TANZANIA NATIONAL ROADS AGENCY (TANROADS)

MSIMBAZI BASIN DEVELOPMENT PROJECT

CONSTRUCTION OF JANGWANI BRIDGE

TERMS OF REFERENCE FOR CONSULTANCY SERVICES FOR DESIGN REVIEW AND SUPERVISION OF WORKS

1. INTRODUCTION

The Government of the United Republic of Tanzania has received financing from the International Development Association (IDA) in the form of Credit toward the cost of Msimbazi Basin Development Project (MBDP).

Tanzania National Roads Agency (TANROADS) under the Ministry of Works and Transport is the Employer and the implementing agency of the Project. TANROADS intends to apply a portion of the proceeds of this credit to eligible payments under the contract for which the Terms of Reference is issued for the Consultancy Services for Design Review and Supervision of Construction of Jangwani Bridge in the Lower Msimbazi Basin located in Dar es Salaam City.

2. PROJECT BACKGROUND

Dar es Salaam is the largest City in Tanzania. It is also the country's largest city with a population of about six million people and a regionally important economic centre. It is a region divided into five administrative districts i.e. Kinondoni, Ilala, Temeke, Kigamboni and Ubungo. Though Dar es Salaam lost its official status as capital city to Dodoma, it continues to serve as the capital for commercial activities within the country. Located on a harbour on the Indian Ocean, it is the main port for Tanzania, handling exports of minerals and agricultural product. In addition, it is the hub of Tanzanian's national transport system as major highways and railways originate in or near the city.

TANROADS has recently completed implementing the first Phase of the Dar es Salaam Bus Rapid Transit (BRT) Infrastructure covering 20.9 km of Morogoro Road from Kimara to Kivukoni, Kawawa Road from Magomeni to Morocco and Msimbazi Street from Fire to Kariakoo. The Construction of BRT Phase 2 on Kilwa Road is at advanced stage while Phase 3 on Nyerere Road has just started. The Dar es Salaam BRT System is a high-quality, low-cost public transportation system operating on specialized infrastructure with adequate incentives to offer affordable mobility, sustainable urban environment, and better quality of life to urban population, of all income levels.

However, services along developed BRT infrastructure is frequently disrupted at Jangwani area as a result of flash floods due to uncontrolled human development upstream of Jangwani Valley

The Jangwani valley in Dar es Salaam, and its surrounding wards, is a highly flood-prone area. During rainy season, Morogoro Road and Jangwani Bridge get flooded, making the crossing of the valley impossible. The Bus Rapid Transport (BRT) depot located just next to the existing Jangwani Bridge also get flooded regularly damaging not only the depot's structures and BRT bus parking yard also obstructing the drainage system.

In order to avoid disruption of the BRT operation, it is necessary to construct new raised multi-span bridge with raised approach embankments and improving storm water conveyance of the river by dredging. Consequently, the existing BRT depot (see photo below) will become defunct and will therefore be obliterated by others and a new depot be constructed by others at a new location near Ubungo Maziwa

In fulfillment of the above, the study and preparation of tender documents for the bridge and dredging along Msimbazi River was completed through Dar es Salaam Urban Transport Project (DUTP) financed by IDA.

Fig. 1: Overview of the Project Area

3. PROJECT DESCRIPTION

The project includes an important infrastructure corridor of Dar es Salaam along Morogoro road. This road runs from the city center close to the shore towards the north-western part of the city and turns into the highway that connects Dar es Salaam to the western and northern part of Tanzania.

Currently, Morogoro Road crosses the Msimbazi River through a three spans, 47m long Bridge. Due to rapid sediment built-up in the Jangwani valley, the existing bridge does not have sufficient capacity to accommodate flash floods that occur in the Jangwani Valley causing Morogoro Road and Jangwani Bridge to be flooded at the project location, causing severe traffic congestions.

To alleviate the problem, TANROADS commissioned M/s CDR International BV in association with M/s Stichting Deltares and M/s WEMA Consultants to undertake Hydrological Study, Detailed Engineering Design and Preparation of Tender Documents for Flood Prevention Measures at Jangwani valley. The study recommended to replace the existing bridge with elevated 13 spans' bridge with a total length of 390m. The remaining part of the Jangwani valley will be crossed on a raised embankment. For local drainage purposes, a new culvert will also be included at the eastern side of the valley.

The Tender documents for Jangwani Bridge and dredging of the Msimbazi River were approved by the Client in March 2022. Now TANROADS has decided to implement the Project of which this TOR is for design review and supervision of the bridge and associated Works. The design review by the Consultant shall address issues of appearance of the bridge, inclusion of CCTV Camera to monitor traffic operation over the Bridge and integration with lower Msimbazi Development plans as detailed in Section 4 and Section 5 below. It is anticipated that the procurement of the works will be conducted in parallel to the Consultancy and hence the outcome of the design review will be used for preparation of an addendum to the works contract.

4. OBJECTIVES OF THE ASSIGNMENT

Objective of the assignment is to perform Consultancy Services for design review and construction supervision of Jangwani Bridge and associated works after quick design review and harmonization with Lower Msimbazi Basin Development Plans.

Specific objectives of the Consultancy services are:

(a) Review the bridge design, propose measures, for uplifting of appearance and upon consultation and concurrence with the Employer make modifications as required.

(b) Ensure design of the bridge and approach embankments integrates with development plans of lower Msimbazi Basin. The integration requires (i) Introduction of a BRT bus stop within the raised embankment in consultation with DART and (ii) Provision of pedestrian facility to access the bus stop. The design of these investments must employ gender-sensitive and inclusive design principles to ensure the safety and access of girls, women, the disabled and other vulnerable groups.

(c) Review river dredging design prepared for 500 m upstream and 1800 m downstream of the existing Msimbazi bridge and make modifications if required. The purpose of the dredging is to avoid flooding of Morogoro Road and keep open to traffic during construction. Update BoQ, specifications and drawings.

