Kenya National Highways Authority

Quality Highways, Better Connections

REPUBLIC OF KENYA

TENDER DOCUMENT

CONSTRUCTION OF UPLANDS – GITHUNGURI – RUIRU (B116) ROAD

TENDER NO. KeNHA/2885/2025

JUNE 2025

CLIENT	ENGINEER
DIRECTOR GENERAL KENYA NATIONAL HIGHWAYS AUTHORITY BARABARA PLAZA, OFF AIRPORT SOUTH ROAD, OPP. KCAA P.O. BOX 49712-00100 NAIROBI	DIRECTOR (DEVELOPMENT) KENYA NATIONAL HIGHWAYS AUTHORITY BARABARA PLAZA, OFF AIRPORT SOUTH ROAD, OPP. KCAA P.O. BOX 49712-00100 NAIROBI

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SECTION I: INVITATION TO TENDER

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CONSTRUCTION OF UPLANDS – GITHUNGURI – RUIRU (B116) ROAD The Kenya National Highways Authority (KeNHA) is a State Corporation established under the Kenya Roads Act, 2007, with the responsibility for the management, development, rehabilitation and maintenance of national roads.

The Authority invites bids from eligible construction companies registered with the **National Construction Authority (NCA) in Category 1 for Road works** or its equivalent from the country of origin, for **CONSTRUCTION OF UPLANDS – GITHUNGURI – RUIRU (B116) ROAD** to be funded through the Government of Kenya Development Fund. Foreign firms, if successful, will be required to register with the National Construction Authority.

SCOPE OF WORK

The scope of works shall be as described in the tender document.

QUALIFICATION FOR TENDERING

Mandatory Requirements

The following must be submitted together with bid:

1. Copy of Certificate of Incorporation
2. Copy of **Valid** Annual Practicing License with the **National Construction Authority** in the class specified above, or its equivalent from the country of origin in case of a foreign company.
3. Copy of a **Valid** Tax Compliance Certificate
4. Copy of CR12 form (Issued within the last Six 6 months from the Tender Opening Date), or its equivalent from the country of origin in case of a foreign company, duly notarized.
5. All foreign contractors must source **at least forty percent** of their supplies from citizen contractors and must submit a declaration of compliance together with their tender
6. Under Regulation 12 of the National Construction Authority Regulations 2014 foreign firm(s) to grant an undertaking in **WRITING** that the foreign person or firm:
    i. Shall subcontract or enter into a joint venture with a local person or local firm for not less than **thirty percent** (**30%**) of the value of the Contract work for which temporary registration is sought.
    ii. Shall transfer technical skills not available locally to a local person or firm in such manner as the Authority may determine from time to time

    The subcontractors or joint ventures partners should be **registered with NCA** in the category equivalent to the thresholds or value of the portion of the works to be undertaken by them.
7. Bidders **must serialize all pages** for each bid document submitted.

Other Requirements

As specified in the tender documents covering the following: -

1. General and Similar previous experience
2. Equipment holding as per Appendix 1
3. Professional and technical personnel
4. Current workload
5. Litigation history **Current** Sworn Affidavit (i.e. within three months of the tender opening date)
6. Eligibility
    a) Only those Bidders registered in the NCA 1 road works category or its equivalent from their country of origin (as indicated in the Tender Document) shall be eligible to bid for this tender.
    b) Bidders with history of Non-performance (e.g. failure to complete the projects for the last three (3) Financial Years, notice of termination or termination of contracts in the last three (3) Financial Years) will be disqualified.
    c) Directors bidding under different companies for the same tender shall be disqualified.
    d) For Joint Ventures (JV), evidence of a duly executed Joint Venture Agreement by all parties, clearly stating obligations and liabilities and registration of the same with the Registration of Documents Act.
7. Any form of canvassing will lead to disqualification.

Note:

- In case of a joint venture (JV), the above mandatory requirements shall be met by all joint venture partners. For domestic JV partners, the NCA category requirements shall be NCA 1 as specified above.
- Procurement shall be based on the post qualification method and the above details will be submitted with the priced bid.
- All submitted Documents may be verified from the issuing agencies, KeNHA Reserves the right to verify all submitted documents

There shall be a mandatory Pre-Tender Site Visit that will be held on the date, time and location specified in the tender notice.

Interested eligible candidates may obtain further information and inspect tender documents from **Procurement Office, Kenya National Highways Authority, Barabara Plaza** during normal working hours.

A complete set of tender documents may be obtained by interested tenderers from the Kenya National Highways Authority website: *www.kenha.co.ke* or PPIP portal: *www.tenders.go.ke* free of charge. Bidders are encouraged to download tender documents to minimise physical visits to **KeNHA Headquarters Office**.

Completed tender documents should be addressed to: -

Director General,
Kenya National Highways Authority,
Barabara Plaza, Off Airport South Road, Opp. KCAA,
P. O. Box 49712-00100,
NAIROBI, KENYA

and be deposited in the Tender Box located at the reception area KeNHA Block C, 2nd Floor Boardroom, so as to be received on or before the date specified in the tender notice.

All interested bidders are required to continually check the Kenya National Highways Authority website: www.kenha.co.ke for any tender addendums or clarifications that may arise before the submission date.

Tenders will be opened immediately thereafter in the presence of Tenderers/Representatives who wish to attend at the **Kenya National Highways Authority Headquarters, Barabara Plaza, Jomo Kenyatta International Airport (JKIA), Nairobi, Off Mazao Road, Block C - 2nd Floor Board Room.**

Deputy Director,
Supply Chain Management
For Director General

PART 1 – TENDERING PROCEDURES

SECTION II: INSTRUCTIONS TO TENDERERS AND CONDITIONS OF TENDER

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CONDITIONS OF TENDER AND INSTRUCTIONS TO BIDDERS

A. GENERAL

1 SCOPE OF TENDER

1.1 The Procuring Entity as defined in the Appendix to Conditions of Contract invites tenders for Works Contract as described in the tender documents. The name, identification, and number of lots (contracts) of this Tender Document are specified in the TDS.

1.2 **INTERPRETATIONS**

Throughout this tendering document:

The term "in writing" means communicated in written form (e.g., by mail, e-mail, and fax, including if specified in the TDS, distributed or received through electronic-procurement system used by the Procuring Entity) with proof of receipt; if the context so requires, "singular" means "plural' and vice versa; and "Day" means calendar day, unless otherwise specified as a "Business Day." A Business Day is any day that is a working day of the Procuring Entity. It excludes the Procuring Entity's official public holidays.

2 FRAUD AND CORRUPT PRACTICES

2.1 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 "Declaration not to engage in corruption". The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.

2.2 The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the "Certificate of Independent Tender Determination" annexed to the Form of Tender.

2.3 Unfair Competitive Advantage-Fairness and transparency in the tender process require that the firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. To that end, the Procuring Entity shall indicate in the Data Sheet and make available to all the firms together with this tender document all information that would in that respect give such firm any unfair competitive advantage over competing firms.

2.4 Tenderers shall permit and shall cause their agents (where declared or not), subcontractors, sub consultants, service providers, suppliers, and their personnel, to permit the Procuring Entity to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Procuring Entity.

3 ELIGIBLE BIDDERS

3.1 A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT 3.8 or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a Form of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the Tendering process and, in the event the JV is awarded the Contract, during contract execution. Members of a joint venture may not also make an individual tender, be a subcontractor in a separate tender or be part of another joint venture for the purposes of the same Tender. The maximum number of JV members shall be specified in the TDS.

3.2 Public Officers of the Procuring Entity, their Spouses, Child, Parent, Brothers or Sister. Child, Parent, Brother or Sister of a Spouse, their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers with such relatives are also not allowed to participate in any procurement proceedings.

3.3 A Tenderer shall not have a conflict of interest. Any Tenderer found to have a conflict of interest shall be disqualified. A Tenderer may be considered to have a conflict of interest for the purpose of this Tendering process, if the Tenderer:

a) Directly or indirectly controls, is controlled by or is under common control with another Tenderer; or

b) Receives or has received any direct or indirect subsidy from another Tenderer; or

c) Has the same legal representative as another Tenderer; or

d) Has a relationship with another Tenderer, directly or through common third parties, that puts it in a position to influence the Tender of another Tenderer, or influence the decisions of the Procuring Entity regarding this Tendering process; or

e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Tender; or

f) Any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity or Procuring Entity as Engineer for the Contract implementation; or

g) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the TDS ITT 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or has a close business or family relationship with a professional staff of the Procuring Entity, Who:

i) are directly or indirectly involved in the preparation of the tendering document or specifications of the Contract, and/or the Tender evaluation process of such Contract; or

ii) Would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the Tendering process and execution of the Contract.

3.4 A tenderer shall not be involved incorrupt, coercive, obstructive or fraudulent practice. A tenderer that is proven to have been involved in any of these practices shall be automatically disqualified.

3.5 A firm that is a Tenderer (either individually or as a JV member) shall not participate in more than one Tender, except for permitted alternative Tenders. This includes participation as a subcontractor in other Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. A firm that is not a Tenderer or a JV member may participate as a subcontractor in more than one Tender.

3.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT 3.10 A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case maybe. This criterion also shall apply to the determination of the nationality of proposed subcontractors or sub-consultants for any part of the Contract including related Services.

3.7 Tenderer that has been debarred from participating in public procurement shall be ineligible to be prequalified for a tender or be awarded a contract. The list of debarred firms and individuals is available from the website of PPRA www.ppra.go.ke or email: complaints@ppra.go.ke.

3.8 Tenderers that are state-owned enterprises or institutions in Kenya may be eligible to compete and be awarded a Contract(s) only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Procuring Entity.

3.9 Tenderer shall not be under suspension from Tendering by the Procuring Entity as the result of the operation of a Tender-Securing or Proposal-Securing Declaration.

3.10 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, if Kenya prohibits commercial relations with that country, or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.

3.11 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, subcontracts and labour) from national suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided in for this purpose is be provided in "SECTION III - EVALUATION AND QUALIFICATION CRITERIA, Item 9".

3.12 Pursuant to the eligibility requirements of ITT 3.10, a tender is considered a foreign tenderer, if the tenderer is not registered in Kenya or if the tenderer is registered in Kenya and has less than 51 percent ownership by Kenyan citizens. JVs are considered as foreign tenderers if the individual member firms are not registered in Kenya or if are registered in Kenya and have less than 51 percent ownership by Kenyan citizens. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.

3.13 The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration for foreign contractors shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website www.nca.go.ke.

3.14 The Competition Act of Kenya requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website www.cak.go.ke

3.15 A Tenderer may be considered ineligible if he/she offers goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

3.16 A Kenyan tenderer shall provide evidence of having fulfilled his/her tax obligations by producing a valid tax compliance or tax exemption certificate issued by the Kenya Revenue Authority.

4 ELIGIBLE MATERIALS, EQUIPMENT, AND SERVICES

4.1 The materials, equipment and services to be supplied under the Contract may have their origin in any eligible country and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of materials, equipment and services.

4.2 For purposes of ITT 3.10 above, “origin” means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially different in its basic characteristics or in purpose or utility from its components.

5 TENDERER'S RESPONSIBILITIES

5.1 The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.

5.2 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Works and its surroundings, and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall beat the tenderer's own expense.

5.3 The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against all liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the inspection.

5.4 The tenderer shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including charts, as necessary or required.

B. CONTENTS OF TENDER DOCUMENTS

6 SECTIONS OF TENDERING DOCUMENT

6.1 The tendering document consists of Parts 1, 2, and 3, which include all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITT 10.

PART 1: Tendering Procedures

Section I: Instructions to Tenderers
Section II: Tender Data Sheet (TDS)
Section III: Evaluation and Qualification Criteria
Section IV: Tendering Forms

PART 2: Works' Requirements

Section V: Bills of Quantities
Section VI: Specifications
Section VII: Drawings

PART3: Conditions of Contract and Contract Forms

Section VIII: General Conditions (GCC)
Section IX: Particular Conditions of Contract
Section X: Contract Forms

6.2 The Invitation to Tender Document Notice issued by the Procuring Entity is not part of the Tender document.

6.3 Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.

6.4 The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Document and to furnish with its Tender all information and documentation as is required by the Tender document.

7 SITE VISIT

7.1 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Required works and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for the works. The costs of visiting the Site shall be at the Tenderer's own expense.

7.2 The Procuring Entity shall specify in the TDS if a pre-tender conference will be held, when and where. The Procuring Entity shall also specify in the TDS if a pre-arranged pretender visit of the site of the works will be held and when. The Tenderer's designated representative is invited to attend a pre-arranged pretender visit of the site of the works. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

7.3 The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the TDS before the meeting.

7.4 Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents in accordance with ITT7.3. Minutes shall not identify the source of the questions asked.

7.5 The Procuring Entity shall also promptly publish anonymized (no names) Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works at the web page identified in the TDS. Any modification to the Tender Documents that may become necessary as a result of the pre-Tender meeting shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT10 and not through the minutes of the pre-Tender meeting. Nonattendance at the pre-Tender meeting will not be a cause for disqualification of a Tenderer.

8 CLARIFICATION OF TENDER DOCUMENTS

8.1 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address specified in the TDS or raise its enquiries during the pre-Tender meeting and the pre-arranged pretender visit of the site of the works if provided for in accordance with ITT7.2. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the TDS prior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender Documents in accordance with ITT 6.3, including a description of the inquiry but without identifying its source. If so specified in the TDS, the Procuring Entity shall also promptly publish its response at the web page identified in the TDS. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents appropriately following the procedure under ITT 9.

9 AMENDMENT OF TENDERING DOCUMENT

9.1 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tendering document by issuing addenda.

9.2 Any addendum issued shall be part of the tendering document and shall be communicated in writing to all who have obtained the tendering document from the Procuring Entity in

accordance with ITT 6.3. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's webpage in accordance with ITT8.4.

9.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity shall extend, as necessary, the deadline for submission of Tenders, in accordance with ITT 24.2 below.

C. PREPARATION OF BIDS

10 COST OF TENDERING

10.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Tendering process.

11 LANGUAGE OF BID

11.1 The Tender, as well as all correspondence and documents relating to the Tender exchanged by the Tenderer and the Procuring Entity, shall be written in the English language. Supporting documents and printed literature that are part of the Tender may be in another language provided they are accompanied by an accurate translation of the relevant passages in the English language, in which case, for purposes of interpretation of the Tender, such translation shall govern.

