterpart Engineer access to inspect the quality of the construction works and the road condition, including the conducting of inspections of performance standards and appropriate tests in the Laboratory, to verify that the quality control is sufficient to ensure all elements of the Works are being constructed in total conformity with the Specification and the Contract, and discuss with the consultant if he thinks that the quality of the works is not in compliance with the contract provisions.

The Counterpart Engineer will assist the Engineer's Representative in providing on-the-job training to graduate Civil Engineers assigned by ERA, in the various aspects of the Construction Supervision and application of the Works Contract.

The Counterpart Engineer will participate in the routine, provisional and final inspection and acceptance of the Works (i.e., for performance assessment, Taking-Over of the sections/parts or the whole of the Works), and assist senior staff in the recording of defects in the Works affecting substantial completion (for final acceptance of the Works) and requiring remedying, if any.

The Counterpart Engineer will attend monthly progress meetings and any other meetings to be held on Site.

8. DURATION OF THE SERVICES

The duration of the Service is to extend from date of effectiveness of the contract to the end of the Mobilization, Design, Improvement, and Rehabilitation Stage of the last section of the works, which is envisaged as a period of approximately 36 months, during which period the Consultant's key professional staff team shall spend their time on this assignment in Ethiopia with necessary technical and engineering support from the head office of their firm. Indicated key staff with limited time inputs will be expected to be deployed on an intermittent basis.

During the Contractors' mobilization period, the Consultant shall operate with a skeleton staff agreed with ERA. Staff mobilization and demobilization plans are to form part of the Consultant's technical proposal and related financial proposal.

9. EQUIPMENT TO BE SUPPLIED BY THE CONSULTANT

As detailed under Appendix-F herein, the Consultant shall be provided with all site facilities as specified in the civil works contract starting from the date of commencement of the civil works to the end of the construction period. See also Item 6 above.

10. FACILITIES FOR ERA'S COUNTERPART STAFF

The Consultant shall provide, from the facilities received in accordance with the civil works contract document, the following facilities for ERA's counterpart staff for the whole duration of service.

Type B Vehicle (No. 1)	for ERA's Right of way agent and cashier
Accommodation (Residence Type B)	for ERA Counterpart Project Engineer and official visitors to site
Accommodation (Residence Type C) (two bed rooms)	for ERA's Right of way agent and cashier
Office (with accommodation)	for ERA Counterpart Project Engineer
Office (with accommodation)	for ERA's Right of way agent and cashier

11. TEAM COMPOSITION & QUALIFICATION REQUIREMENTS FOR THE KEY EXPERTS (AND ANY OTHER REQUIREMENTS WHICH WILL BE USED FOR EVALUATING THE KEY EXPERTS UNDER DATA SHEET 21.1 OF THE ITC)

The Consultant shall provide competent personnel for the services, who shall be managed by the Project Manager (Team Leader) and who will represent the Consultant in performing the services.

All the Consultant's personnel shall be fluent in the full use (i.e. the writing, reading and speaking) of the contract language, which is English. In addition, all the key staff described herein, shall be fully computer literate regarding word processing and spread sheets, with at least one member of staff fully computer literate in the use of: data bases; total station surveying; computer aided design and drafting (CADD).

Only the CVs of key personnel indicated in sub clause 21.1 of the Data Sheet will be submitted with technical proposal and the same will be evaluated. However, the successful consultant shall submit the CVs of the other key personnel during negotiation and should fulfill the minimum requirement set.

The CVs of the other technical and support staff are not required until commencement of the assignment.

1. The Consultant's personnel shall include the following key personnel and Technicians

Key personnel

I. Project Manager (estimated minimum man-months -36)

- A minimum of B.Sc. Degree in Civil Engineering and at least 15 years experience in carrying out road design/construction/ rehabilitation
- Eight years as a Project Manager or Resident Engineer on road construction or rehabilitation projects, out of the eight years at least four years experience has to be as a Resident Engineer.