(d) Carry out supervision of Works to ensure compliance with the approved design, drawings, specifications, conditions of contract and sound engineering practices;

(e) Review of proposed traffic management plan during construction to ensure that the proposed traffic arrangement results in minimal disruption. The plan shall allow at minimal one lane of vehicular and pedestrian traffic in each direction at any time during construction

(f) Carry out supervision of activities during Defects Notification Period

(g) Carry out any other activities necessary for the successful completion of the project

5. CONSULTANT'S RESPONSIBILITIES

5.1 Design Review

The Consultant will carry out all the required updates from the finalized design to ensure that the documents and data are correct, complete and conform to the internationally and World Bank (WB) acceptable standards, National Guidelines and standards and advise the Client accordingly. This assignment will cover the following:

(a) Carry out design modifications specifically for uplifting the appearance (architectural view) of the bridge. The recommended measures by the Consultant shall not result in overhauling of the structural design of the Bridge

(b) Carry out design modifications with the objective of integrating with the development plans of lower Msimbazi Basin. The integration requires (i) Introductions of BRT bus stop within the raised embankment and (ii) Provision of pedestrian and or vehicular facility to access the bus stop / garden; The consultant may be required to consider the position where there will be no requirement to adjust the designed abutment, but will need to ensure safety and clear path in and off the bridge as the carriage way may be widened to some point,

(c) Conduct a participatory and gender-sensitive safety audit of the current bus stop and surrounding areas to inform gender-responsive design of the BRT bus stop and pedestrian facility to access the bus stop. The consultant will directly work with women, girls and other vulnerable groups to conduct the audit. Analysis methodology will include safety walks, a survey on perception of safety, focused group discussion and in-depth interviews.

(d) The BRT station shall conform to the BRT (DART) specifications & standards in terms of the design and space between the stations. The design will incorporate recommendations from the gender-sensitive safety audit.

(e) Pedestrian facility to access not only the bus stop, but also both side of the bridge within the park. The design of the facility will also incorporate recommendations from the gender-sensitive safety audit.

(f) Review detailed engineering design reports and adequacy of available information and details to ensure constructability of the project;

(g) Conduct road safety inspection and audit of the current detailed engineering design in line with Road Safety Audit manuals and indicate

how the suggested changes will be incorporated in the design modification;

(h) Review drawings to ensure that the facility to be constructed will suffice the intended purpose and correlates well with BOQ. Any design deficiencies identified including need for grade separation of pedestrian crossings at busy/strategic areas and other facilities shall be carried out by the Consultant upon consultation and concurrence by the Client;

(i) Verify correctness of survey / setting out data on site and perform the updates to the Detailed Engineering Design Report and Bidding documents as found appropriate;

(j) Review Environmental and Social Impact Assessment (ESIA) report and Environmental Management Plan including the contractor's ESMP and recommend/make necessary updates, and incorporate relevant mitigation measures into the final design;

(k) Review bills of quantities (BOQ) in terms of accuracy of quantities and make update to ensure that all items in the design are captured and quantified appropriately;

(l) Update / prepare updated drawings, specifications and ensure that all documents are harmonized to form the basis for an addendum;

(m) Assess proposed traffic deviations/traffic management plans if meet demand expectations in order to avoid or reduce disruption of traffic during construction;

(n) Prepare a complete design for CCTV camera system at the bridge and at proposed bus station with a network of service ducts for future improvement of the communication system along and across the BRT corridor;

(o) Identify and mark all affected utilities and obtained drawings and information pertaining to the existing services within the project area, propose adequate relocation plans (layout) and identify additional areas for relocating the identified utilities so that the same would not clash with permanent works during repair of such utilities; and liase with the local authority and utility authorities to carry out detailed investigation to determine and show on drawings exact positions of any services whether on the existing drawings or not that may be affected by the works.

(p) Update project construction cost based on the quantities taken-off from final design approved by the Employer. In order to make a reasonable estimate of the cost of project, the Consultant shall prepare a unit price analysis of each item using basic cost elements (labour, materials, equipment, tools, overheads, on-site costs, profit, etc.), and showing separately the cost of all taxes (direct or indirect, duties, levies and fees). The estimated financial cost resulting from this analysis shall be accurate to within +10%. The cost estimates shall also include the costs for implementation of

(q) Update ESMP, RAP (if any), and HIV/AIDS alleviation programme.

(r) Carry out any other activities necessary for the successful completion of the project

5.2 Construction Supervision

The Consultant shall be fully responsible for the supervision of the construction in accordance with the FIDIC Conditions of Contract – Red Book. The Consultant shall, in general, exercise the powers of the Engineer in all matters concerning the Works Contract and the execution of the Works. The Consultant shall therefore nominate a suitably qualified individual to be agreed by the Client who will be authorized to act as the Engineer for the purposes of the Works Contract.

The Consultant shall supervise the Works with due diligence and efficiency and in accordance with sound technical, administrative, financial, and economic practices.

The Consultant shall perform all duties associated with such tasks to ensure that only the best construction practices are followed and that the final product is in all respects equal to, or better than that specified, at the most economic costs and is carried out in full compliance with the governing specifications.

In particular, the Consultant's duties and responsibilities shall include but not be limited to the following:

(a) Check the design and contract documents and advise the Client of any deficiencies or necessary improvements that are identified or deemed necessary for the successful implementation of the project;

(b) Check and establish that the contractor mobilizes and supplies to the contract all plant, equipment and machinery that have been committed in the tender and ensure that all such items of plant remain on the contract until their release has been authorized as per the provision of the contract

(c) At all times take necessary measures and provide appropriate advice to the Client to enable the construction contract be completed in a timely and cost-effective manner, in conformity with the contract conditions and specifications;

(d) Review and approve the submitted contractor's ESMP and its sub plans(such as OHS plan, traffic management plan, waste management plan);

(e) Review and approve the submitted contractor's "method statements", ensuring that the construction methods proposed by the contractor for carrying out the Works are satisfactory, with reference to the technical requirements and sound environmental standards.

(f) Monitor progress against the contractor's programme (including the resources required) and advise the client of potential delays.