12 DOCUMENTS COMPRISING THE TENDER

12.1 The Tender shall comprise the following:

a) Form of Tender prepared in accordance with ITT 14;

i) Schedules of personnel, and work completed in accordance with ITT 14 and ITT 16;
ii) Tender Security or Tender-Securing Declaration, in accordance with ITT 21.1;
iii) Alternative Tender, if permissible, in accordance with ITT 15;
iv) Authorization: written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 22.3;
v) Qualifications: documentary evidence in accordance with ITT 19 establishing the Tenderer's qualifications to perform the Contract if its Tender is accepted;
vi) Conformity: a technical proposal in accordance with ITT 18;
vii) Any other document required in the TDS.

12.2 In addition to the requirements under ITT 14.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed Agreement. The Tenderer shall serialize all pages of tender documents submitted.

13 FORM OF TENDER AND SCHEDULES

13.1 The Form of Tender and Schedules, including the Bills of Quantities, shall be prepared using the relevant forms furnished in Section IV, Tendering Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested. The Tenderer chronologically serialize all pages of the tender documents submitted.

13.2 The Tenderer shall furnish in the Form of Tender information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Tender.

14 ALTERNATIVE TENDERS

14.1 Unless otherwise specified in the TDS, alternative Tenders shall not be considered.

14.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the TDS, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.

14.3 Except as provided under ITT 15.4 below, Tenderers wishing to offer technical alternatives to the requirements of the Tender Documents must first price the Procuring Entity's design as described in the Tender Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Winning Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

14.4 When specified in the TDS, Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts will be identified in the TDS, as will the method for their evaluation and described in Section VII, Works' Requirements.

15 TENDER PRICES AND DISCOUNTS

15.1 The prices and discounts (including any price reduction) quoted by the Tenderer in the Form of Tender shall conform to the requirements specified below.

15.2 The Tenderer shall price for all items of the Works, including design, management and quality control costs and shall be assumed to have included in the tender price all associated costs, including costs to meet Public Authorities' requirements.

15.3 The price to be quoted in the Form of Tender, in accordance with ITT 14.1, shall be the total price of the Tender, excluding any discounts offered.

15.4 The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 16.1.

15.5 It will be specified in the TDS if the rates and prices quoted by the Tenderer are or are not subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, except in cases where the contract is subject to fluctuations and adjustments, not fixed price. In such a case, the Tenderer shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Procuring Entity may require the Tenderer to justify its proposed indices and weightings.

15.6 If so indicated in ITT 1.1, Where tenders are being invited for individual lots (contracts)or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 16.4, provided the Tenders for all lots (contracts) are opened at the same time.

15.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28days prior to the deadline for submission of Tenders, shall be included in the rates and prices and the total Tender Price submitted by the Tenderer.

16 CURRENCIES OF TENDER AND PAYMENT

16.1 The currency (ies) of the Tender and the currency (ies) of payments shall be the same.

16.2 Tenderers shall quote entirely in Kenya Shillings.

16.3 A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya (referred to as "the foreign currency requirements") shall indicate so in the Financial Proposal the percentage (s) of the Tender Price (excluding Provisional Sums), needed by the Tenderer for the payment of such foreign currency requirements, limited to no more than two foreign currencies.

16.4 The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the percentage (s) mentioned in (a) above shall be specified by the Tenderer in the TDS, and shall apply for all payments under the Contract so that no exchange risk will be borne by the successful Tenderer.

16.5 Tenderers may be required by the Procuring Entity to justify, to the Procuring Entity's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Tender are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Tenderers.

17 DOCUMENTS COMPRISING THE TECHNICAL PROPOSAL

17.1 The Tenderer shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Tender Forms, and insufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the work's requirements and the completion time.

18 DOCUMENTS ESTABLISHING THE ELIGIBILITY AND QUALIFICATIONS OF THE TENDERER

18.1 Tenderers shall complete the Form of Tender, included in Section IV, Tender Forms, to establish Tenderer's eligibility in accordance with ITT 5.

18.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tender Forms.

18.3 If a margin of preference applies as specified in accordance with ITT 36.1, national tenderers, individually or in joint ventures, applying for eligibility for national preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 36.1.

18.4 Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and thereby help to prevent any corrupt influence in relation to the procurement process or contract management.

18.5 The purpose of the information described in ITT 20.2 above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.

18.6 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which information on any changes to the information which was provided by the tenderer under ITT19.5. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.

18.7 All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.

18.8 If a tenderer fails to submit the information required by these requirements, its tenderer will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.

18.9 If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:

i) If the procurement process is still on going, the tenderer will be disqualified from the procurement process,
ii) If the contract has been awarded to that tenderer, the contract award will be set aside,
iii) The tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other persons have committed any criminal offence.

18.10 If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT 18.8 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tender.

19 PERIOD OF VALIDITY OF TENDERS

19.1 Tenders shall remain valid for the Tender Validity period specified in the TDS. The Tender Validity period starts from the date fixed for the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 25). A Tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.

19.2 In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 22, it shall also be extended for thirty (30) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting their quest shall not be required or permitted to modify its Tender, except as provided in ITT 26.3

20 TENDER SECURITY

20.1 The Tenderer shall furnish as part of its Tender, either a Tender-Securing Declaration or a Tender Security as specified in the TDS, in original form and, in the case of a Tender Security, in the amount and currency specified in the TDS. A Tender-Securing Declaration shall use the form included in Section IV, Tender Forms.

20.2 If a Tender Security is specified pursuant to ITT21.1, the Tender Security shall be a demand guarantee in any of the following forms at the Tenderer's option:

i) cash;
ii) a bank guarantee;
iii) a guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority; or
iv) A guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya, from a reputable source, and an eligible country.

20.3 If an unconditional bank guarantee is issued by a bank located outside Kenya, the issuing bank shall have a correspondent bank located in Kenya to make it enforceable. The Tender Security shall be valid for thirty (30) days beyond the original validity period of the Tender, or beyond any period of extension if requested under ITT 24.2.

20.4 If a Tender Security or Tender-Securing Declaration is specified pursuant to ITT 21.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.

20.5 If a Tender Security is specified pursuant to ITT 21.1, the Tender Security of unsuccessful Tenderers shall be returned as promptly as possible upon the successful Tenderer's signing

the Contract and furnishing the Performance Security and any other documents required in the TDS. The Procuring Entity shall also promptly return the tender security to the tenderers where the procurement proceedings are terminated, all tenders were determined non-responsive or a bidder declines to extend tender validity period.

20.6 The Tender Security of the successful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required Performance Security, and any other documents required in the TDS.

20.7 The Tender Security may be forfeited or the Tender-Securing Declaration executed:

a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension there to be provided by the Tenderer; or

b) if the successful Tenderer fails to:

i) sign the Contract in accordance with ITT 48; or

ii) Furnish a Performance Security and if required in the **TDS**, and any other documents required in the **TDS.**

20.8 Where tender securing declaration is executed, the Procuring Entity shall recommend to the PPRA that PPRA debars the Tenderer from participating in public procurement as provided in the law.

20.9 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of tendering, the Tender Security or the Tender-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITT 4.1 and ITT 13.2.

20.10 A tenderer shall not issue a tender security to guarantee itself.

21 FORMAT AND SIGNING OF TENDER

21.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 11 and clearly mark it “ORIGINAL.” Alternative Tenders, if permitted in accordance with ITT 13, shall be clearly marked “ALTERNATIVE.” In addition, the Tenderer shall submit copies of the Tender, in the number specified in the TDS and clearly mark them “COPY.” In the event of any discrepancy between the original and the copies, the original shall prevail.

21.2 Tenderers shall mark as “CONFIDENTIAL” all information in their Tenders which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

21.3 The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the TDS and shall be attached to the Tender. The name and position held by ach person signing the authorization must be typed or printed below the signature. All pages of the Tender where entries or amendments have been made shall be signed or initialled by the person signing the Tender.

21.4 In case the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

21.5 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialled by the person signing the Tender.

D. SUBMISSION AND OPENING OF TENDERS

22 SEALING AND MARKING OF TENDERS

22.1 Depending on the sizes or quantities or weight of the tender documents, a tenderer may use an envelope, package or container. The Tenderer shall deliver the Tender in a single sealed envelope, or in a single sealed package, or in a single sealed container bearing the name and Reference number of the Tender, addressed to the Procuring Entity and a warning not to open before the time and date for Tender opening date. Within the single envelope, package or container, the Tenderer shall place the following separate, sealed envelopes:

a. in an envelope or package or container marked "ORIGINAL", all documents comprising the Tender, as described in ITT 13; and
b. in an envelope or package or container marked "COPIES", all required copies of the Tender; and
c. if alternative Tenders are permitted in accordance with ITT 15, and if relevant:
    i. in an envelope or package or container marked "ORIGINAL – ALTERNATIVE TENDER", the alternative Tender; and
    ii. in the envelope or package or container marked "COPIES-ALTERNATIVE TENDER", all required copies of the alternative Tender.

22.2 The inner envelopes or packages or containers shall:

a)Bear the name and address of the Procuring Entity.

b) Bear the name and address of the Tenderer; and

c)Bear the name and Reference number of the Tender.

22.3 Where a tender package or container cannot fit in the tender box, the procuring entity shall:

a. Specify in the TDS where such documents should be received.
b. Maintain a record of tenders received and issue acknowledgement receipt note to each tenderer specifying time and date of receipt.
c. Ensure all tenders received are handed over to the tender opening committee for opening at the specified opening place and time.

22.4 If all envelopes are not sealed and marked as required, the Procuring Entity will assume no responsibility for the misplacement or premature opening of the Tender. Tenders that are misplaced or opened prematurely will not be accepted.

23 DEADLINE FOR SUBMISSION OF TENDERS

23.1 Tenders must be received by the Procuring Entity at the address and no later than the date and time indicated in the TDS. When so specified in the TDS, Tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures specified in the TDS.

23.2 The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the tendering document in accordance with ITT 10, in which case all

rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

24 LATE TENDERS

24.1 The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of Tenders, in accordance with ITT 22. Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

25 WITHDRAWAL, SUBSTITUTION, AND MODIFICATION OF TENDERS

25.1 A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 20.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:

a. prepared and submitted in accordance with ITT 20 and ITT 21 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION; "and

b. Received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 22.

25.2 Tenders requested to be withdrawn in accordance with ITT 24.1 shall be returned unopened to the Tenderers.

25.3 No Tender may be withdrawn, substituted, or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Form of Tender Form or any extension thereof.

26 TENDER OPENING

26.1 Except in the cases specified in ITT 23 and ITT 24.2, the Procuring Entity shall publicly open and read out in accordance with this ITT all Tenders received by the deadline, at the date, time and place specified in the TDS, in the presence of Tenderers' designated representatives and anyone who chooses to attend. Any specific electronic Tender opening procedures required if electronic tendering is permitted in accordance with ITT 22.1, shall be as specified in the TDS.

26.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding Tender shall not be opened, but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Tender opening.

26.3 Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be

opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Tender opening.

26.4 Next, Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Tender opening.

26.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether there is a modification; the total Tender Price, per lot (contract) if applicable, including any discounts and alternative Tenders; the presence or absence of a Tender Security, if required; and any other details as the Procuring Entity may consider appropriate.

26.6 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further. The Form of Tender and the Bill of Quantities are to be initialled by representatives of the Procuring Entity attending Tender opening in the manner specified in the TDS.

26.7 The Procuring Entity shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).

26.8 The Procuring Entity shall prepare a record of the Tender opening that shall include, as a minimum:

i. The name of the Tenderer and whether there is a withdrawal, substitution, or modification;
ii. The Tender Price, per lot (contract) if applicable, including any discounts;
iii. Any alternative Tenders;
iv. The presence or absence of a Tender Security, if one was required.
v. Number of pages of each tender document submitted

26.9 The Tenderers' representatives who are present shall be requested to sign the record. The omission of a Tenderer's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Tenderers. A copy of the tender opening register shall be issued to a Tenderer upon request.

E. EVALUATION AND COMPARISON OF TENDERS

27 CONFIDENTIALITY

27.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderers or any other persons not officially concerned with such process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 43.

27.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its Tender.

27.3 Notwithstanding ITT 28.2, from the time of Tender opening to the time of Contract award, if any Tenderer wishes to contact the Procuring Entity on any matter related to the Tendering process, it may do so in writing.

28 CLARIFICATION OF TENDERS

28.1 To assist in the examination, evaluation, and comparison of the Tenders, and qualification of the Tenderers, the Procuring Entity may, at its discretion, ask any Tenderer for a clarification of its Tender. Any clarification submitted by a Tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change in the prices or substance of the Tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the Tenders, in accordance with ITT 33.

28.2 If a Tenderer does not provide clarifications of its Tender by the date and time set in the Contracting Agency's request for clarification, its Tender may be rejected.

29 DEVIATIONS, RESERVATIONS, AND OMISSIONS

29.1 During the evaluation of Tenders, the following definitions apply:

a. “Deviation” is a departure from the requirements specified in the tendering document; “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the tendering document; and

b. “Omission” is the failure to submit part or all of the information or documentation required in the tendering document.

30 DETERMINATION OF RESPONSIVENESS

30.1 The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the Tender itself, as defined in ITT 13.

30.2 A substantially responsive Tender is one that meets the requirements of the tendering document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:

a. If accepted, would:

i. Affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

ii. Limit in any substantial way, in consistent with the tendering document, the Procuring Entity's rights or the Tenderer's obligations under the proposed Contract;

or

b. If rectified, would unfairly affect the competitive position of other Tenderers presenting substantially responsive Tenders.

30.3 The Procuring Entity shall examine the technical aspects of the Tender submitted in accordance with ITT18, Technical Proposal, in particular, to confirm that all requirements of Section VII, Specifications for Works and Services have been met without any material deviation, reservation or omission.

30.4 If a Tender is not substantially responsive to the requirements of the tendering document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

31 NON-MATERIAL NON-CONFORMITIES

31.1 Provided that a Tender is substantially responsive, the Procuring Entity may waive any nonconformities in the Tender.

31.2 Provided that a Tender is substantially responsive, the Procuring Entity may request that the Tenderer submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial non- conformities in the Tender related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the Tender. Failure of the Tenderer to comply with the request may result in the rejection of its Tender.

31.3 Provided that a Tender is substantially responsive, the Procuring Entity shall rectify nonmaterial non- conformities related to the Tender Price. To this effect, the Tender Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified in the TDS.