- Four years experience as a Team Leader/Highway Engineer on road design or design management projects.
- Shall have proven ability to manage and administer road construction contracts of this nature under OPRC General Conditions and shall have minimum two years of Team Leader and/or experience in highway proven experience managing DB, DBOMT and/or DBM and or DBOM projects.
- Five years of relevant experience in Sub Saharan African countries
- Two years experience with the firm or its associate within the last five years.

Note: Experience record less than six (6) months for a design and one (1) year for a construction project will not be considered for evaluation on each listed projects.

II. Assistant Project Manager (estimated minimum man-months -32)

- A minimum of B.Sc. Degree in Civil Engineering and at least 10 years experience in carrying out road design/construction/ rehabilitation
- Five years experience as a Project Manager or Resident Engineer or Seven years experience as Assistant Resident Engineer or Assistant Project Manager on road construction or rehabilitation projects.
- Two years professional experience on road design or design management projects
- Two years experience in Output Performance based road contracts (OPRC) /DB /DBOMT /DBM /DBOM as Project Manager or Resident Engineer or Assistant Resident Engineer.
- Three years of relevant experience in Sub Saharan African countries
- Two years experience with the firm or its associate within the last five years.

Note: Experience record less than six (6) months for a design and one (1) year for a construction project will not be considered for evaluation on each listed projects.

III. Senior Pavement/Material Engineer (estimated minimum man-months -20)

- A minimum of B.Sc. Degree in Civil Engineering, Geology or equivalent qualifications with a minimum of 10 years experience in Civil Engineering works.
- Four years experience as Pavement/Materials Engineer on road construction or rehabilitation projects.
- Four years experience as Pavement/Materials Engineer in road design projects.
- Experience of pavement assessments using falling weight deflectometer and roughness profilometer
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate within the last five years.

Note: Experience record less than six (6) months for a design and one (1) year for a construction project will not be considered for evaluation.

IV. Highway Engineer (estimated minimum man-months -24)

- A minimum of B.Sc. Degree in Civil Engineering with at least 10 years experience in road projects
- Four years of extensive involvement in road construction/rehabilitation projects
- Four years of experience in road design projects as a Highway Engineer.
- Experience in use of Highway design software and Computer Aided Design and Drafting
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate within the last five years.

V. Structural Engineer (estimated minimum man-months - 10)

- A minimum of B.Sc. Degree in Civil Engineering with at least 10 years experience in road /bridge construction or road rehabilitation projects
- Four years of experience in bridges design including foundation design of bridges.
- Three years experience as a structural engineer on road construction/rehabilitation projects.
- Two years experience of condition assessment and design of remedial measures for concrete bridges.
- Experience in use of Computer Aided Design and Drafting
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate with in the last five years.

VI. Geotechnical Engineer (estimated minimum man-months -10)

- A minimum of B.Sc. in Civil Engineering or related fields with at least 10 years experience road/ bridge projects.
- Four years of extensive experience in supervising ground investigation, testing and interpretation of results for the design of road pavements and structural foundations
- Four years experience in road construction/rehabilitation projects as a Geotechnical Engineer
- Three years experience in Sub Saharan African countries
- Two years experience with the firm or its associate within the last five years.

VII. Hydraulic Engineer (estimated minimum man-months - 10)

- A minimum of B.Sc. Degree in Civil Engineering, Hydraulics or related fields with at least 10 years experience in road/bridge construction or road rehabilitation projects
- Four years of experience in hydrological and hydraulics studies
- Two years experience as a Hydraulic Engineer/Hydrologist on road construction/ rehabilitation projects.

- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate with in the last five years.

VIII. Quantity Surveyor (estimated minimum man-months –12)

- A minimum requirement of B.Sc. in Civil Engineering or related field with eight (8) years experience in road construction/rehabilitation projects
- Three (3) years extensive involvement in road construction projects as a quantity surveyor.

OR

- A minimum of Diploma in Civil Engineering or related field with at least 10 years experience in road construction/rehabilitation projects
- Five (5) years extensive involvement in road construction projects as a quantity surveyor.