(g) Understand the nature and scope of the works, of all information available and of documents and materials to be used by the contractor in executing the works to enable the Consultant perform duties satisfactorily, study and check all documents associated with the projects, foresee possible problems and advise the Client appropriately during the construction and defect notification period;

(h) Liaise with the respective authorities to ensure that assessment and compensation of properties including temporary structures and fences, as it may apply, existing within the construction zone is done to avoid delays in construction;

(i) Identify and locate all beacons and benchmarks to enable the contractor set out and construct the works and hand over to the contractor before commencement of the works;

(j) Undertaking the construction supervision, inspection, quality control tests and contract administration including assessing all materials certificates and provide approvals of all materials and certification of completed Works to ensure compliance with technical specification requirements as per the provisions of the contract

(k) Keep updated all records including reports, works diaries, correspondence, instructions given to contractor(s), test records, measurement and quantity calculations, payment records and all other relevant documents pertaining to the works operations and supervision contracts;

(l) Prepare consolidated reports including monthly reports on physical and financial status, site meetings, contractual matters, etc., with recommendations for action by the Client

(m) Supervise the implementation of contractor environmental and social management plan (e.g. mitigation measures, monitoring, training) during the construction of the works and prepare consolidated monthly reports to the Client including measures for action and any significant risks;

(n) Prepare control charts of the main activities and a project master schedule, indicating both past performance and forecasts for completion including time involved in each case;

(o) Measure quantities of approved completed works and certify on monthly interim and final payment certificates for consideration by the Client. Monthly certificates to be submitted to the Employer for payment shall include the total cost of the works executed in foreign and local currency as it may apply;

(p) Foresee any imminent claim by the Contractor and propose the best way to resolve the issue amicably. In the case of Claim. record, examine and assess all Contractor's claims, , dispute, extension of time and the like, including variation orders as appropriate and submit timely corresponding evaluation reports with recommendations thereof to the Client for consideration;

(q) When implementation of the Works reaches a value of 50% and 80% of the initial contract price, the consultant shall prepare and submit a detailed progress report with updated cost of the Works, implementation schedules and substantiation for additional funding as it may be required for successful completion of the project;

(r) Evaluate unit rates for new items of works in the Contract and submit to the Client for review and approval;

(s) Compile and submit as-built drawings;

(t) Prepare and submit final cost of executed works;

(u) Prepare and submit final construction report;

(v) With prior consultation with, and approval of the Client the Consultant may effect changes that will improve design or specification of the works;

(w) The Consultant shall prepare a Supervision Manual, which will lay out procedures to be followed during the execution of the works. The Manual will also serve as a basis for on-the-job training during the implementation of the works contract for the Client staff and any attached practical trainee Engineers from other relevant professional boards or university students.

(x) Maintain a site diary on a daily basis with the contents and format to be agreed with the Client.

(y) The Consultant shall organize and undertake on- the-job training for at least two (2) counterpart Engineers proposed by the Employer, 10 SEAP Trainees from ERB and any attached practical university students as approved by the Employer. The training will include apart from others, all aspects of design, supervision of the works contract, works scheduling, contract management, use of relevant software, quality control, setting out and measurement, including preparation of as-built drawings and final reporting.

(z) Carry out any other activities necessary for the successful completion of the project.

(aa) ESHS requirements:

The Consultant must ensure that the Contractor's Environmental, Social, Health, and Safety (ESHS) performance aligns with the Employer's Environmental and Social Policy, Contractor's ESHS obligations, and international industry good practices. The ESHS-related services include, but are not limited to:

(i). Reviewing and approving the Contractor's Environment and Social Management Plan (C-ESMP) before any construction works commence, including all updates and revisions of the C-ESMP (within a reasonable time and before any significant works that would be impacted by the proposed changes) in consultation with the Environmental, Occupational Health and Safety (OHS), and social specialists of the Employer. The C-ESMP should cover the following areas:

- Erosion and Sediment Control Plan to protect water resources (e.g. river, stream).
- Waste Management Plan to minimize, reduce, handle, and dispose of waste during construction or land-clearing.
- Wastewater management outlining the process for effluent treatment, and water discharge quality monitoring.
- Material source management, including borrow pit and quarry management and rehabilitation plan.
- Traffic Management Plan to ensure the safety of workers and local communities from construction traffic.
- Health and Safety Management Plan to ensure the health and safety of workers, including the use of protective clothing, HIV/AIDS and COVID-19 awareness and prevention, and provision of welfare equipment and facilities.

- Cultural Heritage Management to protect cultural heritage (e.g., historical buildings, traditional burial sites, worship places/buildings, sacred places/trees) that may be affected by construction; and chance finds procedure that outlines the actions to be taken if previously unknown cultural heritage is encountered.
- Grievance Redress Mechanism.

(ii). Providing supervision to ensure the Contractor performs their tasks with due regard to environmental, health, and safety.

(iii). Reviewing and considering the potential Environmental, Social, Health, and Safety OHS: Occupational Health and Safety (ESHS) risks and impacts of any proposed design change proposals and advising if there are implications for compliance with Road C-ESMP, subproject ESIA, consent/permits, and other relevant project requirements.

(iv). Routinely reviewing and conducting audits and inspections of the Contractor's worker ESHS training records, accident logs, community liaison records, ESHS inspection and monitoring findings, and other ESHS-related documentation, as necessary, to confirm the Contractor's compliance with ESHS requirements.

(v). Promptly reporting any identified non-compliance issues to the Contractor and Employer and working with these entities to define acceptable remedial actions and their timeframe for implementation in the event of non-compliance with the Contractor's ESHS obligations.

(vi). In the event of any significant or material ESHS incident (such as death or serious accident, significant spill, pandemics like COVID-19, etc.), reporting within one day of knowledge of such event to the Employer and working to define acceptable remedial actions to investigate, remediate, and prevent such events in the future.

(vii). Assessing all significant material and service providers to the Contractor (such as sites/providers of road base and fill materials, construction waste disposal services, and sites) by undertaking site visits and evaluating such material and service providers for potential significant ESHS issues and compliance with relevant ESHS requirements.