32 CORRECTION OF ARITHMETICAL ERRORS

32.1 The tender sum as submitted and read out during the tender opening shall be absolute and final and shall not be the subject of correction, adjustment or amendment in anyway by any person or entity.

32.2 Provided that the Tender is substantially responsive, the Procuring Entity shall handle errors on the following basis:

a. Any error detected if considered a major deviation that affects the substance of the tender, shall lead to disqualification of the tender as non-responsive.

b. Any errors in the submitted tender arising from a miscalculation of unit price, quantity, subtotal and total bid price shall be considered as a major deviation that affects the substance of the tender and shall lead to disqualification of the tender as non-responsive and

c. If there is a discrepancy between words and figures, the amount in words shall prevail.

32.3 Tenderers shall be notified of any error detected in their bid during the notification of award.

33 CONVERSION TO SINGLE CURRENCY

33.1 For evaluation and comparison purposes, the currency (ies) of the Tender shall be converted into a single currency which is Kenya Shillings. The source of the exchange rates shall be the Central Bank of Kenya.

34 NOMINATED SUBCONTRACTORS

34.1 Unless otherwise stated in the TDS, the Procuring Entity does not intend to execute any specific elements of the Works by subcontractors selected/nominated by the Procuring Entity. In case the Procuring Entity nominates a subcontractor, the subcontract agreement shall be signed by the Subcontractor and the Procuring Entity. The main contract shall specify the working arrangements between the main contractor and the nominated subcontractor.

34.2 Tenderers may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified in the TDS. Subcontractors proposed by the Tenderer shall be fully qualified for their parts of the Works.

34.3 The subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated so by the Procuring Entity in the TDS as can be met by subcontractors referred to here after as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

35 MARGIN OF PREFERENCE AND RESERVATIONS

35.1 A margin of preference on local contractors may be allowed only when the contract is open to international competitive tendering where foreign contractors are expected to participate in the tendering process and where the contract exceeds the value/threshold specified in the Regulations.

35.2 A margin of preference shall not be allowed unless it is specified so in the TDS.

35.3 Contracts procured on basis of international competitive tendering shall not be subject to reservations exclusive to specific groups as provided in ITT 36.5.

35.4 An individual firm is considered a Kenyan tenderer for purposes of the margin of preference if it is registered in Kenya, has more than 51 percent ownership by nationals of Kenya, and if it does not subcontract more than 10 percent of the contract price, excluding provisional sums, to foreign contractors. JVs are considered as Kenyan Tenderer and eligible for

domestic preference only if the individual member firms are registered in Kenya or have more than 51 percent ownership by nationals of Kenya, and the JV shall be registered in Kenya. The JV shall not subcontract more than 10 percent of the contract price, excluding provisional sums, to foreign firms.

35.5 Where it is intended to reserve a contract to a specific group of businesses (these groups are Small and Medium Enterprises, Women Enterprises, Youth Enterprises and Enterprises of persons living with disability, as the case may be), and who are appropriately registered as such by a competent authority, a procuring entity shall ensure that the invitation to tender specifically indicates that only businesses or firms belonging to the specified group are eligible to tender. No tender shall be reserved to more than one group. If not so stated in the Invitation to Tender and in the Tender documents, the invitation to tender will be open to all interested tenderers.

36 EVALUATION OF TENDERS

36.1 The Procuring Entity shall use the criteria and methodologies listed in this ITT and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Best Evaluated Tender in accordance with ITT 39.

36.2 To evaluate a Tender, the Procuring Entity shall consider the following:

a. Price adjustment due to discounts offered in accordance with ITT 16.4;

b. Price adjustment due to quantifiable non-material non-conformities in accordance with ITT 32.3;

c. Converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with ITT 34; and

d. Any additional evaluation factors specified in the TDS and Section III, Evaluation and Qualification Criteria.

36.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered in tender evaluation.

36.4 In the case of multiple contracts or lots, Tenderers are allowed to tender for one or more lots and the methodology to determine the lowest evaluated cost of the lot (contract) and for combinations, including any discounts offered in the Form of Tender, is specified in Section III, Evaluation and Qualification Criteria.

37 COMPARISON OF TENDERS

37.1 The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders in accordance with ITT 34.2 to determine the Tender that has the lowest evaluated cost.

38 ABNORMALLY LOW TENDERS

38.1 An Abnormally Low Tender is one where the Tender price, in combination with other constituent elements of the Tender, appears unreasonably low to the extent that the Tender price raises material concerns as to the capability of the Tenderer to perform the Contract for the offered Tender price.

38.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the tendering document.

38.3 After evaluation of the price analyses, in the event that the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

39 ABNORMALLY HIGH TENDERS

39.1 An abnormally high price is one where the tender price, in combination with other constituent elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.

39.2 In case of an abnormally high tender price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:

i) If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not accept the tender depending on the Procuring Entity's budget considerations.

ii) If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.

39.3 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (often due to collusion, corruption or other manipulations), the Procuring Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

40 UNBALANCED TENDERS OR FRONT LOADED

40.1 If the Tender that is evaluated as the lowest evaluated cost is, in the Procuring Entity's opinion, seriously unbalanced or front loaded the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Tender prices with the scope of works, proposed methodology, schedule and any other requirements of the tendering document.

40.2 After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may as appropriate:

a. Accept the Tender; or

b. Require that the amount of the Performance Security be increased at the expense of the Tenderer to a level not exceeding 20% of the Contract price; or

c. Reject the Tender.

41 QUALIFICATION OF THE TENDERER

41.1 The Procuring Entity shall determine to its satisfaction whether the Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria or, if prequalification has taken place, continues to be eligible and continues to meet the qualifying criteria.

41.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 19.2. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors, if permitted in TDS when prequalification has not taken place) or any other firm(s) different from the Tenderer.

41.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the next lowest evaluated Tender to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

42 LOWEST EVALUATED TENDER

42.1 Having compared the evaluated costs of Tenders, the Procuring Entity shall determine the Best Evaluated Tender. The Best Evaluated Tender is the Tender of the Tenderer that meets the Qualification Criteria and whose Tender has been determined to be:

a. Most responsive to the tendering document; and

b. The lowest evaluated cost.

43 PROCURING ENTITY'S RIGHT TO ACCEPT ANY TENDER, AND TO REJECT ANY OR ALL TENDERS

43.1 The Procuring Entity reserves the right to accept or reject any Tender, and to annul the Tendering process and reject all Tenders at any time prior to contract award, without thereby incurring any liability to Tenderers. In case of annulment, all Tenderers shall be notified with reasons and all Tenders submitted and specifically, Tender securities, shall be promptly returned to the Tenderers.

44 NOTICE OF INTENTION TO ENTER IN TO A CONTRACT

44.1 Upon award of the contract and prior to the expiry of the Tender Validity Period the Procuring Entity shall issue a Notification of Intention to Enter into a Contract/Notification of award to all tenderers which shall contain, at a minimum, the following information:

a. The name and address of the Tenderer submitting the successful tender;

b. The Contract price of the successful tender;

c. A statement of the reason(s) the tender of the unsuccessful tenderer to whom the letter is addressed was unsuccessful, unless the price information in © above already reveals the reason;

d. The expiry date of the Standstill Period; and

e. Instructions on how to request a debriefing and/or submit a complaint during the standstill period;

45 STANDSTILL PERIOD

45.1 The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply. Where only one Tender is submitted, the Standstill Period shall not apply.

45.2 Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter into a Contract with the successful Tenderer.

46 DEBRIEFING BY THE PROCURING ENTITY

46.1 On receipt of the Procuring Entity's Notification of Intention to Enter into a Contract referred to in ITT 43, an unsuccessful tenderer may make a written request to the Procuring Entity for a debriefing on specific issues or concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.

46.2 Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its own costs of attending such a debriefing meeting.

F. CONTRACT NEGOTIATIONS AND AWARD OF CONTRACT

47 NEGOTIATIONS

47.1 Before signature of contract, the procuring Entity may conduct negotiations with the best evaluated tenderer. The negotiations will be held at the date and address indicated in the TDS with the Tender's Representatives who must have written power of attorney to negotiate a Contract on behalf of the Tenderer.

47.2 The Procuring Entity shall prepare minutes of negotiations that are signed by the Procuring Entity and the Tender's authorized representative.

47.3 The negotiations include discussions of the Schedule of Requirements, the proposed methodology, the Procuring Entity's inputs, the Special Conditions of the Contract, and finalizing the "Works and Services' Requirements" part of the Contract. These discussions shall not substantially alter the original scope of services or the terms of the contract, lest the quality of the final product, its price, or the relevance of the initial evaluation be affected.

47.4 The financial negotiations include the clarification of the tax liability in Kenya and how it should be reflected in the Contract. If the selection method included cost as a factor in the evaluation, the total price stated in the Financial Proposal for a Lump-Sum contract shall not be negotiated. The Procuring Entity may ask for clarifications and, if the costs are very high, ask to change the rates.

47.5 The negotiations are concluded with a review of the finalized draft Contract, which then shall be initialled by the Procuring Entity and the Tender's authorized representative. If the negotiations fail, the Procuring Entity shall inform the Tender in writing of all pending issues and disagreements and provide a final opportunity to the Tenderer to respond. If disagreement persists, the Procuring Entity shall terminate the negotiations informing the Tenderer of the reasons for doing so. The Procuring Entity will invite the next-ranked Tenderer to negotiate a Contract. Once the Procuring Entity commences negotiations with the next-ranked Tenderer, the Procuring Entity shall not reopen the earlier negotiations.

48 LETTER OF AWARD

48.1 Prior to the expiry of the Tender Validity Period and upon expiry of the Standstill Period specified in ITT 44.1, upon addressing a complaint that has been filed within the Standstill Period, the Procuring Entity shall transmit the Letter of Award to the successful Tenderer. The letter of award shall request the successful tenderer to furnish the Performance Security within 21 days of the date of the letter.

49 SIGNING OF CONTRACT

49.1 Upon the expiry of the fourteen days of the Notification of Intention to enter into contract and upon the parties meeting their respective statutory requirements, the Procuring Entity shall send the successful Tenderer the Contract Agreement.

49.2 Within fourteen (14) days of receipt of the Contract Agreement, the successful Tenderer shall sign, date, and return it to the Procuring Entity.

49.3 The written contract shall be entered into within the period specified in the notification of award and before expiry of the tender validity period.

50 PERFORMANCE SECURITY

50.1 Within twenty-one (21) days of the receipt of the Letter of Award from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and if required in the TDS, using for that purpose the Performance Security Forms included in Section VIII, Contract Forms, or another form acceptable to the Procuring Entity. If the Performance Security furnished by the successful Tenderer is in the form of a bond, it shall be issued by a bonding or insurance company that has been verified by the successful Tenderer to be acceptable to the Procuring Entity. A foreign institution providing a bond shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent financial institution is not required.

50.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Best Evaluated Tender.

51 PUBLICATION OF PROCUREMENT CONTRACT

51.1 Within fourteen days after signing the contract, the Procuring Entity shall publish the awarded contract at its notice boards and websites; and on the Website of the Authority. At the minimum, the notice shall contain the following information:

a. Name and address of the Procuring Entity;

b. Name and reference number of the contract being awarded, a summary of its scope and the selection method used;

c. The name of the successful Tenderer, the final total contract price, the contract duration.

d. Dates of signature, commencement and completion of contract; names of all Tenderers that submitted Tenders, and their Tender prices as read out at Tender opening.

52 PROCUREMENT RELATED COMPLAINTS

52.1 The procedures for making a Procurement-related Complaint are as specified in the TDS

SECTION III: TENDER DATA SHEET

SECTION III - TENDER DATA SHEET

The following specific data for the Works and Services to be procured shall complement, supplement, or amend the provisions in the Instructions to Tenderers (ITT). Whenever there is a conflict, the provisions herein shall prevail over those in ITT.

A. General	
1.1	The reference number of the Invitation to Tender is:**KeNHA/2885/2025** The Procuring Entity is: ***Kenya National Highways Authority (KeNHA)*** The name of the ITT is: ***Not Applicable*** The number and identification of lots (contracts) comprising this ITT T is: ***Not Applicable*** The Road is: **CONSTRUCTION OF UPLANDS – GITHUNGURI – RUIRU (B116) ROAD** The sections of the Road(s) subject to Rehabilitation Works are: Not applicable Construction Works are required as detailed in the scope of works
ITT 3.1	Maximum number of members in the JV shall be: ***Two (2)***
ITT3.11	The Tenderer will require to register with _ whose contact addressed are: ***Not Applicable***
ITT 3.6	The tender is for any contractors.
B. Contents of Tender Document	
ITT 7.2	There shall be a **mandatory Pre-Tender Site Visit** that will be held on the date and venue indicated in the Tender Notice.
ITT 7.5	The Procuring Entity's website where Minutes of the pre-Tender meeting and the pre-arranged pretender will be published is ***www.kenha.co.ke***
ITT 8.1	The Tenderer will submit any questions in writing, to reach the Procuring Entity not later than ***7 days to the submission date*** The Procuring Entity will publish its response at the website ***www.kenha.co.ke***
ITT 8.1	For Clarification of Tender purposes, for obtaining further information and for purchasing tender documents, the Procuring Entity's address is: ***As indicated in the tender notice***
C. Preparation of Tenders	

ITT 13.1 (h)	The Tenderer shall submit the following additional documents in its Tender: ***As indicated in the Qualification Criteria***
ITT 14.1	Alternative Tenders ***shall not be permitted***.
ITT 15.4	The prices quoted by the Tenderer shall be fixed
ITT 16.1	The currency(ies) of the Tender and the payment currency(ies) shall be in **Kenya Shillings**
ITT 19.1	The Tender validity period shall be **140 days** from the specified date of opening as indicated in the invitation to Tender
ITT 20.1	A Tender/Bid Security of the form and amount specified in the Appendix to form of Bid ***shall be required***. (The bid security MUST be in the name of JV partners in case of a joint venture)
ITT 20.2 (iv)	Other types of acceptable securities: ***Not Applicable***
ITT 21.1	In addition to the original Tender, the number of copies is: ***none***
ITT 21.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: _ *Certificate of Independent Tender Determination* ***Part B of Form of Tender***

D. Submission and Opening of Tenders

ITT 23.1	(A) For Tender submission purposes only, the Procuring Entity's address is: As indicated in the **Invitation to Tender** Tenders **shall not be submitted** electronically.
ITT 26.1	The Tender opening shall take place at: ***As indicated in the invitation to Tender*** The electronic Tender opening procedures shall be: ***Not applicable***
ITT 26.6	The Form of Tender and priced Bills of Quantities ***shall be*** initialed by representatives of the Procuring Entity attending Tender opening. If initialization is required, it shall be conducted as follows: □ ***By all members of the Tender opening committee In the pages they shall deem appropriate***

E. Evaluation and Comparison of Tenders

ITT 32.1	No correction of arithmetic errors in the submitted tender sum
ITT 34.1	The Procuring Entity **does not intend** to execute any specific elements of the Works by subcontractors selected/nominated by the Procuring Entity.
ITT 34.2	The **maximum** volume of works that can be subcontracted is **40%** of the total contract price.
ITT 34.3	The sub contractor's qualifications ***shall not*** be used by the Tenderer to qualify for the Works.
ITT 35.2	A margin of domestic preference ***shall*** apply. ***[If a margin of preference applies, the application methodology shall be defined in the Evaluation and Qualification Criteria]***
ITT 36.2 (d)	Additional requirements apply. These are detailed in the evaluation criteria in the Evaluation and Qualification Criteria.
ITT41.2	Where prequalification has not taken place, the Procuring Entity ***shall not*** permit that specific experience for parts of the Works and Service may be met by Specialized Subcontractors.
ITT 47.1	Contract negotiations with the best evaluated tenderer will be held at: (***Not Applicable)***
ITT 50.1	Amount provided in the ***Appendix to Form of tender*** Format provided in Section VIII, Contract Forms
ITT 52.1	The procedures for making a Procurement-related Complaint are available from the PPRA website info@ppra.go.ke or complaints @ppra.go.ke. If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to: For the attention: ***Director General*** Procuring Entity: ***Kenya National Highways Authority (KeNHA)*** Email address: dg@kenha.co.ke In summary, a Procurement-related Complaint may challenge any of the following: (i) the terms of the Tender Documents; and the Procuring Entity's decision to award the contract.