OR

- A minimum of certificate in Quantity Surveying or Drafting from technical school with twelve (12) years of relevant experience
- Eight (8) years extensive involvement in road construction projects as a quantity surveyor.

AND

- Experience in use of computer aided design and drafting.
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate with in the last five years.

Note: Experience record less than one (1) year per project will not be considered for evaluation.

IX. Senior Surveyor (estimated minimum man-months –12)

- A minimum requirement of B.Sc. in Civil Engineering or related field with eight (8) years experience in road construction/rehabilitation and/or design projects
- Three (3) years extensive involvement in road construction/rehabilitation and/or design projects as a Senior Surveyor.

OR

- A minimum of Diploma in Civil Engineering or Surveying with at least 10 years experience in road construction/rehabilitation and/or design projects
- Five (5) years extensive involvement in road construction/rehabilitation and/or design projects as a Senior Surveyor

OR

- A minimum of certificate in Surveying from technical school with twelve (12) years of experience in road construction/rehabilitation and/or design projects
- Eight (8) years extensive involvement in road construction/rehabilitation and/or design projects as a Senior Surveyor.

AND

- Three years experience in Sub Saharan African countries.

- Two years experience with the firm or its associate with in the last five years.

Note: Experience record less than six (6) months for a design and one (1) year for a construction project will not be considered for evaluation.

X. Claims Expert (estimated minimum man-months - 12)

- A minimum of B.Sc. Degree in Civil Engineering or related fields with ten years experience in contract administration and claims handling
- At least five years experience direct involvement in handling claims on road construction or rehabilitation project
- Three years experience in Sub Saharan African countries
- Two years experience with the firm or its associate within the last five years.

- **N.B:** A fixed 12 man-month input of the Claims Expert should be provided in the Consultant's Financial Proposals. The necessity for any input from the Claims Expert shall be agreed with the client prior to commencement of services. This input may be on an intermittent basis.

XI. Sociologist (estimated minimum man-months –15)

- A minimum of BA degree in Sociology or related fields and 10 years professional experience in Sociological works
- 5 years extensive involvement in designing and implementing social impact assessments, monitoring and evaluation of infrastructure projects, and resettlement of affected persons.
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate within the last five years.

XII. Environmentalist (estimated minimum man-months –12)

- A minimum of BA degree in Environmental Science or related fields and 10 years professional experience in Environmental works
- 5 years extensive involvement in designing and implementing environmental impact assessments and monitoring and evaluation of infrastructure projects
- Three years experience in the preparation of Environmental Management Plan for road construction/rehabilitation projects.
- Working knowledge of World Bank safeguards policies and their implementation.
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate with in the last five years.

XIII. Road Safety and Safety Audits Specialist (estimated minimum man-months –8)

- A minimum of B.Sc. degree in Civil Engineering or related field
- 10 years of experience in Road Project
- Three years Experience as road safety audit specialist on road construction projects.

- Two years Experience as road safety audit specialist on road design projects
- Training in road safety or safety audits
- Three years experience in Sub Saharan African countries.
- Two years experience with the firm or its associate within the last five years.

XIV. Quality Assurance Specialist (estimated minimum man-months –12)

- A minimum of B.Sc. degree in Civil Engineering or related field
- 10 years of experience in managing the QC or QA of roads and bridges construction supervision or roads and bridges rehabilitation and maintenance supervision projects
- 5 years of experience as QC \ QA Unit Manager on road construction projects
- Three years experience in Sub Saharan African countries
- Two years experience with the firm or its associate within the last five years

TECHNICIANS

Two Soils Laboratory Technicians (Estimated minimum Man-months - 2*36), one Works Inspector (Estimated minimum Man-months - 1*32), Two Material Inspectors (Estimated minimum Man-months - 2*32), Two structural inspectors (Estimated minimum Man-months- 2*32), Two Surveyors (Estimated minimum Man-months- 2*36) and One draftsman (at least capable of CADD) (Estimated minimum Man-months- 1*32), with a minimum of Diploma in respective related fields from a Technical College or University and with a minimum of 5 year's experience on highway projects in respective fields of assignment **or** a minimum of Certificate from a Technical College and with a minimum of 8 years experience an highway projects in respective fields of assignment. In addition to this, 36 man month input for qualified One (1) secretary is also required.