(viii). Ensuring appropriate representation at relevant meetings, including site meetings and progress meetings, to discuss and agree on appropriate actions to ensure compliance with ESHS obligations.

(ix). Conduct liaison, as necessary, with project stakeholders to identify and discuss any actual or potential ESHS issues.

(x). As part of the monthly progress report, prepare and submit to the Employer issues related to project construction ESHS compliance and performance.

Upon completion of the project construction or closure of any specific work area or campsite, inspect the site/area to ensure Contractor compliance with ESHS requirements and identify any existing unmitigated ESHS impacts. If issues are identified, promptly notify the Contractor and Employer and work with them to define acceptable remedial actions to resolve all issues.

5.3 Defects Notification Period

The Consultant shall oversee the works during the Defects Notification Period with duration indicated under Section 9 of TOR. For the purpose of carrying out the services, the consultant shall assign at least one key person to prepare and issue the Performance Certificate. During this period the Consultant shall be expected to draw the attention of the Contractor to any defects if and when noticed and shall supervise such remedial works. As the Defects Notification Period for the Contract is 36 months, a total of three (3) inspections will be

carried out in an interval of 12 months' time intervals during the 36-month period (each inspection visit shall be extended for a maximum period of seven (7) calendar-days consecutively) after Substantial completion of the works and any deficiencies noted along the road and its remedial measures be proposed to the Contractor. Depending on the nature of deficiency, repair work will be carried out under the Consultant's supervision. The Consultant will be required to submit the inspection report to the Client. At the end of the 36-month Notification Period, the Consultant will do inspection and confirm that the Contractor has completed Works ready for joint inspection and handover. A final inspection will be carried out under the supervision of the Resident Engineer who will prepare and sign the Inspection Report and distribute to the Contractor, TANROADS HQ and Regional Manager – Dar es Salaam Region for joint verification.

5.4 Additional Services

The Consultant shall provide any other additional services if so requested by the Client at rates and under conditions to be mutually agreed which fall within the general ambit of these Terms of Reference.

6. CONSULTANT'S PERSONNEL

In order to execute his obligations, the Consultant shall provide qualified key staff for the assignment, and shall prepare a work programme, and a corresponding manning schedule, showing the timing of activities and the corresponding staff input required for execution of the services. The Consultant shall provide approximately **186** person- months of Key professional staff inputs split into S Phase 1 – **22** person-months, Phase 2 –**158** person-months and Phase 3 – **6** person-months. The estimate of the key professional staff requirements is only indicative and could be construed as skill mix requirements for these Services. The Consultant shall employ only such key staff whose CVs have been approved by the Client. In addition to the key personnel, the Consultant shall determine the support staff to assist with on-site supervision of the works.

The Consultant must provide in the proposal CVs and copies of highest academic certificates for all professional and technical staff including the duration in person-months during which the staff will be deployed under the Contract.

The desirable inputs of Key Staff are provided as follows: -

Phase 1	**During Design Review**	
	Key Position	**Staff Month**
1.	Team Leader	4
2.	Highway Engineer	3
3.	Bridge/Structural/Drainage Engineer	3
4.	Architect/Bridge Architect	2
5.	Mechanical Electrical Plumbing Engineer	2
6.	Topographical Surveyor	2
7.	Quantity Surveyor	2

8.	Environmentalist	2
9.	Sociologist	2
	Sub-Total 1	**22**
Phase 2	**During Construction Supervision**	
	Key Position	**Staff Month**
1.	Resident Engineer	24
2.	Highway Engineer	10
3.	Bridge/Structural Engineer	24
4.	Pavement/Materials Engineer	16
5.	Topographical Surveyor	24
6.	Mechanical Electrical Plumbing Engineer	6
7.	Environmentalist	12
8.	Sociologist	6
9.	Measurement Engineer/Quantity Surveyor	24
10.	Occupational Health and Safety (OHS) Specialist	. 12
	Sub-Total 2	**158**
Phase 3	**During Defects Notification Period**	
	Key Position	**Staff Month**
1.	Resident Engineer	3
2.	Bridge/Structural/Drainage Engineer	3
	Sub-Total 3	**6**
	TOTAL	**186**

6.1 Phase 1: Key Staff Requirement During Design Review Period

The following are qualification and experience requirements for the Design Review team:

a) Team Leader (K-1)

(i) Must be registered with relevant professional authorities;

(ii) Must be a Civil Engineer with a degree in Civil Engineering. A postgraduate qualification in Structure/Bridge Engineering is an added advantage;

(iii) Must have a minimum of fifteen (15) years of cumulative working experience related to studies and design of bridges;

(iv) Must have served as the Team leader or equivalent capacity in at least three (3) design projects of similar nature, at least one of which

must have been undertaken in a developing country, in an urban environment;

(i) Must have a working experience of at least three (3) years in developing country; and

(v) Proficiency in written and spoken English is mandatory.

The Team Leader shall be the head of design review team responsible for all technical and administrative aspects of design review and design modification activities on site, which include but not limited to road surveys, site investigation, design review of road pavement structure, bridge structures, measurement of quantities and quality control of prepared design review reports, bidding documents and updated cost estimates. He/she shall be the principal contact person between the design review team and the Client.

b) **Highway Engineer *(K-2)***

(ii) Must be registered with relevant professional authorities;

(iii) Must be a holder of a degree in Civil Engineering. A postgraduate qualification in Highway Engineering will be an added advantage;

(iv) Must have a minimum of ten (10) years cumulative experience in highway studies and designs;

(v) Must have served in similar capacity in at least three (3) projects of similar nature, at least one of which must have been undertaken in a developing country, in an urban environment;

(vi) Must have a working experience of at least three (3) years in sub Saharan Africa; and

(vii) Proficiency in written and spoken English is mandatory.