SECTION IV: EVALUATION AND QUALIFICATION CRITERIA

1. GENERAL PROVISIONS

1.1. This section contains the criteria that the Procuring Entity shall use to evaluate tender and qualify tenderers. No other factors, methods or criteria shall be used other than specified in this tender document. The Tenderer shall provide all the information requested in the forms included in Section IV, Tendering Forms. The Procuring Entity shall use **the Standard Tender Evaluation Document for Goods and Works** for evaluating Tenders.

1.2. Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:

a. For construction turnover or financial data required for each Year-Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.
b. Value of single Contract-Exchange rate prevailing on the date of the contract signature.
c. Exchange rates shall be taken from the publicly available source identified in the ITT. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.

1.3. Evaluation and contract award Criteria

The Procuring Entity shall use the criteria and methodologies listed in this Section to evaluate tenders and arrive at the Lowest Evaluated Tender. The tender that (i) meets the qualification criteria, (ii) has been determined to be substantially responsive to the Tender Documents, and (iii) is determined to have the Lowest Evaluated Tender price shall be selected for award of contract.

2. PRELIMINARY EXAMINATION FOR DETERMINATION OF RESPONSIVENESS

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and requirements in the ITT35.3, and that the tender is complete in all aspects in meeting the requirements of "Part 2 – Procuring Entity's Works Requirements". Tenders that do not submit a financial offer will also be rejected at this stage. The Standard Tender Evaluation Report Document for Goods and Works for evaluating Tenders provides clear guide on how to deal with review of these requirements. Tenders that do not pass the Preliminary Examination will be considered irresponsive and will not be considered further.

a) In case the tender <u>was not subject to post-qualification</u>, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.
   i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet annual construction cash flow as specified in the Qualification criteria indicated below.
   ii) Minimum average annual construction turnover as specified in the Qualification criteria indicated below
   iii) Specific experience of a similar nature executed within Kenya, or the East African Community, that have been satisfactorily and substantially completed as a prime

contractor, or joint venture member or sub-contractor each of cumulative value specified in the Qualification Criteria below.

iv) Contractor's Representative and Key Personnel, which are specified as indicated in the Qualification Criteria below

v) Contractors' key equipment listed on the table "Contractor's Equipment" below and more specifically listed as [specify requirements for each lot as applicable]

vi) Other conditions depending on their seriousness.

3. ASSESSMENT OF ADEQUACY OF TECHNICAL PROPOSAL WITH REQUIREMENTS (IF APPLICABLE)

The Procuring Entity will evaluate the Technical Proposals of all irresponsive tenders using the following criteria, sub-criteria, and point system for the evaluation of the Technical Proposals:

i History of non-performance
ii Financial capability
iii General and specific experience
iv Current Commitments
v Key personnel
vi Contractors Plant and Equipment
vii Adequacy and quality of the proposed methodology, and work plan in responding to the schedule of Requirements:

Total points for the six criteria: **100 points**. The minimum technical score (St) required to pass is: **75 points.**

Tenderers who score less than the required pass will automatically be disqualified. Tenderers who pass the technical evaluation will be evaluated further.

4. TENDER EVALUATION (ITT 35)

Price evaluation: In addition to the criteria listed in ITT 35.2 (a) – (d) the following criteria shall apply:

i) **Alternative Completion Times,** if permitted under ITT 13.2, will be evaluated as follows:……

ii) **Alternative Technical Solutions** for specified parts of the Works, if permitted under ITT 13.4, will be evaluated as follows:……

iii) **Other Criteria; i**f permitted under ITT 35.2(d):…….....

5. MULTIPLE CONTRACTS

Multiple contracts will be permitted in accordance with ITT 35.4. Tenderers are evaluated on basis of Lots and the lowest evaluated tenderer identified for each Lot. The Procuring Entity will select one Option of the two Options listed below for award of Contracts.

OPTION 1

i) If a tenderer wins only one Lot, the tenderer will be awarded a contract for that Lot, provided the tenderer meets the Eligibility and Qualification Criteria for that Lot.

ii) If a tenderer wins more than one Lot, the tender will be awarded contracts for all won Lots, provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the Lots. The tenderer will be awarded the combination of Lots for which the tenderer qualifies and the others will be considered for award to second lowest the tenderers.

OPTION 2

The Procuring Entity will consider all possible combinations of won Lots [contract(s)] and determine the combinations with the lowest evaluated price. Tenders will then be awarded to the Tenderer or Tenderers in the combinations provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the won Lots.

6. ALTERNATIVE TENDERS (ITT 13.1)

An alternative if permitted under ITT 13.1, will be evaluated as follows:

The Procuring Entity shall consider Tenders offered for alternatives as specified in Part2-Works Requirements. Only the technical alternatives, if any, of the Tenderer with the Best Evaluated Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

7. MARGIN OF PREFERENCE

1.1. If the TDS so specifies, the Procuring Entity will grant a margin of preference of fifteen percent (15%) to be loaded on evaluated price of the foreign tenderers, where the percentage of shareholding of Kenyan citizens is more than fifty-one percent (51%).

1.2. Contractors applying for such preference shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contract or group of contractors qualifies for a margin of preference.

1.3. After Tenders have been received and reviewed by the Procuring Entity, responsive Tenders shall be assessed to ascertain their percentage of shareholding of Kenyan citizens. Responsive tenders to shall be classified into the following groups:

i) Group A: tenders offered by Kenyan Contractors and other Tenderers where Kenyan citizens hold shares of over fifty one percent (51%).
ii) Group B: tenders offered by foreign Contractors and other Tenderers where Kenyan citizens hold shares of less than fifty one percent (51%).

7.4 All evaluated tenders in each group shall, as a first evaluation step, be compared to determine the lowest tender, and the lowest evaluated tender in each group shall be further compared with each other. If, as a result of this comparison, a tender from Group A is the lowest, it shall be selected for the award. If a tender from Group B is the lowest, an amount equal to the percentage indicated in Item 3.1 of the respective tender price, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each tender from Group B. All tenders shall then be compared using new prices with added prices to Group Band the lowest evaluated tender from Group A. If the tender from Group A is still the lowest tender, it shall be selected for award. If not, the lowest evaluated tender from Group B based on the first evaluation price shall be selected.

8. POST QUALIFICATION AND CONTRACT AWARD (ITT 39), MORE SPECIFICALLY,

a. In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of pre-qualification data, if so required.

b. In case the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.

c. History of non-performing contracts:
Tenderer and each member of JV incase the Tenderer is a JV, shall demonstrate that Non-performance of a contract did not occur because of the default of the Tenderer, or the member of a JV in the last 10 years. The required information shall be furnished in the appropriate form.

d. Pending Litigation
Financial position and prospective long-term profitability of the Single Tenderer, and in the case the Tenderer is a JV, of each member of the JV, shall remain sound according to criteria established with respect to Financial Capability under Paragraph (i) above if all pending litigation will be resolved against the Tenderer. Tenderer shall provide information on pending litigations in the appropriate form.

e. Litigation History
All parties to the contract shall furnish the information in the appropriate form about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the years specified.

QUALIFICATION CRITERIA

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
A. PRELIMINARY EVALUATION				
1.	Nationality	Nationality in accordance with ITT 3.6	Forms ELI - 1.1, 1.2 and 1.3, with attachments	
2.	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 4.1	Forms ELI - 1.4	
3.	Conflict of Interest	No conflicts of interest in accordance with ITT 3.3	Form of Tender	
4.	**PPRA** Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.7	Form of Tender - **Form SD 1**	
5.	State- owned Enterprise	Meets conditions of ITT 3.8	Forms ELI - 1.1 and 1.2, with attachments	
6.	Appendix to Form of Bid	Form properly filled & signed	Appendix to Form of Bid in the Prescribed Format	
7.	Suspension Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not under suspension based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 19.8.	To be confirmed from Internal records by the procuring entity	
8.	Pending Litigation	Tender's financial position and prospective	Form CON - 1	

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
		long-term profitability still sound according to criteria established in 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.		
9.	Litigation History	No consistent history of court/arbitral award decisions against the Tenderer for the last three (3) years.	Form CON - 1	
10.	Declaration of Fair employment laws and practices	Bidders shall declare they are not guilty of any serious violation of fair employment laws and practices and will be bound to abide by the industry CBA at minimum	Form CON - 2	
11.	Declaration of Knowledge of Site /Pre-Bid Conference	● Attend Pre-Tender Site Visits as per TDS, ITT 7.1 ● Bidders to sign attendance register ● Certificate must be signed by the Employer's representative ● Bidders to send Technical Persons for the Site Visit – Min Qualifications – Diploma in Civil Engineering	Form CON - 3	
12.	Tender Security	Tender Security document	a) Form in the Prescribed Format b) Digital Tender Securities will be accepted	
13.	Priced Bill of Quantities	- Fill all rates, and amounts, - NO Alterations of the Quantities accepted, - All bidders own Corrections must be Countersigned	Bills of Quantity in the Prescribed Format	

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
		- NO Errors noted in the Bills of Quantities		
14.	Annual Practicing License with the National Construction Authority	Proof of registration with the National Construction Authority in **Category- NCA 1 Roads/Bridges Contractor.**	Copy of Current NCA Practicing License	
15.	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by the Kenya Revenue Authority in accordance with ITT 3.16.	***Provide Valid Tax Compliance Certificate***	
16.	Serialization of the Bid	Bidders shall sequentially serialize all pages of each tender submitted. Any written Pages or document attached or inserted Documents **MUST** be sequentially serialized.	The Serialization MUST be numerically sequential starting from Numeric 1.	
17.	Completeness of tender document	The person or persons signing the bid **shall** initial all pages of the bid where entries have been made. Bidders shall own all alterations made to the tender document. Bidders shall duly fill all relevant forms/schedules provided for in the document that requires entries	All pages with entries (Typed or hand written) must be initialed. Any alterations made in the tender document must be countersigned. All relevant Forms/ Schedules shall be duly filled	

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
18.	Proposed weightings	Dully filled and Signed Schedule H	Bidder to fill Schedule H: Basic Prices for Materials and Labour	
19.	Rates derivation	Bidders shall provide current (atleast 28 days before tender opening) proof of cost of materials e.g. Proforma Invoices/quotation (Cement, Bitumen etc)	Bidder to fill Schedule G: Part I. Schedule of Materials; -Basic Prices Part II. Schedule of rates derivation	
B. TECHNICAL EVALUATION				
1.	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default for the last three (3) years. Non-performance shall be deemed to have occurred by evidence of: ● *Termination Letter* ● *Liquidated Damages*	Form CON-1 ***If a bidder fails to disclose, shall be disqualified*** ***Reference to be made to procuring Authority's records*** ***A bidder with any history of non-performance earns zero(0) marks***	2 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
2.	Financial Capabilities	**(i) Audited Statements:** Bidders shall provide audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last 3 years shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability (as demonstrated by Financial Evaluation ratios).	Form FIN - 3.1, with attachments ***Attachments include:*** ***i. Audited accounts*** ***All pages must be initialed and stamped by both a practicing Auditor registered with ICPAK and one of the Directors. Auditor's practicing membership number from ICPAK must be indicated and a valid practicing license shall be provided.***	3 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
		(ii) Working Capital The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet annual construction cash flow of equivalent to **Kshs. 1,400,000,000.00.** In the case of a **Joint Venture (JV),** the domestic partner shall provide a line of credit or demonstrate a cash flow capacity of **Kshs 400,000,000.00.**	● ***Line of Credit*** ● ***Bank statements*** ***Etc***	5 Mark