The team shall have knowledge and experience of international tendering, in the administration of ICB contracts for similar types of projects.

Curriculum Vitae (CV) for the proposed professional staff shall be filled in the format given in Tech-6 of Section 3, Technical Proposal-Standard Forms.

NB. The induction of any staff including the intermittent ones shall be subject to the Clients' prior approval.

11.0 Reporting Requirements and Time Schedule for Deliverables to be prepared by the consultant.

The Consultant shall prepare and submit directly by hand or by courier to the Client and IDA the following reports and documents in the numbers stated as per the format that will be provided by the Client for the contract:

Types of reports/Documents		Draft No of copies	Final No of copies
(i)	Inception Report	3	5
(ii)	Annual Work Program Report	3	5
(iii)	Design Review Report	3	5
(iv)	Contractor's Mobilisation Report	3	5
(v)	Monthly Progress Reports	-	5
(vi)	Quarterly Progress Reports	-	5
(vii)	Annual Progress Reports	-	5
(viii)	Final Design Review Report	3	5
(ix)	Periodic Payment Report	3	5
(x)	Consultancy Completion Report	3	5
(xi)	Consultant's Quality Assurance Manual	3	5
(xii)	Environmental Management Report	3	5
(xiii)	Special Report	-	5

Brief descriptions of the contents of these reports are presented as follows:

(i) Inception Report:

This will constitute the Consultant's and Contractor's state of mobilization, Contractor's obligations, records of site meetings and the proposed site communications procedures and record keeping. It should also include introduction of all team members and tasks assigned to them and how each task is proposed to be carried out, the project quality assurance plan, confirmation of the technical approach, the methodology, the equipment, and the software(s) which the consultant proposes to use and proposal(s) to train the counterpart personnel. It should also contain a preliminary review and assessment of the documentation and data provided by the conceptual design Consultant; to be submitted within 2 weeks of commencement of works. The Consultant shall also make a presentation before the Client review committee on the proposed technical approach and methodology.

(ii) Annual Work Program Report:

This report will give a description of the review and confirmation of the adequacy of version of the annual work programme in place by the first day of the applicable contract year and updated monthly.

(iii) Design Review Report:

This report will give a description of the review and confirmation of the adequacy of all aspects of the Contractor's design submissions for topography, pavement, geometry, hydrology, hydraulic structures, bridges etc. and the associated contract drawings. While this might take the form of interim design reviews, it is also expected that there will be a final design review report that integrates all interim reporting into a final document, to be submitted within two weeks after the last section has been designed following the schedule proposed for detailed design.

(iv) Contractors' Mobilization Report:

On completion of the Contractors mobilization period, the Consultant shall report on the following:

- Contractors' mobilization
- Organization and correspondence
- Lines of communication
- Environmental and Social Safeguards start-up and mobilization workshop report
- Contractors' detailed work programme
- Proposed resources schedules
- Proposed cash flow
- Plant and equipment schedules
- Format of forms and their use and presentation
- Schedule of site meetings
- Contractors' obligations
- Procedures for inspections
- Any other submitted contractual documentation
- Consultant's mobilization

(v) Monthly Progress Report:

Progress reports shall be prepared monthly using ERA's standard report format, including format for reporting the implementation of Environmental and Social Impact mitigation measures, to detail progress against programme in respect of all project elements and hard out puts. Two copies of the report will be submitted to ERA and Two copies sent to IDA in Washington (address to be provided by ERA), and a copy will be send to IDA Country Representative Office (address to be provided by ERA) within one week of the reporting period. All monthly project correspondences shall be submitted in soft copy together with monthly progress reports. Monthly progress report shall include discussion of environmental, social and safety issues

This report will provide a brief, but comprehensive end-of month progress assessment It will include tabulated and graphical representations of physical and financial progress compared with the Work Programme and Cash Flow forecasts,

relevant photographs and details of impediments to the Works and proposals for overcoming them. The reports shall include information on Contractor's plant, equipment and staffing, weather conditions at the site of the works, accidents on site and any other relevant details. This report shall be submitted within the first week of the succeeding month. This report should also summarize activities carried out, difficulties, and activities programmed for next month among others the Environmental and Social Management, safety practices carried out, traffic management.