The Highway Engineer shall be responsible for design review and improvement of the geometrical aspects of the bridge and approach roads to incorporate required modifications Shall also assist the Team Leader in the reviewing and improving road safety aspects.

c) Bridge/Structural/Drainage Engineer (K-3)

(i) Must be registered with relevant professional authorities;

(ii) Must have a degree in Civil Engineering or equivalent. A postgraduate qualification in Bridge/Structural Engineering will be an added advantage

(iii) Must have a minimum of fifteen (15) years cumulative experience in designing of major bridges, grade separated intersections/flyovers, elevated highways and drainage structures. Experience in bridge aesthetics is an added advantage.

(iv) Must have served in similar capacity in designing of at least two (2) major bridges/flyover/grade separated intersection projects of similar nature, at least one of which must have been undertaken in a developing country, in an urban environment.

(v) Must have a working experience of at least three (3) years in developing country.

(vi) Proficiency in written and spoken English is mandatory.

The Bridge/Structural Engineer shall be responsible for structural analysis and design review of the bridge including structures that shall be incorporated for uplifting of appearance, for bus stop and access for pedestrians; as a whole and its substructure and superstructure elements.

d) Architect (K-4)

(i) Must be registered with relevant professional authorities;

(ii) Must have a degree in Architecture. Postgraduate qualification in Landscape Architecture or equivalent.is an added advantage.;

(iii) Must have a minimum of ten (10) years cumulative experience in planning and designing of aesthetical structures that are integrated with road infrastructures including Bridges but also in landscape architectural studies,

(iv) Must have served in similar capacity in at least two (2) projects of similar nature, that have been undertaken in an urban environment;

(v) Must have a working experience of at least three (3) years in developing countries; and

(vi) Proficiency in written and spoken English is mandatory.

The Architect shall be responsible for the uplifting bridge appearance, architectural inputs for provision of BRT bus stop and its integration with landscape design of City park planned to be implemented under Msimbazi Basin Development Project. The landscape architect is also responsible for production of the corresponding technical specifications of the contract documents.

e) Electro-Mechanical Engineer (K-5)

(i) Must be registered with relevant professional authorities;

(ii) Must be a holder of a degree in Electro-Mechanical Engineering. A postgraduate qualification in Electro-Mechanical Engineering is an added advantage;

(iii) Must have a minimum of ten (10) years cumulative experience in design of electrical, mechanical and plumbing installations;

(iv) Must have served in similar capacity in design of electro-mechanical and plumbing installations in at least two (2) projects of similar nature;

(v) Must have a working experience of at least three (3) years in developing country; and

(vi) Proficiency in written and spoken English is mandatory.

The Electro-Mechanical Engineer shall be responsible for studying and reviewing the electrical, mechanical and plumbing requirements and installations for road, pedestrian access and bus station facilities and ensuring that conforms current design.

f) Topographical Surveyor (K-6)

(i) Must be registered with relevant professional authorities;

(ii) Must have a degree in land surveying. A postgraduate qualification in surveying is an added advantage;

(iii) Must have minimum of 8 years working experience in land surveying related to road studies and design activities;

(iv) Must have served as a Topographical Surveyor on at least two (2) projects of similar nature within the last 10 years, at least one of which must have been undertaken in a developing country, in an urban environment; and

(v) Must have a working experience of at least three (3) years in sub Saharan Africa; and

(vi) Proficiency in written and spoken English is mandatory.

The Topographical Surveyor shall be responsible for checking that there is adequate corridor for construction of road and structures, locating and rechecking accuracy of bench marks on the project and reviewing/checking the accuracy of all the survey data used in designing.

g)* Quantity Surveyor *(K-7)

(i) Must be registered with relevant professional authorities;

(ii) Must have a degree in Quantity Surveying or Building Economics. A postgraduate qualification in Quantity Surveyor or Building Economics is an added advantage;

(iii) Must have a minimum of ten (10) years' experience as a Quantity Surveyor in Civil works.

(iv) Must have served in similar capacity in at least three (3) projects of similar nature, at least one of which must have been undertaken in a developing country, in an urban environment;

(v) Must have a working experience of at least three (3) years in developing country; and

(vi) Proficiency in written and spoken English is mandatory

The Quantity Surveyor shall be responsible for ensuring that all measurements and evaluation of designed works conform to4 specifications and actual quantities measured from drawings and design layouts.

h) Environmentalist (K-8)

(i) Must be registered with relevant professional authorities;

(ii) Must have a degree in Environment Management or related discipline. A postgraduate qualification in Environment Management or related discipline is an added advantage;

(iii) Must have at least 10 years of cumulative professional experience related to environmental issues, initiatives and implementation of mitigation measures related to civil engineering infrastructure projects.

(iv) Must have done an EIA and preparation of RAP in at least two (2) projects of similar nature within the last ten (10) years undertaken in developing countries, in an urban environment;

(v) Must have a working experience of at least three (3) years in developing country; and

(vi) Proficiency in written and spoken English and Kiswahili is mandatory.

The Environmentalist shall review the environmental impact assessment of the project and prepare Environmental Management Plan in order to minimize any negative impacts that the project will have on the environment.

i) Sociologist (K-9)

(i) Must be registered with relevant professional authorities;

(ii) Must have a degree in social science or related discipline. A postgraduate qualification in social science or related discipline is an added advantage;

(iii) Must have at least 10 years of cumulative professional experience related to social issues, social risks and safeguards management and implementation of mitigation measures related to civil engineering infrastructure projects;

(iv) Must have served in similar capacity on at least two (2) infrastructure projects of similar nature in urban environments and must have prepared RAP and SMP for the respective projects within the last ten (10) years;

(v) Must have at least 3 years working experience in developing country; and

(vi) Proficiency in written and spoken English and Kiswahili is mandatory.

The Sociologist shall review all social related issues on the project corridor in order to minimize and manage any negative impacts and review the RAP for conformity.