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
		(iii) Financial soundness The audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last 3 years shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability. In case of a JV, both partners are required to submit their financial statements and respective Financial ratios	***The Financial ratio Form to be signed by the Auditor registered with ICPAK and one of the Directors*** ● ***Financial Ratios*** Computation shall be made for the following Ratios and marks awarded to each of the ratios: -Working Capital - Debt to Equity Ratio - Current ratio - Operating Cash Flow ratio	4 Marks
3.	Average Annual Construction Turnover	The Tenderer shall have a minimum average annual construction turnover of **Kshs 1,200,000,000.00**, calculated as the total gross certified payments received for contracts in progress and/or completed within the last three (3) years, divided by three (3). In the case of a **Joint Venture (JV),** the domestic partner shall demonstrate an average annual construction turnover of **Kshs 400,000,000.00** for the same period, also calculated based on total gross certified payments received.	Form FIN - 3.2 ***Attachments include Financial Statements and invoices***	3 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
4.	Current Commitments	The total value of outstanding works on the on-going contracts should not exceed the average annual construction turnover for the last three (3) years. In case of a JVs, the above requirement shall apply.	Form FIN - 3.3 If the value of the outstanding Works and the new commitment is more than the operating cash flow (based on the last audited financial statement) of the bidder, the bidder loses two marks	2 marks
5.	General Construction Experience	Experience under construction contracts in the role of prime contractor, sub-contractor, or management contractor for at least the last 5 years. Grading shall be based on general construction projects handled. Five projects and above earns maximum points and prorated downwards. In case of JVs, the above requirement shall be co-owned.	Form EXP -4.1 ***Attach Letters of Award and Completion Certificates***	5 Marks
6.	Specific Construction &Contract Management Experience	The Tenderer shall have executed upto 3no. contracts of a similar nature, with a minimum cumulative value of **Kshs 7,000,000,000.00**, within the last five (5) years. At least one (1) contract shall have been satisfactorily and substantially completed (over eighty per cent) as a prime contractor or joint venture member within Kenya or the East African Community. *(Incase of a Joint Venture (JV) All members*	Form EXP 4.2(a) ***Provide Letters of Award and Completion Certificates*** ***For subcontracted works, the bidder should provide the following;*** • ***Award letter of the main***	15 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
		combined must meet requirements)	***contractor*** ● ***Award letter of the subcontract.*** ● ***Completion letter of the subcontract.*** ● ***Subcontract approval from the Engineer/supervision Authority***	
7.	4.2 (b) Specific Construction &Contract Management Experience – Key Activities	For the above and any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or Subcontractor in the last five(5) years and Application submission deadline, a minimum construction experience in the following key activities successfully completed: ○ ***Earthworks Cut/Fills – 30,000m^3/month*** ○ ***Processing Cement improved material – 4,000m^3/month*** ○ ***Asphalt Concrete 'Superpave' – 500m^3/month*** ○ ***Concrete Works 100m^3/month*** *(Incase of a Joint Venture (JV) All members combined must meet requirements*)	Form EXP 4.2(b) • ***Award letter*** • ***Completion Certificates*** • ***Copies of BoQ*** • ***Copies of Certified Quantities in IPCs***	8 Marks
8.	Contractor's	Tenderers must demonstrate that it will	Schedule F (Form PER. 1 and	15 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
	Representative and Key Personnel	have a suitably qualified Contractor's Representative and suitably qualified (and in adequate numbers) Key Personnel, as listed below (*Incase of a Joint Venture (JV) All members combined must meet requirements)*	PER. 2) ***Curriculum Vitae (CVs) of the Proposed Key Staff must be presented in the provided format and duly signed by the proposed individual. Copies of certificates and Annual Practicing Licenses (for Engineers) and Academic Certificates for all staff is mandatory.***	

	KEY PERSONNEL			Max **15**
1.	Site Agent (Max 4marks)	Registration & Qualification	Professional Engineer & Degree (BSc. Civil) holder	2
		Relevant experience	10 years and above	2
			6-9years	1.5
			Less than 6yrs	0
2.	Material Engineer & Structural/ Bridge Engineer (Max 3 marks)	Registration	Professional Engineer	1
		Qualification	Degree (BSc. Civil) holder	1
		Relevant experience	10 years and above	1
			6-9years	0.5
			Less than 6yrs	0

Item No.	Qualification Subject	Qualification Requirement				*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
			Each personnel above earn Max. 2marks				
		3.	Surveyor (Max 2marks)	Qualification	Degree	1	
					HND	0.5	
				Relevant experience	10 years and above	1.0	
					6-9years	0.5	
					Less than 6 years	0	
		4.	Foreman (Max 2marks)	Qualification	HND	1	
					Diploma	0.8	
				Relevant experience	10 years and above	1.0	
					6-9years	0.5	
					Less than 6	0	
		5.	Environmental Specialist & Social Specialist Max 2marks)	Qualification and certification	Degree and registration with NEMA	1	
				Relevant experience	10 years and above	1.0	
					6-9years	0.5	
					Below 6 years	0	
		6.	Road Safety Specialist (Max 2marks)	Qualification and certification	Degree holder & occupational health and Safety certification	1	
				Relevant experience	10 years and above	1.0	
					6-9years	0.5	
					Below 6 years	0	

<table>
<tr><th>Item No.</th><th>Qualification Subject</th><th>Qualification Requirement</th><th>Document To be Completed/provided by Tenderer</th><th>For Procuring Entity's Use (Qualification met or Not Met)</th></tr>
<tr><td>9.</td><td rowspan="2">Contractors key equipment</td><td>● Bidders shall declare they have possession/Ownership of various equipment as proposed to be used in the Project by providing Logbooks that demonstrate proof of ownership

● For Bidders planning to hire, they shall provide an Active Lease Agreement in Place that can be used during the Project Life. The copy of logbooks of the lessor(s) shall also be provided.</td><td>Schedule D of Technical Proposal</td><td>20 Marks</td></tr>
<tr><td>10.</td><td colspan="3">
<table>
<tr><th rowspan="2">Main Scope of Works of Tender</th><th rowspan="2">Main Equipment</th><th rowspan="2">Quantity (No) (Minimum)</th><th colspan="2">Marks (Score)</th><th rowspan="2">No. of Equipment to be made available for the Contract by the Bidder</th></tr>
<tr><th>For No. of Equipment Owned by the Bidder</th><th>For No. of Equipment to be hired/ purchased by the Bidder</th></tr>
<tr><td rowspan="2">Earthworks Concrete works Bituminous works (AC</td><td>a) General Plant</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Primary/Secondary Crusher Unit/Power Screen Min capacity – 90t/hr.</td><td>1</td><td>3</td><td>1.5</td><td></td></tr>
</table>
</td></tr>
</table>

Item No.	Qualification Subject	Qualification Requirement			Document To be Completed/provided by Tenderer		For Procuring Entity's Use (Qualification met or Not Met)
		& Surface Dressing)	Concrete batching plant Min Cap 20 m3/hr	1			
			Asphalt Concrete batching plant.	1			
			b) Bituminous Plants				
			Bitumen Pressure distributor	2	2	1	
			Asphalt concrete paver	1			
			c) Compactors				
			Vibrating compaction plate 300 mm wide	2	1.5	0.5	
			Vibrating compaction plate 600 mm wide	1			
			d) Mobile Compressors				
			Single tool (1.8 m3/min)	1	1.5	1.0	
			Two tool (2.8 – 7.3 m3/min)	1			
			Four tool (11.3 – 25.3 m3/min)	1			
			Medium rock drill (1.5 m3/min)	1			
			Heavy rock drill (2.4 m3/min	1			
			e) Concrete Equipment				

Item No.	Qualification Subject	Qualification Requirement		Document To be Completed/provided by Tenderer			For Procuring Entity's Use (Qualification met or Not Met)	
			Mobile concrete mixers	2	5	2		
			Truck mounted mixers	1				
			Concrete vibrators	5				
			f) Transport (Tippers, dumpers, water tankers)					
			4X2 tippers payload 7 – 12 tonnes	10	12.5	5		
			6X4 tippers payload 16 – 20 tonnes	2				
			8X4 tippers payload 16 – 20 tonnes	1				
			Dump trucks	7				
			Flatbed lorries	2				
			Water tankers (18,000 – 20,000 lts. capacity)	4				
			g) Diesel Generators					
			Diesel generators (15 – 200Kva)	3	1.5	0.5		
			h) Excavators					
			Hydraulic crawler mounted (7 – 10 tonnes) – 0.25 – 0.4 m3 SAE bucket.	1				
			Hydraulic crawler mounted (10 – 16 tonnes) – 0.40 – 0.60 m3 SAE bucket.	2				

Item No.	Qualification Subject	Qualification Requirement			Document To be Completed/provided by Tenderer			For Procuring Entity's Use (Qualification met or Not Met)
			Hydraulic wheel mounted (7 – 10 tonnes) – 0.25 – 0.4 m3 SAE bucket.	2	8	3.5		
			Hydraulic wheel mounted (10 – 16 tonnes) – 0.40 – 0.6 m3 SAE bucket.	1				
			Hydraulic wheel mounted backloader (7 – 10 tonnes) – 0.25 – 0.4 m3 SAE bucket.	1				
			i) Rollers					
			Self-propelled single drum vibrating (various types)	3	5	1		
			Pneumatic rubber tyre (1-2 tonnes/wheel)	2				
			Sheep's foot roller	2				
			Double drum vibrating roller	2				
			pedestrian rollers	2				
			Pulvimixer	2				
			Motor graders	4				
			Total		40	16		
			Note: Score for Construction Equipment = (X/40)*30 ----Owned = (Y/40)*30----Hired					

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
11.	Proposed methodology	Adequacy and quality of the proposed methodology	*a)* **Technical approach and methodology** ● Provided a detailed Work Methodology: a) Procedure on execution of activities as outlined in the BoQs b) Allocation of machinery/labour in execution the activities c) Procedures in quality control of the activities described in BoQs ● Provided a Methodology on safety during the construction period: a) Personal protective equipment b) Signages c) Delineation of construction and passage of traffic d) Passage of traffic at night ● Provide a specific Quality	7 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
			management plan that covers the following: 1. Scope Management 2. Time Management 3. Material Quality Management 4. Financial Management 5. Risk Management 6. Health & Safety Management 7. Environmental Management 8. Communication Management 9. Procurement Management 10. Human Resource Management Stakeholder Management ***b)*** **Work plan*/Program of Works (PoW)*** • PoW Resourced with Equipment-Min. allocation pursuant to the ***Schedule E of Technical Proposal*** - –	

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
			To be submitted in A3 Size Paper well legible Fonts • PoW captures Monthly outputs for each activity • PoW details BoQ Quantities, Units and Rates • PoW is superimposed with Cashflow Projections as detailed in ***Schedule A*** of the technical proposal c) **Site Organization and staffing** (Schedule B of Technical proposal)	
12.	Knowledge Transfer *[When transfer of knowledge is a particularly important component of the*	Transfer of knowledge (training) program (relevance of approach and methodology	*a)* Relevance of training program ***[Not Applicable]*** *b)* Training approach and methodology ***[Not Applicable]*** *c)* Qualifications of experts and	1 Marks

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
	assignment, the following sub-criteria may be provided]		trainers *[**Not Applicable**]*	
Tenderers who score less than the required pass (75%) will be automatically disqualified. Tenderers who meet the minimum pass mark in the technical evaluation will be evaluated further.				
C. FINANCIAL EVALUATION: The lowest evaluated bidder shall be subjected to Financial Evaluation which include but not limited to **sensitivity analysis** of the **rates** to **detect abnormally low bids or abnormally high bids or unbalanced tenders or front loaded**. **Treatment of Abnormally Low Bid/Abnormally high Bid/ Unbalanced bid** The Procuring Entity may undertake an analysis of bidders' rates which are potentially lower/higher than the known prevailing market rates. The bidders shall be required to provide objective justification including supporting documents on derivation of their rates within stipulated time to the Procuring Entity (***See Schedule G, Part I&II on Derivation of Rates***). In addressing the above criteria, the following steps shall be undertaken by the Procuring Entity; a. **Identify**: The Procuring Entity identifies a potential Abnormally Low/High Bid based on comparison with known prevailing market rates or with the project's total cost estimate. b. **Evaluate**: The Procuring Entity fully analyses the Bidder's justification provided on Schedule G to verify if it is Abnormally Low/High Bid. Due diligence may be carried out by the Procuring Entity on the bidder's documentation. c. **Determination**: The Procuring Entity fully documents the decision to accept or reject the Bid and executes appropriate action(s)/recommendation(s) including but not limited to enhancement of the performance Security.			

Item No.	Qualification Subject	Qualification Requirement	*Document To be Completed/provided by Tenderer*	*For Procuring Entity's Use (Qualification met or Not Met)*
In view of the above, the procuring Entity shall evaluate and analyze the Bidders' submissions against the known prevailing market rates and cost estimation guidelines. The analysis of the bidder's justification shall consider all evidence provided. Accordingly, the Procuring Entity's relevant committee shall make a recommendation to the Accounting Officer.				
D. POST QUALIFICATION: The procuring entity may verify the documents provided by the bidder with the issuing authority.				

Appendix to Qualification Criteria

ITEM		DESCRIPTION		POINT SCORE SCALE
1		**HISTORY OF NON-PERFORMANCE**		**Max 2**
		History of Non-Performance		0-2
2		**FINANCIAL CAPACITY**		**Max 15**
	a	Audited Statements		0-3
	b	Working capital		0-5
	c	Financial Ratios attested by CPA		0-4
	d	Average Annual Construction Turnover		0-3
3		**EXPERIENCE**		**Max 30**
		General Experience		0-5
		Specific experience in related works		0-15
		Workload Analysis		0-2
		Specific experience as per 4(b)		0-8
4		**KEY PERSONNEL**		**Max 15**
	a	Site Agent		4
	b	Materials Engineer		3
	c	Surveyor		2
	d	Foreman		2
	e	Environmentalist and Social Safeguards specialist		2
	f	Safety Specialist		2
5		**PLANT AND EQUIPMENT**		**Max 30**
		Relevant Equipment (As detailed in Schedule D)	Owned (Max 30 marks)	0-30
			Leased (Max 10 marks)	0-10
6		**WORK METHODOLOGY**		**Max 7**
		Work Methodology	● Provided a detailed Work Methodology ● Site layout proposal, Organisational Structure & Assignment of Duties ● Environmental & Social Impact requirements ● Quality Assurance System. ● Health & Safety Plan	0-4
		Program of Works	● PoW is resourced with Equipment-Min. allocation pursuant to the Schedule E of Technical Proposal - – To be submitted in A3 Size Paper well legible Fonts ● PoW captures Monthly outputs for each activity ● PoW details BoQ Quantities, Units and Rates	0-3

ITEM		DESCRIPTION		POINT SCORE SCALE
			● PoW is superimposed with Cash flow Projections as detailed in Schedule A of the technical proposal	
7		Knowledge Transfer		0-1
		TOTAL		**MAX 100**