(vi) Quarterly Progress Reports:

These will be similar to the monthly reports but will be more detailed and include record photographs. They will be prepared by the Project Manager and give an overview of the progress of the Project (if more than one Contract is being supervised by the Consultant). The quarterly progress report shall include discussion of environmental, social and safety issues.

A suitable number of color photographs with date imprint should be included which will illustrate progress and any difficulties encountered on the Site. These will allow a permanent record of progress.

(vii) Annual Progress Reports:

This report will summarize the activities performed within a year. The format of this report is similar to that of the monthly report. It will be submitted at the end of each fiscal year of Ethiopia (June), after the beginning of construction supervision. The Annual progress report shall include discussion of environmental, social and safety issues. The report also give a description of the review and confirmation of the adequacy of version of the annual work programme in place by the first day of the contract year applicable and updated monthly.

(viii) Final Design Review Report:

This report will give a description of the final review and approval of the adequacy of all aspects of the design of bridge, pavement, topography, hydrology, hydraulic structures, and geometry including all drawings. This report must be submitted within two weeks after the last section has been designed following the schedule proposed for detailed design.

(ix) Periodic Payment Report:

This report will summarize the Periodic Payment Report including the fulfillment of all level of service and the non-compliance carried out during the period of three months. The Consultant will review and approve the periodic payment report submitted by the Contractor based on the measures done by the Consultant periodically.

(x) Consultancy Completion Report:

This report shall be prepared addressing all aspects of the Improvement/ Rehabilitation works and management and maintenance services implementation and submitted within two months of the completion of construction. It will also describe the aims of the project and the achievements of the construction works. This shall include but not be limited to:

- Executive summary
- Mobilization /Demobilizations details
- Contractor's plant and personnel
- Description of Project
- Project Implementation
- Financial summaries and breakdown of the final cost of the contract item by item
- Design and construction methods
- Details of the work executed and of the techniques employed and type, quality, quantities and sources of materials used in the on the project
- Changes made by the Contractor in design and specifications and the reasons thereof
- Contract changes and variations
- Detailed assessment of life of the pavement and recommended routine maintenance practices
- Contractors' performance
- Assessment of any complaints and/or claims by the Contractors and disputes by the Contractors
- A critical study of important technical problems which may have arisen during the construction and solutions employed
- Special conditions
- Comments on Technical Specification and Conditions of Contract
- Construction Records.
- As-built drawings (A1 size reproducible)
- Assessment of counterpart training, if any
- Conclusions
- Suggestions and recommendations for future periodic maintenance
- Details of Final Account, where possible

The Completion report shall include discussion of environmental, social and safety issues.

(xi) Consultant's Quality Assurance Manual:

This manual shall at a minimum describe the methodology and procedures to be followed in attaining the desired quality of the service at each stage. The report should also detail assignment of responsibilities with regard to quality assurance to the respective personnel in the team. The content of the manual shall be suggested by the Consultant for review by ERA and will be finalized following taking into account the letters comment.

(xii) Environmental Management Report:

It will be a comprehensive report on all Environmental and Social impact mitigation measures undertaken by the contractor. It will describe the major environmental elements of the project, adequacy of the mitigation measures proposed during design as well as supervision period and the effectiveness of the measures undertaken during construction. The supervision consultant is also expected to report in his progress report any developments with respect to Environmental and Social aspects of the project.