6.2 Phase 2: Key Staff Requirement during Supervision Period

The following are qualification and experience requirements for key professional staff for the Supervision Stage:

(a) Resident Engineer (K-10)

(i) Must be a Civil Engineer with a degree in Civil Engineering. A postgraduate qualification in Highway, Structural or Bridge Engineering is an added advantage;

(ii) Must be registered by relevant authorities;

(iii) Must have a minimum of fifteen (15) years of extensive experience related to supervision of roads and bridge construction and contract administration under FIDIC Conditions of Contract;

(iv) Must have served as the Resident Engineer or equivalent capacity in at least three (3) construction projects of similar magnitude and complexity, at least one of which must have been undertaken in a developing country, in an urban environment

(v) Must have at least 3 years working experience in developing country; and

(vi) Proficiency in written and spoken English is mandatory.

The Resident Engineer shall head the site staff and shall be responsible for all technical and administrative aspects on site.

(b) Bridge/Structural Engineer (K-11)

(i) Must have a degree in Civil Engineering or equivalent qualification. A postgraduate qualification in Bridge/Structural Engineering is an added advantage;

(ii) Must be registered by relevant authorities;

(iii) Must have a minimum of ten (10) years cumulative experience in bridges construction supervision;

(iv) Must have served in similar capacity in at least three bridge projects of similar magnitude and complexity, at least one of which must have been undertaken in a developing country, in an urban environment.

(i) Must have at least 3 years working experience in developing country; and

(v) Proficiency in written and spoken English is mandatory.

The Bridge/Structural Engineer shall be responsible for ensuring that bridges and other structures are constructed according to the design and conform to the contract specifications.

(c) Pavement/Materials Engineer (K-12)

(ii) Must have a degree in Civil Engineering or equivalent qualification. Postgraduate qualifications in Geotechnical or Pavement Engineering is an added advantage;

(iii) Must be registered by relevant authorities;

(iv) Must have a minimum of ten (10) years cumulative experience in materials matters related to civil works;

(v) Must have served in similar capacity in at least three (3) road and bridge projects of similar magnitude and complexity, at least one of which must have been undertaken in a developing country, preferably in an urban environment.

(i) Must have at least 3 years working experience in developing country; and

(vi) Proficiency in written and spoken English is mandatory.

The Pavement/Materials Engineer shall be responsible for ensuring the quality of all materials to be incorporated in the works, as well as the completed works, conform to the contract specifications.

(d) Topographical Surveyor (K-13)

(ii) Must have a degree in land surveying or equivalent. Post graduate qualifications in land surveying is an added advantage;

(iii) Must be registered by relevant authorities;

(iv) Must have a minimum of ten (10) years cumulative experience in Land surveying supervision related activities;

(v) Must have served as a Topographical Surveyor on at least three (3) projects of similar magnitude and complexity within the last 10 years. In addition, at least one of which must have been undertaken in a developing country, preferably in an urban environment;

(vi) Must have at least 3 years working experience in developing country; and

(vi) Proficiency in written and spoken English is mandatory.

The Topographical Surveyor shall be responsible for ensuring that the road and structures are constructed according to the design setting out and specifications.

(e) Mechanical Electrical and Plumbing (MEP) Engineer (K-14)

(i) Must be a holder of a degree in Electro-mechanical Engineering or equivalent qualification;

(ii) Must be registered by relevant authorities;

(iii) Must have a minimum of ten (10) years cumulative experience in supervision of electrical, mechanical and plumbing installations;

(iv) Must have served in similar capacity in at least three projects of similar magnitude and complexity, at least one of which must have been undertaken in a developing country, preferably in an urban environment.

(v) Must have at least 3 years working experience in developing countries; and

(vi) Proficiency in written and spoken English is mandatory.

The Mechanical Electrical Plumbing Engineer shall be responsible for ensuring all electro-mechanical and plumbing installations are performed according to design and conform to the contract specifications.

(f) Environmentalist (K-15)

(i) Must have a degree in Environmental Management or related discipline;

(ii) Must be registered by relevant authorities;

(iii) Must have minimum of 10 years cumulative working experience on environmental management with sound knowledge of environmental and social issues, initiatives and implementation of mitigation measures in construction of bridges and road works.

(i) Must have at least 3 years working experience in developing country; and

(iv) Proficiency in written and spoken English is mandatory.

The Environmental Specialist shall be responsible for supervision of the Environmental and Social Management Plan (ESMP) of the project as per the project Operational Manual.

(g) Sociologist (K-16)

(ii) Must have a degree in Social sciences or related discipline;

(iii) Must be registered by relevant authorities;

(iv) Must have minimum of 5 years cumulative working experience on social risk management and social safeguards with sound knowledge of social issues, initiatives and implementation of mitigation measures in construction of bridges and roads.

(v) Must have at least 3 years working experience in developing country; and

(v) Proficiency in written and spoken English and Kiswahili is mandatory.

The Social Specialist shall be responsible for supervision of the resettlement and land related issues and the Social Management Plan including engagement with communities and grievance management as may be needed, of the project as per the project Operational Manual.

(h) Measurement Engineer/Quantity Surveyor (K-17)

(i) Must have a degree in Civil Engineering or Quantity surveying;

(ii) Must be registered by relevant authorities;

(iii) Must have minimum of ten (10) years cumulative experience as Measurement Engineer or Quantity Surveyor in Civil works;

(iv) Must have served in similar capacity in at least three projects of similar magnitude and complexity, at least one of which must have been undertaken in a developing country, preferably in an urban environment.

(v) Must have at least 3 years working experience in developing country; and

(vi) Proficiency in written and spoken English is mandatory.

The Measurement Engineer/Quantity Surveyor shall be responsible for ensuring that all measurements and evaluation of executed works submitted for payment by the contractor conform to actual quantities executed on site, and are in line with the approved design and contract specifications.

(i) Occupational Health and Safety (OHS) Specialist(K-18)

(i) Must have a degree in Health Sciences or other related fields. A Master's degree in a similar Profession is an added advantage.

(ii) Must be registered by relevant authorities

(iii) Must have minimum of ten (10) years cumulative experience in managing health safety and environmental issues at workplace during the project execution.