SECTION V – TENDERING FORMS

SECTION V- TENDERING FORMS

1. TENDERER'S QUALIFICATION FORMS
   - Form ELI-1.1- Tenderer Information Form
   - Form ELI- 1.2- Tenderer JV information
   - Form ELI - 1.3- Qualification of Foreign Contractors
   - Form ELI - 1.4- Declarations of materials, equipment and labor sources
2. FORM OF TENDER
   - A. TENDERER'S ELIGIBILITY - CONFIDENTIAL BUSINESS QUESTIONNAIRE
   - B. CERTIFICATE OF INDEPENDENT TENDER DETERMINATION
   - C. SELF-DECLARATION FORMS
     - FORM SD1
     - FORM SD2
     - FORM SD3
   - APPENDIX TO FORM OF TENDER
3. CONTRACTUAL FORMS
   - FORM CON – 1
   - FORM CON – 2
   - FORM CON – 3
4. FINANCIAL FORMS
   - FORM FIN- 3 .1
   - FORM FIN- 3.2
   - FORM FIN- 3.3
5. TECHNICAL EXPERIENCE
   - FORM EXP - 4.1
   - FORM EXP - 4.2 (A)
   - FORM EXP - 4.2 (B)
6. TECHNICAL PROPOSAL
   - SCHEDULE A. Projected Cash Flow
   - SCHEDULE B. Site Organizations
   - SCHEDULE C. Subcontractors
   - SCHEDULE D. Contractor's Equipment
   - SCHEDULE E. Initial Tentative Program of Performance
   - SCHEDULE F. Key Personnel Proposed
     - FORM PER -1
     - FORM PER -2
   - SCHEDULE G. Schedule of Materials; -Basic Prices

7. FORM OF TENDER SECURITY - DEMAND GUARANTEE
8. FORM OF TENDER SECURITY (TENDER BOND)
9. FORM OF TENDER-SECURING DECLARATION

TENDERER'S QUALIFICATION FORMS FORM
ELI-1.1- TENDERER INFORMATION FORM

Form ELI-1.1
Tenderer Information Form
Date:_____ ITT No. and title: _____ Page _____of_____pages
Tenderer's name: ……..
In case of Joint Venture (JV), name of each member:……
Tenderer's actual or intended country of registration: *[indicate country of Constitution]*
Tenderer's actual or intended year of incorporation:
Tenderer's legal address [in country of registration]:
Tenderer's authorized representative information Name: Address: Telephone/Fax numbers: E-mail address:
1. Attached are copies of original documents of: I. *Certificate of Incorporation and CR12* of the legal entity named above, in accordance with ITT 4.1. II. *Copies of National Identification documents for Directors* ☐ In case of a JV, Form of intent to form JV or JV agreement, in accordance with ITT 4.1. ☐ In case of a state-owned enterprise or institution, in accordance with ITT 4.7. documents establishing: • Legal and financial autonomy • Operation under commercial law • Establishing that tenderer is not under the supervision of the Procuring Entity, 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership (*Not Applicable*).

FORM ELI- 1.2- TENDERER JV INFORMATION

Tenderer's JV Information Form

(to be completed for each member of Tenderer's JV)

Date: _____

ITT No. and title: _____

Page_____of _____pages

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers:_____ E-mail address:_____
1. Attached are copies of original documents of: i. Certificate of Incorporation and CR 12 of the legal entity named above, including Registered JV agreement (Registration of Documents Act), in accordance with ITT 4.1. ii. Copies of National Identification documents for all Directors ☐ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 4.7. 2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership (***Not Applicable*****).**

FORM ELI - 1.3- QUALIFICATION OF FOREIGN CONTRACTORS

Qualification of Foreign Tenderers

Pursuant to ITT 4.10, a foreign tenderer must complete this form to demonstrate that the tender fulfils this condition (the 40% Rule).

ITEM	Description of Work Item	Describe location of source	COST in K. shillings	Comments, if any
A	Local Labour			
1				
2				
3				
4				
5				
B	Sub contracts from Local sources			
1				
2				
3				
4				
5				
C	Local materials			
1				
2				

3				
4				
5				
D	Use of Local Plant and Equipment			
1				
2				
3				
4				
5				
E	Add any other items			
1				
2				
3				
4				
5				
6				
7				
	TOTAL COST LOCAL CONTENT		XX	
	PERCENTAGE OF CONTRACT PRICE		XX	

FORM ELI - 1.4- DECLARATIONS OF MATERIALS, EQUIPMENT AND LABOUR SOURCES

Pursuant to ITT 5.1, tenderers must complete this form to demonstrate that the tender fulfils this condition

ITEM	Description of Work Item	Describe location of source	Comments, if any
A	Materials		
1			
2			
3			
4			
5			
6			
B	Equipment		
1			
2			
3			
4			
5			
C	Labour		
1			
2			
3			
4			
5			
6			
	TOTAL COST LOCAL CONTENT		
	PERCENTAGE OF CONTRACT PRICE		

FORM OF TENDER INSTRUCTIONS TO TENDERERS

(i) The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address.

(ii) All italicized text is to help Tenderer in preparing this form.

(iii) Tenderer must complete and sign and TENDERER'S ELIGIBILITY-CONFIDENTIAL BUSINESS QUESTIONNAIRE, CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION OF THE TENDERER, all attached to this Form of Tender.

(iv) The Form of Tender shall include the following Forms duly completed and signed by the Tenderer.

A) Tenderer's Eligibility- Confidential Business Questionnaire
B) Certificate of Independent Tender Determination
C) Self-Declaration of the Tenderer

FORM OF TENDER

Date of this Tender submission: ***[insert date (as day, month and year) of Tender submission]***

Invitation to Tender No.: ***[insert identification]*** Alternative No.: *[Not Applicable]*

To:

We, the undersigned, declare that:

a) *No reservations:* We have examined and have no reservations to the tendering document, including Addenda issued in accordance with Instructions to Tenderers (ITT)

b) *Eligibility:* We meet the eligibility requirements and have no conflict of interest in accordance with ITT4;

c) *Tender-Securing Declaration:* We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender-Securing Declaration or Proposal-Securing Declaration in Kenya in accordance with ITT 4.8.

d) *Conformity:* We offer to execute in conformity with the tendering document and in accordance with the construction or service schedule the following Works:

[Tender Number and Name]

e) *Tender Price:* The total price of our Tender is [name of currency] (***amount in figures and words***).

f) *Combined Price:* We hereby confirm that our combined price for Rehabilitation Works and Improvement Works does not exceed the threshold given in the TDS ITT 37.5, which is [***NOT APPLICABLE***].

g) *Tender Validity Period*: Our Tender shall be valid for a period specified in TDS 18.1 (or as amended if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (or as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

h) *Performance Security:* If our Tender is accepted, we commit to obtain a Performance Security in accordance with the tendering document;

i) *One Tender per Tenderer:* We are not submitting any other Tender (s) as an individual Tenderer, and we are not participating in any other Tender(s) as a Joint Venture member or as a subcontractor, and meet the requirements of ITT 4.4, other than alternative Tenders submitted in accordance with ITT 13;

j) *Suspension and Debarment:* We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Procuring Entity. Further, we are not ineligible under Kenya laws or official regulations or pursuant to a decision of the United Nations Security Council;

k) *State-owned enterprise or institution:* [select the appropriate option and delete the other] [We are not a state-owned enterprise or institution] / [We are a state-owned enterprise or institution but meet the requirements of ITT 4.7];

l) *Commissions, gratuities and fees:* We have paid, or will pay the following commissions, gratuities, or fees with respect to the Tendering process or execution of the Contract: [insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity].

Name of recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

m) *Binding Contract*: We understand that this Tender, together with your written acceptance thereof included in your Form of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

n) *Not Bound to Accept*: We understand that you are not bound to accept the lowest evaluated cost Tender, the Best Evaluated Tender or any other Tender that you may receive;

o) *Fraud and Corruption*: We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption;

p) *Collusive practices:* We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the "Certificate of Independent Tender Determination" attached below.

r) We undertake to adhere by the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal, copy available from_____(specify website) during the procurement process and the execution of any resulting contract.

s) We, the Tenderer, have completed fully and signed the following Forms as part of our Tender:

i. Tenderer's Eligibility; Confidential Business Questionnaire – to establish we are not in any conflict to interest.

ii. Certificate of Independent Tender Determination – to declare that we completed the tender without colluding with other tenderers.

iii. Self-Declaration of the Tenderer – to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.

iv. Declaration and commitment to the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal.

t) Further, we confirm that we have read and understood the full content and scope of fraud and corruption as informed in "Appendix 1- Fraud and Corruption" attached to the Form of Tender.

Name of the Tenderer: *[*insert complete name of person signing the Tender*]

Name of the person duly authorized to sign the Tender on behalf of the Tenderer: **[*insert complete name of person duly authorized to sign the Tender*]

Title of the person signing the Tender: [*insert complete title of the person signing the Tender*]

Signature of the person named above: [*insert signature of person whose name and capacity are shown above*]

Date signed [*insert date of signing*] day of [*insert month*], [*insert year*]

Name in the capacity of____

Signed _____

Duly authorized to sign the Tender for and on behalf of _____

Dated on____day of _____, __

A. TENDERER'S ELIGIBILITY - CONFIDENTIAL BUSINESS QUESTIONNAIRE

Instruction to Tenderer

Tender is instructed to complete the particulars required in this Form, one form for each entity if Tender is a JV. Tenderer is further reminded that it is an offence to give false information on this Form.

a) Tenderer's details

	ITEM	
1	Name of Procuring Entity	Kenya National Highways Authority
2	**KeNHA/...../2025**	
3	Date and Time of Tender Opening	
4	Name of Tenderer	
5	Full Address and Contact Details of the Tenderer	1. Country 2. City 3. Location 4. Building 5. Floor 6. Postal Address 7. Name and email of contact person
6	Current Trade License Registration Number and Expiring date	
	Name, country and full address (postal and physical addresses, email, and telephone number) of Registering Body/Agency	
7	Description of Nature of Business	
8	Maximum value of business which the Tenderer handles	
9	State if Tenders Company is listed in stock exchange, give name and full address (*postal and physical addresses, email, and telephone number*) of state which stock exchange	

General and Specific Details

b) Sole Proprietor, provide the following details

Name in full_____ Age_____

Nationality_____ Country of Origin_____

Citizenship _____

c) Partnership, provide the following details.

	Name of Partners	**Nationality**	**Citizenship**	**%Shares Owned**
1				
2				
3				

d) Registered Company, provide the following details.

i) Private or public Company_____

ii) State the nominal and issued capital of the Company-

Nominal Kenya Shillings (Equivalent).....

Issued Kenya Shillings (Equivalent).....

iii) Give details of Directors as follows.

	Name of Directors	**Nationality**	**Citizenship**	**%Shares Owned**
1				
2				
3				

e) DISCLOSURE OF INTEREST - Interest of the Firm in the Procuring Entity.

(i) Are there any person/persons in…… (KeNHA) who has/have an interest or relationship in this firm? Yes/No……

If yes, provide details as follows.

	Name of Person	**Designation in the Procuring Entity**	**Interest or Relationship with Tenderer**
1			
2			
3			

(ii) Conflict of interest disclosure

	Type of Conflict	**Disclosure YES or NO**	**If YES provide details of the relationship with Tenderer**
1	Tenderer is directly or indirectly controls, is controlled or is under common control with another tenderer.		
2	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	Tender has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process		
5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
6	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract specified in this Tender Document.		
7	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
8	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who would be involved in the implementation or supervision of such Contract.		
9	Has the conflict stemming from such relationship stated in item 7 and 8 above been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.		

f) Certification

On behalf of the Tenderer, I certify that the information given above is complete, current and accurate as at the date of submission.

Full Name_____

Title or Designation _____

_____ _____

(Signature) (Date)

B. CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying Letter of Tender to the **KENYA NATIONAL HIGHWAYS AUTHORITY** for: [Name and number of tender] in response to the request for tenders made by:_[Name of Tenderer] do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of_[Name of Tenderer] that:

1. I have read and I understand the contents of this Certificate;
2. I understand that the Tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am the authorized representative of the Tenderer with authority to sign this Certificate, and to submit the Tender on behalf of the Tenderer;
4. For the purposes of this Certificate and the Tender, I understand that the word "competitor" shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
   a) Has been requested to submit a Tender in response to this request for tenders; b) could potentially submit a tender in response to this request for tenders, based on their qualifications, abilities or experience
5. The Tenderer discloses that [*check one of the following, as applicable*]:
   a) The Tenderer has arrived at the Tender independently from, and without consultation, communication, agreement or arrangement with, any competitor;
   b) The Tenderer has entered into consultations, communications, agreements or arrangements with one or more competitors regarding this request for tenders, and the Tenderer discloses, in the attached document(s), complete details thereof, including the names of the competitors and the nature of, and reasons for, such consultations, communications, agreements or arrangements;
6. In particular, without limiting the generality of paragraphs (5) (a) or (5) (b) above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   a) prices;
   b) methods, factors or formulas used to calculate prices;
   c) the intention or decision to submit, or not to submit, a tender; or
   d) the submission of a tender which does not meet the specifications of the request for Tenders; except as specifically disclosed pursuant to paragraph (5) (b) above;
7. In addition, there has been no consultation, communication, agreement or arrangement with any competitor regarding the quality, quantity, specifications or delivery particulars of the works or services to which this request for tenders relates, except as specifically authorized by the procuring authority or as specifically disclosed pursuant to paragraph (5) (b) above;
8. the terms of the Tender have not been, and will not be, knowingly disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening, or of the awarding of the Contract, whichever comes first, unless otherwise required by law or as specifically disclosed pursuant to paragraph (5) (b) above.

Name _____ Title _____

Date and Official stamp _____

C. SELF-DECLARATION FORMS

FORM SD 1: SELF DECLARATION THAT THE PERSON/TENDERER IS NOT DEBARRED IN THE MATTER OF THE PUBLIC PROCUREMENT AND ASSET DISPOSAL ACT 2015

I... of Post Office Box.....being a resident of

.....in the Republic of.....do hereby make a statement as follows: -

1. THAT I am the Company Secretary/ Chief Executive/Managing Director/Principal Officer/Director of ……...…….. *(insert name of the Company)* who is a Bidder in respect of TenderNo.....for.....*(insert tender title/description)* for.....……. *(insert name of the Procuring entity)* and duly authorized and competent to make this statement.
2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.