(xiii) Special Report:

The Consultant shall produce Special Reports on such incidents which would possibly change the design or other aspects of the project. The consultant shall submit the report as the case demands and it shall include but not limited to the following:

- Project Manager's determination on Contractors Claim;
- Project Manager's proposal to expedite an unduly delayed project progress;
- Technical reports on the remedial measures and its effectiveness on slide or flood-prone areas;
- Reports on major design and specification change and the consequence thereto;
- Reports on road safety audits;
- Analysis of Contractor's proposals for changes;
- Traffic and Axle load survey Updates and impact of future forecasts on the design; etc.

APPENDIX B

REPORTS AND DOCUMENTS TO BE PREPARED BY THE CONSULTANT

The Consultant shall prepare and submit directly by hand or by courier to the Client and IDA the following reports and documents in the numbers stated as per the format that will be provided by the Client:

No	Report Description	Paper Copy						E-Copy (CD)					
		Draft (Nos.)		Submission Date	Final (Nos.)		Submission Date	Draft (Nos.)		Submission Date	Final (Nos.)		Submission Date
i.	**Inception Report**	ERA	2	Not later than 2 months after the date of effectiveness of the Consultant's contract	ERA	2	Within two weeks of receipt of comments	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
ii.	**Annual Work Program Report**	ERA	2	Not later than 2 months after the date of effectiveness of the Consultant's contract	ERA	2	Within two weeks of receipt of comments	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
iii.	**Design Review Report**	ERA	2	Within two weeks after the specific section has been designed	ERA	2	Within two weeks of receipt of comments	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
iv.	**Contractor's Mobilisation Report**	ERA	2	After completion of the mobilization of the contractor but not later than four months of the commencement of the civil works contract	ERA	2	Within two weeks of receipt of comments	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
v.	**Monthly Progress Reports**	ERA	-	-	ERA	2	Within one week after the	ERA	-	-	ERA	2	Along with the final paper copy
		IDA	-		IDA	3		IDA	-		IDA	1	

No	Report Description	Paper Copy						E-Copy (CD)					
		Draft (Nos.)		Submission Date	Final (Nos.)		Submission Date	Draft (Nos.)		Submission Date	Final (Nos.)		Submission Date
		Total	-		Total	5	end of the report period	Total	-		Total	3	
vi.	Quarterly Progress Reports	ERA	-	-	ERA	2	within one week after the end of the report period	ERA	-	-	ERA	2	Along with the final paper copy
		IDA	-		IDA	3		IDA	-		IDA	1	
		Total	-		Total	5		Total	-		Total	3	
vii.	Annual Progress Reports	ERA	-	-	ERA	2	within one week after the end of the report period	ERA	-	-	ERA	2	Along with the final paper copy
		IDA	-		IDA	3		IDA	-		IDA	1	
		Total	-		Total	5		Total	-		Total	3	
viii.	Final Design Review Report	ERA	2	Within two weeks after the last section has been designed	ERA	2	Within two weeks of receipt of comments	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
ix.	Periodic Payment Report	ERA	2	within one week after the end of each quarter	ERA	2	Within one week of receipt of comments.	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
x.	Consultancy Completion Report	ERA	2	Within two months of the completion of construction	ERA	2	Within two weeks of receipt of comments.	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
xi.	Consultant's Quality Assurance Manual	ERA	2	Within one month of the date of commencement of the services	ERA	2	Within two weeks of receipt of comments.	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	
xii.	Environmental Management Report	ERA	2	Within two months of the completion of construction	ERA	2	Within two weeks of receipt of comments.	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	1		IDA	3		IDA	1		IDA	1	
		Total	3		Total	5		Total	2		Total	3	

No	Report Description	Paper Copy						E-Copy (CD)					
		Draft (Nos.)		Submission Date	Final (Nos.)		Submission Date	Draft (Nos.)		Submission Date	Final (Nos.)		Submission Date
xiii.	**Special Reports**	ERA	-	-	ERA	2	As the case demands.	ERA	1	-	ERA	2	Along with the final paper copy
		IDA	-		IDA	3		IDA	1		IDA	1	
		Total	-		Total	5		Total	2		Total	3	