(iv) Proven credentials in managing health and safety issues in the construction projects preferably FIDIC based contracts or contracts having detailed provisions and protocols on managing the health, safety and environment during the project execution.

(v) Must have at least 3 years working experience in Developing country Africa; and

(vi) Proficiency in written and spoken English is mandatory.

(j) **Highway Engineer *(K-19)***

(i) Must be registered with relevant professional authorities;

(ii) Must be a holder of a degree in Civil Engineering. A postgraduate qualification in Highway Engineering will be an added advantage;

(iii) Must have a minimum of ten (10) years cumulative experience in highway designs and construction supervision;

(iv) Must have served in similar capacity in at least three (3) projects of similar nature, at least one of which must have been undertaken in a developing country, in an urban environment;

(v) Must have a working experience of at least three (3) years in sub Saharan Africa; and

(vi) Proficiency in written and spoken English is mandatory.

The Highway Engineer shall be responsible for design review and improvement of the geometrical aspects of the bridge and approach roads to incorporate required modifications, She/he shall also assist the Resident Engineer in the reviewing and improving road safety aspects.

6.3 Back up Staff

(a) Project Director

The Project Director shall guide and support the design review and site supervision staff for the duration of the project. She/he shall be based at the Consultant's head office and shall co-ordinate the recruitment and deployment of any specialist services that may be required from the Consultant.

(b) Other Support Personnel

In addition to the key experts designated above, the Consultant shall determine the support and back-up staff deemed necessary to assist with design review and on-site supervision of the works. These include home office back-up specialists and support staff such as Assistant Traffic Engineer, Electronics Engineer, Drainage Engineer, Assistant Topographical Surveyor, Material Technician, Works Inspectors, CAD Draftsman, Office Management Secretary, as required. The CV for experts other than the key experts shall not be evaluated or examined prior to the signature of the contract; therefore, they need not be included in the proposal.

6.4 Staff Requirement during Defects Notification Period

The Consultant shall assign at least one of key personnel to lead a team of experts to conduct inspections during the Defect Notification Period as described in Section 5.3 of the Terms of Reference.

6.5 Curriculum Vitae (CVs)

The Consultant shall provide in the proposal duly signed CVs and copies of professional registration and academic certificates for all professional key staff including the duration in man-months during which the staff will be deployed under the Contract.

7. SERVICES AND FACILITIES TO BE PROVIDED

7.1 Obligations of the Client

The Client shall provide to the Consultant the following:

(a) Soft copy of Engineering Reports, drawings and BoQ and any other available data for design review stage

(b) One set of the Contract Documents for Works;

(c) Liaison/assistance in obtaining information or documents required from other Government Agencies and which TANROADS considers essential for the proper conduct and execution of this assignment;

(a) Local transport and Furnished Office, Laboratory and Accommodation, with furniture and equipment as required for efficient execution of the services, shall be provided to the Consultant under the Works Contract. Note that, the Client will not provide these facilities during design review/pre-contract services period. The Consultant shall be deemed to have included the cost of providing these facilities in his Financial Proposal

(d) Assistance in obtaining working permits of the Consultant staff for undertaking this assignment by writing to relevant authorities.

7.2 The Consultant's Obligations

The Consultant shall be responsible for the following:

(a) The Consultant shall employ only such key professional staff whose CV's have been approved by the Client. Replacement or temporary substitution shall not be permitted unless in emergency or under very exceptional circumstances of which the Client shall be made aware of immediately.

(b) The Consultant shall arrange and provide for supervision and efficient performance of his staff.

(c) The Consultant shall ensure that his supervision staff provide organized training and instructions to counterpart personnel, practical trainee Engineers from other relevant professional boards or university students assigned to the Project, monitor their performance and submit a quarterly progress report on each individual. Training program and reporting should be defined in the Consultant's proposal and agreed with the Client during pre-contract discussions.

(d) In the conduct of this work, the Consultant shall cooperate fully with relevant Government Ministries and Departments. The Consultant shall be solely responsible however, for the analysis and interpretation of all data received and for the conclusions and recommendations based thereon.

8. REPORTING

8.1 Inception Reports (Separate Report for Design Review Stage and Supervision Stage)

The Consultant shall prepare two (2) Inception Reports one for each stage

(a) During design review phase, the report shall include status of the Consultant's mobilization, Consultant's demonstration on the understanding of the assignment and any other matter requiring the Client's action.

(b) The report during Supervision Phase shall include results of the review of the contractor's work program, any modifications thereto, status of the consultant's and contractor's mobilization and any other matters requiring the Employer's action under the Works Contract.

These reports shall be submitted in two (2) copies to the Client one month after commencement of each stage of the Consultancy services contract. A copy of

each report will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

8.2 Draft Design Review Report

This report shall present the Consultant's findings of his design review and shall point out deficiencies or necessary modifications that are identified or deemed necessary for the successful implementation of the project.

The draft design review report shall also present draft of alternatives design for up lifting of appearance of the bridge, provision of bus stops and pedestrian access to the bus stop.

Further it shall address traffic management during construction submitted to Client in a separate volume as annex to the draft design review report with Consultant's findings on the deficiencies or necessary improvement deemed necessary to minimize traffic disruption during construction.

The report shall be submitted in two (2) copies to the Client not later than **two (2) months** after commencement of the Services. One (1) copy will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

Client's comments will be provided to the Consultant within two (2) weeks after receipt of the draft design review report.

8.3 Final Design Review Report and Bidding Documents

Upon receipt of the Client's comments, the consultant shall then prepare the Final Design Review Report and Bidding Documents after incorporating all modifications resulted from the design review. This report shall present the Consultant's findings of his design review and modifications made to the design for the successful implementation of the project. This shall be accompanied with Bidding documents including:

i. Bidding procedures;
ii. Works requirement (Technical Specifications);
iii. Conditions of Contract;
iv. Final Architectural Drawings;
v. Final Structural Design Drawings;
vi. Final Plan and Profile Design Drawings;
vii. Final Pavement Design Drawings;
viii. Final Drainage Design Drawings; and
ix. Bills of Quantities.