3. THAT what is deponed to herein above is true to the best of my knowledge, information and belief.

……. …… ……

(Title) (Signature) (Date)

Bidder Official Stamp

FORM SD 2: SELF DECLARATION THAT THE TENDERER WILL NOT ENGAGE IN ANY CORRUPT OR FRAUDULENT PRACTICE

I, ...of P. O. Box.....being a resident of .....in the Republic of.....do hereby make a statement as follows: -

1. THAT I am the Chief Executive/Managing Director/Principal Officer/Directo of……..... (insert name of the Company) who is a Bidder in respect of Tender No. ……..... for ……. *(insert tender title/description)*

   for …… *(insert name of the Procuring entity)*

   and duly authorized and competent to make this statement.

2. THAT the aforesaid Bidder, its servants and/or agents /subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ……. *(insert name of the Procuring entity)* which is the procuring entity.

3. THAT the aforesaid Bidder, its servants and/or agents /subcontractors have not offered any inducement to any member of the Board, Management, Staff and/or employees and/or agents of……. *(name of the procuring entity).*
4. THAT the aforesaid Bidder will not engage/has not engaged in any corrosive practice with other bidders participating in the subject tender
5. THAT what is deponed to herein above is true to the best of my knowledge information and belief.

……. ……. …….....

(Title) (Signature) (Date)

Bidder's Official Stamp

FORM SD 3: DECLARATION AND COMMITMENT TO THE CODE OF ETHICS

I, ... (person) on behalf of (Name of the Business/Company/Firm) .....declare that I have read and fully understood the contents of the Public Procurement & Asset Disposal Act, 2015, Regulations and the Code of Ethics for persons participating in Public Procurement and Asset Disposal and my responsibilities under the Code.

I do hereby commit to abide by the provisions of the Code of Ethics for persons participating in Public Procurement and Asset Disposal.

Name of Authorized signatory.....

Sign.....

Position.....

Office address.....Telephone.....

E-mail.....

Name of the Firm/Company.....

Date.....

(Company Seal/ Rubber Stamp where applicable)

Witness

Name.....

Sign.....

Date.....

APPENDIX 1-FRAUD AND CORRUPTION

(Appendix 1 shall not be modified)

1. Purpose

1.1 The Government of Kenya's Anti-Corruption and Economic Crime laws and their sanction's policies and procedures, Public Procurement and Asset Disposal Act *(no. 33 of 2015)* and its Regulation, and any other Kenya's Acts or Regulations related to Fraud and Corruption, and similar offences, shall apply with respect to Public Procurement Processes and Contracts that are governed by the laws of Kenya.

2. Requirements

2.1 Government of Kenya requires that all parties including Procuring Entities, Tenderers, (applicants/proposers), Consultants, Contractors and Suppliers; any Subcontractors, Sub-consultants, Service providers or Suppliers; any Agents (whether declared or not); and any of their Personnel, involved and engaged in procurement under Kenya's Laws and Regulation, observe the highest standard of ethics during the procurement process, selection and contract execution of all contracts, and refrain from Fraud and Corruption and fully comply with Kenya's laws and Regulations as per paragraphs 1.1 above.

2.2 Kenya's public procurement and asset disposal act *(no. 33 of 2015)* under Section 66 describes rules to be followed and actions to be taken in dealing with Corrupt, Coercive, Obstructive, Collusive or Fraudulent practices, and Conflicts of Interest in procurement including consequences for offences committed. A few of the provisions noted below highlight Kenya's policy of no tolerance for such practices and behavior:

1) a person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or asset disposal proceeding;
2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;
3) Without limiting the generality of the subsection (1) and (2), the person shall be—
    a) disqualified from entering into a contract for a procurement or asset disposal proceeding; or
    b) if a contract has already been entered into with the person, the contract shall be voidable;
4) The voiding of a contract by the procuring entity under subsection (7) does not limit any legal remedy the procuring entity may have;
5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity who has a conflict of interest with respect to a procurement—
    a) shall not take part in the procurement proceedings;
    b) shall not, after a procurement contract has been entered into, take part in any decision relating to the procurement or contract; and

c) shall be a subcontractor for the bidder to whom was awarded contract, or a member of the group of bidders to whom the contract was awarded, but the subcontractor appointed shall meet all the requirements of this Act.

6) An employee, agent or member described in subsection (1) who refrains from doing anything prohibited under that subsection, but for that subsection, would have been within his or her duties shall disclose the conflict of interest to the procuring entity;

7) If a person contravenes subsection (1) with respect to a conflict of interest described in subsection (5) (a) and the contract is awarded to the person or his relative or to another person in whom one of them had a director indirect pecuniary interest, the contract shall be terminated and all costs incurred by the public entity shall be made good by the awarding officer. Etc.

2.3 In compliance with Kenya's laws, regulations and policies mentioned above, the Procuring Entity:

a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:

i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;

iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

v. "obstructive practice" is:

- deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
- acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3 e. below.

b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:
"fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.

c) Rejects a proposal for award1 of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, subcontractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

d) Pursuant to the Kenya's above stated Acts and Regulations, may sanction or recommend to appropriate authority(ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;

e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring (i) Tenderers (applicants/proposers), Consultants, Contractors, and Suppliers, and

their Sub-contractors, Sub- consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect2 all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and

f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a "Self-Declaration Form" as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/will not engage in any corrupt or fraudulent practices.

1For the avoidance of doubt, a party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and tendering, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

2 *Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.*

APPENDIX TO FORM OF TENDER

(This appendix forms part of the bid)

CONDITIONS OF CONTRACT	CLAUSE	AMOUNT/DESCRIPTION
Bid Security (Bank Guarantee Only)		**Kshs. 20,000,000.00**
Amount of Performance Security (Unconditional Bank Guarantee)	10.1	5% of Tender Sum in the form of Unconditional Bank Guarantee
Submission of Performance Security		Submitted by the 15th day from the date of the award letter
Guarantee shall be issued by local bank or authorised financial institution issued by a corresponding bank in Kenya recognised by the Central Bank of Kenya	10.1	Guarantee shall be issued by local bank or authorised financial institution issued by a corresponding bank in Kenya recognized by the Central Bank of Kenya
Program to be submitted	14.1	Not later than Fourteen (14) days after issuance of Order to Commence in the format Prescribed in the Tender Document, Schedule E.
Cash flow estimate to be submitted	14.3	Not later than Fourteen (14) days after issuance of Order to Commence
Penalty for not implementing approved Safety Plan.	19.1	Upto Kshs. 50, 000.00 per day
Minimum amount of Contractor's All risk Insurance cover	23.2	0.3% of the Contract Price
Submission of Contractors All Risk Insurance Cover		Submitted by the 28th day from the date of award letter.
Road Safety Implementation Plan	19.1	Not later than Fourteen (14) days after issuance of Order to Commence
Period for commencement, from Engineer's order to commence	41.1	28 days
Time for completion of works	43.1	36 months
Amount of liquidated damages	47.1	0.025 % of the contract price per day.
Limit of liquidated damages	47.1	5% of Contract Value
Defects Liability period for Works	49.1	12 months
Percentage of Retention	60.3	5% of the Interim Payment Certificate
Limit of Retention Money	60.3	5% of the Contract Price
Minimum amount of interim certificates	60.2	2.5% of the Contract Sum
Time within which payment to be made after Interim Payment Certificate signed by Engineer	60.10	90 (ninety) days
Time within which payment to be made after Final Payment Certificate signed by Engineer	60.10	90 (ninety) days
Advance Payment	60.12	The Employer MAY pay up to a maximum of 10% of Contract Sum after signing of contract, issuance of order to commence and submission of advance payment bank guarantee, subject to availability of funds. (Insurance bonds shall not be accepted)

Appointer of Arbitrator	67(3)	The Chartered Institute of Arbitrators - Kenya.
Notice to Employer and Engineer	68.2	The Employers address is: **The Director General,** **Kenya National Highways Authority (KeNHA),** **P.O. Box 49712 – 00100** **NAIROBI** The Engineer's address is: **Director (Development)** **Kenya National Highways Authority,** **Barabara Plaza, Off Airport South Road, Opp. KCAA,** **P.O. Box 49712 - 00100** **NAIROBI** **The Contractor's address is:** **Name**…..…….……. **P.O Box**……..…….. **City/Town**……. **Email:**……..……. **Telephone**…….……

Signature of Tenderer……. Date ……

FORM CON 1 HISTORICAL CONTRACT NON-PERFORMANCE, PENDING LITIGATION AND LITIGATION HISTORY

Tenderer's Name:_____

Date:_____

JV Member's Name_____

ITT No. and title:_____

Non- Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
□ Contract non-performance did not occur for the last three (3) years from the day of tender opening. □ Contract(s) not performed for the last three (3) years from the day of tender opening			
Year	**Non performed portion of contract**	**Contract Identification**	**Total Contract Amount (KenyaShilling equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/number; and any other identification]* Name of Procuring Entity: *[insert full name]* Address of Procuring Entity: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Qualification Criteria and Requirements			
□ No pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 8. □ Pending Litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 9 as indicated below			
Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (Kenya Shilling equivalent)**
		Contract Identification: Name of Procuring Entity: Address of Procuring Entity: Matter in dispute: Party who initiated the dispute: Status of dispute:	
		Contract Identification: Name of Procuring Entity: Address of Procuring Entity: Matter in dispute: Party who initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
□ No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4. □ Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below			
Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (Kenya Shilling equivalent)**

FORM CON 2: DECLARATION FORM – FAIR EMPLOYMENT LAW AND PRACTICES

Date _____

To

The Director General,

Kenya National Highways Authority (KeNHA),

P.O. Box 49712-00100

NAIROBI

We (name and address) _____

_____declare the following:

1. Have not been involved in and will not be involved in violation of fair employment laws and practices.
2. THAT what is declared hereinabove is true to the best of my knowledge, information and belief

---------- ……. ----------

Name of Bidder's authorized Representative Signature Date

(To be signed by authorized representative and officially stamped)

FORM CON 3: DECLARATION OF KNOWLEDGE OF SITE

This is to certify that

[Name/s]……

……

Being the authorized representative/Agent of [Name of bidder]

……

……

Has familiarized himself/herself with the Site conditions in accordance with the Instructions to tenderers and the Tender Notice for purposes of tendering for this road project.

CONSTRUCTION OF UPLANDS – GITHUNGURI – RUIRU (B116) ROAD CONTRACT NO: KeNHA/2885/2025

Having studied the tender Documents, and gained knowledge of local conditions on site likely to influence the works and cost thereof, I certify that I am satisfied with the description of the works and understand the scope of works as specified and as implied in this tender.

…… ……..

(Signed and Stamped by Authorised Bidders Agent/ Representative) (Designation)

FORM FIN – 3.1: FINANCIAL SITUATION AND PERFORMANCE

a) **PART 1**

Tenderer's Name: _____

Date: _____

JV Member's Name_____

ITT No. and title: _____

1. Financial data

Type of Financial information (Kenya Shillings)	**Historic information for previous years, (amount in Millions (KSh.)**				
			2022	2023	2024
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

2. Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	**Source of finance**	**Amount (Kenya Shilling equivalent)**
1	Letter of line of Credit from a recognized Financial Institution	
2	Bank account balance (demonstrated by bank statements)	
3	(*Specify)*	

3. Financial documents

The Tenderer and its parties shall provide copies of financial statements for the last ***three (3)*** years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

a) Reflect the financial situation of the Tenderer or in case of JV member, and not an affiliated entity (such as parent company or group member).

b) Be independently audited or certified in accordance with local legislation.

c) Be complete, including all notes to the financial statements.

d) Correspond to accounting periods already completed and audited. for the three (3) years required above; and complying with

Attached are copies of financial statements the requirements

PART 2

Detailed Financial Situation Evaluation

No.	Description	Auditors Assessment 2022	Auditors Assessment 2023	Auditors Assessment 2024	Evaluation Score Award Criteria
1.	Financial Ratios				***Max Score is= 4 Marks***
a.	**Current Ratio= Current Assets / Current Liabilities**				Current Ratio more than 1 = 1 marks
b.	**Debt to Equity Ratio = Total Liabilities / Total Equity**				Equity Capital Ratio less than 1 = 1 Marks
c.	**Working Capital = Current Assets-Current Liabilities**				Positive Working Capital = 1 marks
d.	**Operating Cash Flow Ratio = Cash Flow from Operations / Current Liabilities**				Operating Cash flow more than 1 = 1 marks
2.	**Working Capital in Ksh. …….**				Ref Item 2(ii) of Qualification Criteria

The above Financial Ratios have to be derived from first Principles from the Audit Statements. The Auditor who has undertaken the analysis has to demonstrate the financial ratios and append his signature and stamp to the Document as below:

The Auditor shall be required to provide his/her workings and demonstrate the source of the workings from the various Audited statements by including the Page Numbers and references of the source of the figures used in the computation of the assigned values.

The Auditor undertaking the above Financial Analysis MUST duly fill the Contact Sheet below in all aspects and attach current annual practicing license.

Financial ratios Computed by a Certified Public Accountant:

CPA: Name	
ICPAK Number	
Telephone Number	
Email Address	
Postal Address	
Physical Address	
Contact Person	
Mobile Contact of the Contact Person	
Signature	
Date	
Personal/Corporate Stamp	

Ratios attested by the Company Director:

Director's Name	
ID/Passport Number	
Telephone Number	
Email Address	
Postal Address	
Physical Address	
Signature	
Date	
Personal/Corporate Stamp	

FORM FIN – 3.2: AVERAGE ANNUAL CONSTRUCTION TURNOVER

Tenderer's Name: ____

Date:____

JV Member's Name___ ITT No. and title: __

	Annual turnover data (construction only)		
Year	**Amount Currency** *[insert amount and indicate currency]*	**Exchange Rate (where applicable)**	**Kenya Shilling equivalent**
2022			
2023			
2024			
Average Annual Construction Turnover*			

* See Section III, Evaluation and Qualification Criteria.

If the most recent set of financial statements is for a period earlier than 12 months from the date of Bid, the reason for this should be justified.