The traffic management review report shall be submitted to Client in a separate volume as annex to the design review report. The traffic management review report shall recommend improvements, if any that are deemed necessary to minimize traffic disruption during construction.

The Consultant shall prepare and submit revised Bidding Documents after incorporating all modifications resulted from the design review.

The Final Design Review Report and the Bidding Documents shall be submitted in two (2) copies to the Client, **four (4) months** after commencement of Services. One (1) copy will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

8.4 Progress Reports

(a) The Consultant shall prepare progress reports every month after commencing Phase 2 (Construction Supervision) for the duration of the Contract. These are to be submitted in two (2) copies and should reach the Client not later than 15 days after the end of the month being reported on. One (1) copy will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

(b) The format and the content of the monthly progress reports shall be as agreed with the Client. They will include but not limited to the following:

(i) Summary progress of the works, both physical and financial;

(ii) Mention of any changes on the original envisaged technical solutions;

(iii) Major changes of quantities compared to contractual Bill of quantities;

(iv) Record of working units (number of equipment and labour) used for the various types of works and total number of working hours of every item of equipment and labour category.

(v) Suggestions for resolving any technical and other problems, which occur, and those affecting progress of works. A separate section will be given to cover issues, problems and solutions.

(vi) Financial status of both works and consultancy contracts;

(vii) Progress charts including percentages of completion of individual main work items and overall project;

(viii) Weather information and charts,

(ix) List details of every claim made by the contractor; and

(x) Construction and supervision data.

8.5 ES reporting

The Consultant shall:

(a) immediately notify the Client of any failure by the Contractor to comply with its SEA and SH obligations;

(b) immediately notify the Client of any allegation, incident or accident, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Client's Personnel, Contractor's Personnel or Experts. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information. The Consultant shall provide full details of such incidents or accidents to the Client within the timeframe agreed with the Client.

(c) immediately inform and share with the Client notifications on ES incidents or accidents provided to the Consultant by the Contractor, and as required of the Contractor as part of the Progress Reporting;

(d) share with the Client in a timely manner the Contractor's ES metrics, as required of the Contractor as part of the Progress Reports.

8.6 Detailed Progress Report

When the implementation of the civil works contract reaches a value of 50% and 80% of the initial construction contract, the Consultant shall prepare and submit detailed progress reports with updated cost of Works contract, implementation schedules and substantiate any request related to additional funding, if such is needed to full completion of the project.

The report shall be submitted in two (2) copies. One (1) copy will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

8.7 Final Report

The final report shall be submitted in two (2) copies. One (1) copy will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

(i) The report shall be submitted not later than one month after the substantial completion of construction works. The report should enable the Client in the future to know the type, quality and quantity of materials used and all information which together with the as built drawings (1 original and 2 copies including soft copy in PDF and DWG format) and specifications will help the Client in the maintenance of the Works.

(ii) The report shall also include a summary of the principal difficulties encountered during construction and the means employed to overcome them, changes (if any) made in the designs, modifications to specifications and conditions of contract, all variation orders, assessment of claims by the contractor, utilization of provisional and price variation and physical contingencies sums. Others include cumulative monthly payments to the Contractor, by date and number of payment certificate and break down into foreign and local currencies and including a similar payment schedule for supervision services. The details of the overall project costs (construction and supervision) with justification for any significant variation from the original shall be given in the final report.

8.8 Final Completion Report

Upon issuance of the defects liability and the final payment certificates, the Consultant shall prepare within 30 days a Final Completion Report and submit two (2) copies to Client. One (1) copy will be delivered to WB by the Client. The report submitted shall be both in hard and soft copies including editable version.

The report shall include a separate volume on proposed future maintenance activities of the bridge.

9. DURATION OF THE ASSIGNMENT

The total duration of the assignment will be 64 calendar months and distributed into three stages as follows:

Phase 1:	Design Review	-	4 months
Phase 2:	Construction Supervision	-	24 months; and
Phase 3:	Defects Notification Period	-	36 months.

The engagement shall be deemed to have started on execution of the Agreement for the Services and shall terminate when the final inspection of the

works at the completion of the Defects Notification Period has been done and the Consultant has fulfilled all his obligations under the Contract.

10. PAYMENT TO THE CONSULTANT

10.1 Payments

Payments will be made monthly for undertaking the assignments described in these Terms of Reference to cover fees for approved personnel and reimbursable expenses.

10.2 Costs

The costs shall be quoted to cover the Consultant's performance of his duties described in this TOR in accordance with the following:

(a) Monthly costs and subsistence allowances for expatriate personnel;
(b) Monthly costs and subsistence allowances for local personnel;
(c) Cost of producing and printing reports and secretarial expenses;
(d) Shipment of personal effects; and
(e) Other costs which the Consultant must specify.

10.3 Reimbursable Expenses

Reimbursable expenses, which cover all out-of-pocket expenses, will be made against submission of acceptable documentary evidence, as shall be agreed with the Client during pre-contract negotiation. The reimbursable expenses should include costs for obtaining work and residence permits, air freight for experts, fees and levies.

10.4 Training and Field visits

The Consultant shall carry out the technology transfer activities as an important aspect in design and supervision works. The Consultant shall (i) provide the opportunity to trainees to be involved in the working team of the Consultant during the design and supervision works for their capacity building wherever possible, and (ii) arrange field visit in the country chosen by the Consultant for the design, beautification and construction of Jangwani Bridge. If requested by the executing agency, the Consultant shall brief and demonstrate the survey and design procedure, the construction supervision and contract management process and procedures.

10.5 General Obligations

The Consultant's remuneration shall be deemed to cover his liabilities, taxes, travel costs and support of his head office staff and all his obligations other than additional services not covered by these terms of reference.

11. LEAVE

The Consultant's key staff engaged in the supervision of the Works will be entitled to 28 days leave per calendar year. The Client shall not pay remunerations for staff-months during annual leave. Generally, payment for the Consultant's Personnel shall be determined on the basis of time spent by such Personnel in the performance of the Services.