FORM FIN 3.3: CURRENT CONTRACT COMMITMENTS / WORKS IN PROGRESS

Tenderers and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a Form of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
No.	Name of Contract	Procuring Entity's Contact Address, Tel, Fax	Value of Outstanding Work (Kenya Shilling equivalent)	Estimated Completion Date	Average Monthly Invoicing Over Last Six Months [KSh./month]
1					
2					
3					
4					
5					

FORM EXP – 4.1: GENERAL CONSTRUCTION EXPERIENCE

Tenderer's Name: _ Date: _____ JV Member's Name____ ITT No. and title:

Starting Year	**Ending Year**	**Contract Identification**	**Role of Tenderer**
		Contract name: Brief Description of the Works and Services performed by the Tenderer: Amount of contract: Name of Procuring Entity: Address:	
		Contract name: Brief Description of the Works and Services performed by the Tenderer: Amount of contract: Name of Procuring Entity: Address:	
		Contract name: Brief Description of the Works and Services performed by the Tenderer: Amount of contract: Name of Procuring Entity: Address:	

All the completed projects for consideration during to filled in this form. Attach the evidences as described in the Qualification criteria

FORM EXP – 4.2(A): SPECIFIC CONSTRUCTION AND CONTRACT MANAGEMENT EXPERIENCE

Tenderer's Name: _____ Date:_____

JV Member's Name_____ITT No. and title:_____

One complete form shall be filled for each specific experience project carried out by the bidder/JV Member

<table>
<tr><td>Similar Contract No..</td><td colspan="4">Information</td></tr>
<tr><td>Contract Identification</td><td colspan="4"></td></tr>
<tr><td>Award date</td><td colspan="4"></td></tr>
<tr><td>Completion date</td><td colspan="4"></td></tr>
<tr><td>Role in Contract (Tick as appropriate)</td><td colspan="4"><table><tr><td>Prime Contractor</td><td>Member in JV</td><td>Management Contractor</td><td>Sub contractor</td></tr><tr><td></td><td></td><td></td><td></td></tr></table></td></tr>
<tr><td>Total Contract Amount</td><td colspan="2"></td><td colspan="2">Kenya Shillings</td></tr>
<tr><td>If member in a JV or sub-contractor, specify participation in total Contract amount</td><td></td><td></td><td colspan="2"></td></tr>
<tr><td>Procuring Entity's Name:</td><td colspan="4"></td></tr>
<tr><td>Address:
Telephone/fax number
E-mail:</td><td colspan="4"></td></tr>
<tr><td>Description of the similarity in accordance with Item 6 of Technical Qualification Criteria:</td><td colspan="4"></td></tr>
<tr><td>1. Amount</td><td colspan="4"></td></tr>
<tr><td>2. Physical size of required Works and Services items</td><td colspan="4"></td></tr>
<tr><td>3. Complexity</td><td colspan="4"></td></tr>
<tr><td>4. Methods/Technology</td><td colspan="4"></td></tr>
</table>

5. Construction rate for key activities	
6. Other Characteristics	

Fill a this form for each project that demonstrate specific experience.

FORM EXP – 4.2(B): CONSTRUCTION EXPERIENCE IN KEY ACTIVITIES

Tenderer's Name:

Date:

Tenderer's JV Member Name:

ITT No. and title:

NOTE:

Bidders must complete the information in this form as per ITT 34.2 and Section III, Qualification Criteria and Requirements

One complete form shall be filled for each key Activity detailed in Technical qualification criteria, Item 7

1. Key Activity No One: _____

	Information			
Contract Identification				
Award date				
Completion date				
Role in Contact	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-Contractor ☐

Total Contract Amount		Kenya Shillings	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)	Actual Quantity Performed (i)*(ii)
Year 1			
Year 2			
Year 3			
Year 4			

Procuring Entity's Name: Address: Telephone/fax number E-mail:	
Description of key activities in accordance with Sub-Factor 4.2(b) of Section III:	

If applicable

2. Activity No. Two

3. .....

TECHNICAL PROPOSAL

The Tenderer's Technical Proposal shall include the following elements:

SCHEDULE A. Projected Cash Flow

SCHEDULE B. Site Organizations

SCHEDULE C. Subcontractors

SCHEDULE D. Contractor's Equipment

SCHEDULE E. Initial Tentative Program of Performance

SCHEDULE F. Key Personnel Proposed

SCHEDULE G: Basic Prices; Materials

SCHEDULE H: Price Adjustment

Instructions on how to present the various schedules of the Technical Proposal are given on the following pages

SCHEDULE A
Projected Cash Flow

1) Tenderers shall tabulate below estimates, based on their preliminary work programme, of:
   a) On the expenditure side, the value of the work which will be carried out;
   b) On the revenue side, the net payments to which they will become entitled with due allowance for the advance payment and repayment, materials prepayments, and retention money, but excluding price adjustments for rise and fall and provisional sums for emergency works.
   c) The projected net cash flow during the contract period.

2) The prospective successful Tenderer may be required to submit full details to substantiate his estimates.

Period (Months)	Cost of Works	Cost of Rehabilitation and Works Improvement	Net Payment to be received	Net Cashflow
1-6				
7-12				
13-18				
19-24				
25-30				
31-36				
37-42				
43-48				
ETC				

SCHEDULE B

Site Organization

Tenderers shall give below full particulars of the organization they propose to establish, direct, and administer the performance of the Contract. In particular, Tenderers shall indicate the location of site camps and the resources they intend to allocate to Self-Control Units for planning and monitoring purposes.

1. SITE ORGANIZATION CHART
2. NARRATIVE DESCRIPTION OF SITE ORGANIZATION CHART

SCHEDULE C SUB-CONTRACTORS / PARTNERS

Tenderers shall list below those parts of the Works and Services which they propose to subcontract, and state the approximate value of those parts and the names and addresses of the proposed subcontractors, if those are known at Tendering stage. Tenderers shall also list other business partners involved in the execution of the contract and their respective roles and responsibilities.

Part of Works / Services:
Approximate value:
Name and address of proposed subcontractor / partner:

Part of Works / Services:
Approximate value:
Name and address of proposed subcontractor / partner:

Part of Works / Services:
Approximate value:
Name and address of proposed subcontractor / partner:

Part of Works / Services:
Approximate value:
Name and address of proposed subcontractor / partner:

SCHEDULE D

Contractor's Equipment Form EQU

The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed (with a current new purchase price exceeding KSH ……., or for alternative equipment proposed by the Tenderer.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current Status	Current Location	
	Details of current commitments	
Source	Indicate source of equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	
Agreements	Details of rental/ lease/ manufacture agreements specific to the project	

SCHEDULE E

Initial Tentative Program of Performance

To demonstrate a clear understanding of the requirements of the Contract, Tenderers shall provide the following:

i. A gantt chart sub-divided into sections for each road showing the major activities to be carried out for pre construction, during construction and post construction if any. The activities shall be shown against time, with linkages shown between related/sequential activities as far as possible and appropriate.

ii. A bar chart or schedule showing the usage of major plant, including those listed in Schedule D (Contractor's Equipment).

iii. The program shall prioritize the main Road, Ruiru - Githunguri -Uplands (B116), to completion, with all road furniture in place and opening to traffic.

iv. The program shall allow upto twelve (12) months from commencement for issuance of possession of site for the spur roads.

SCHEDULE F

Form PER -1 Key Personnel Schedule

Tenderers should provide the names and details of the suitably qualified Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate. **Key Personnel**

1.	**Title of position: ……**	
	Name of candidate:	
	Duration of appointment:	*[insert the whole period (start and end dates) for which this position will be engaged]*
	Time commitment for this position:	*[insert the number of days/weeks/months that has been scheduled for this position]*
	Expected time schedule for this position:	***Full time site presence***
2.	**Title of position: …**	
	Name of candidate:	
	Duration of appointment:	*[insert the whole period (start and end dates) for which this position will be engaged]*
	Time commitment for this position:	*[insert the number of days/weeks/months that has been scheduled for this position]*
	Expected time schedule for this position:	***Full time site presence***
3.	**Title of position: …**	
	Name of candidate:	
	Duration of appointment:	*[insert the whole period (start and end dates) for which this position will be engaged]*
	Time commitment for this position:	*[insert the number of days/weeks/months that has been scheduled for this position]*
	Expected time schedule for this position:	***Full time site presence***
4.	**Title of position: …**	
	Name of candidate:	

	Duration of appointment:	*[insert the whole period (start and end dates) for which this position will be engaged]*
	Time commitment for this position:	*[insert the number of days/weeks/months that has been scheduled for this position]*
	Expected time schedule for this position:	***Full time site presence***
5.	**Title of position: …**	
	Name of candidate:	
	Duration of appointment:	*[insert the whole period (start and end dates) for which this position will be engaged]*
	Time commitment for this position:	*[insert the number of days/weeks/months that has been scheduled for this position]*
	Expected time schedule for this position:	***Full time site presence***
6.	**Title of position: …**	
	Name of candidate:	
	Duration of appointment:	*[insert the whole period (start and end dates) for which this position will be engaged]*
	Time commitment for this position:	*[insert the number of days/weeks/months that has been scheduled for this position]*
	Expected time schedule for this position:	***Full time site presence***

Countersignature of authorized representative of the Tenderer:

Signature: _____

Date: (day month year): _____

Form PER -2

Resume and Declaration – Key Personnel

*(The curriculum vitae of **each** key personnel shall be provided in this format. Attach the relevant academic and professional qualifications)*

Name of Tenderer		
Position [1]: [*title of position from Form PER-1*]		
Personnel information	**Name:**	**Date of birth:**
	Address:	**E-mail:**
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency: *[language and levels of speaking, reading and writing skills]*	
Details	**Address of Procuring Entity:**	
	Telephone:	**Contact (manager/personnel officer):**
	Fax:	
	Job title:	**Years with present Procuring Entity:**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	**Role**	**Duration of involvement**	**Relevant experience**
[main project details	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

Declaration

I, the undersigned Key Personnel, certify that to the best of my knowledge and belief, the information contained in this Form PER -2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Tender:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Key Personnel is available to work on this contract]*
Time commitment:	*[insert the number of days/weeks/months that this Key Personnel will be engaged]*

I understand that any misrepresentation or omission in this Form may:

a) be taken into consideration during Tender evaluation;
b) my disqualification from participating in the Tender;
c) my dismissal from the contract.

Name of Key Personnel: *[insert name]*
Signature:_____

Date: (day month year): _____

Countersignature of authorized representative of the Tenderer:

Signature: _____

Date: (day month year): _____

SCHEDULE G: SCHEDULE OF BASIC MATERIALS; PRICES

ITEM NO	DESCRIPTION	NAME OF SUPPLIER	COUNTRY OF ORIGIN	UNIT	RATE	
					KSHS	CTS
1.	Cut-back Bitumen MC 30 in bulk			Litre		
2.	Cut-back Bitumen MC 30 in drums			Litre		
3.	Bitumen 80/100 in bulk			Kg		
4..	Bitumen 80/100 in drums			Kg		
5..	Bitumen Emulsion K1-60 in bulk			Litre		
6.	Bitumen Emulsion K1-60 in drums			Litre		
7.	Petrol, Regular Grade			Litre		
8.	Petrol, Premium/ super Grade			Litre		
9.	Automotive Diesel Fuel			Litre		
10.	Industrial Diesel Oil			Litre		
11.	Industrial Fuel Oil			Litre		
12.	Kerosene Fuel			Litre		
13.	Cement			Tonne		
14.	Flex beam Guardrail			Metre		
15.	Gabion Mesh			M2		
16.	Reinforcing Steel			Tonne		
17.	Lime			Tonne		

I certify that the above information is correct

…… ……. ……..
(Title) (Signature) (Date)

The prices inserted above shall be those prevailing 30 days before the submission of Tenders and shall be quoted in Kenya Shillings using the prevailing exchange rates by Central Bank Kenya.
Prices of imported materials to be quoted CIF Mombasa or Nairobi as appropriate depending on whether materials are imported by the tenderer directly or through a local agent.

SCHEDULE H: PRICE ADJUSTMENT GUIDELINES

Index Code*	**Index Description***	**Source of Index***	**Base Value and Date***	**Bidder's Weighting**	**Weighting Range**
Fixed	Nonadjustable	KNBS 2019 Civil Engineering Cost Indices	28 days before tender opening date		A= 0.4
EQ	Equipment				B= 0.1– 0.25
LL	Labour				C= 0.19 - 0.2
MT	Materials				D= 0.14 – 0.25
TF	Transport & Fuel				E= 0.01 - 0.14
Total				**1.0**	

Notes:

- The Base year for the indices shall be Q4 2019.
- Tenderer to insert Bidder's weighting coefficients in column 5, within the range specified in column 6, for each index in the table above.
- Entered coefficients should add up to one for use in the variation of price formula. Refer to FIDIC clause 13.8 on adjustment for price.
- Variation of Price will be applied on monthly financial statements and will become effective 12 months after commencement of the Works
- Entered coefficients should add up to one (1) for use in the variation of price formula, Refer to FIDIC Clause 13.8: Adjustment for Changes in Cost.

I certify that the above information is correct.

……	…….	……..
(Title)	(Signature)	(Date)

FORM OF TENDER SECURITY - DEMAND GUARANTEE

Beneficiary:_____

Invitation to Tender No:_____

Date: _____

TENDER GUARANTEE No.:_____

Guarantor:_____

We have been informed that (herein after called "the Applicant") has submitted or will submit to the Beneficiary its Tender (hereinafter called "the Tender") for the execution of under Invitation to Tender No. (“the ITT”).

Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of (……) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

a) Has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Form of Tender (“the Tender Validity Period”), or any extension there to be provided by the Applicant; or

b) Having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to be provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to Tenderers (“ITT”) of the Beneficiary's Tendering document.

This guarantee will expire:

a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the performance Security and, issued to the Beneficiary in relation to such contract agreement; or

b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) twenty-eight days after the end of the Tender Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____

[signature(s)]

PART 2 - WORKS' REQUIREMENTS

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Standard Specifications refers to the Standard Specifications for Road and Bridge Construction, 1986 Edition.

SECTION VII: SPECIAL SPECIFICATIONS

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SECTION 1 - GENERAL

100 SPECIAL SPECIFICATIONS

Special specification is supplementary to the Standard Specifications and the two must be read in conjunction. In any case where there appears to be conflict between the two then the Special Specifications shall take precedence

101 LOCATION OF THE PROJECT

The works are located within Kiambu County and includes a section of the B116 Road measuring about 44.8 Km. The Project Road starts at Nyambari at the A104 junction then runs in an easterly direction through Gitiha, Kambaa, Githunguri, Kanjai and ends at Ruiru / Thika Superhighway Junction. In a previous contract of the works done on the project road, various works were done to completion on various sections and any incomplete works is what is planned to be executed under this contract. Any section where earthworks were done in previous contract but pavement layers were not done and site clearance works will still be done.

In this Contract, various interventions are planned for the main project road as per the table below.

S/No.	Component	Outstanding Work Sections		Outstanding length (Km)	Sub Total	Remarks
		From (kM)	To (kM)			
1.	Site Clearance and topsoil stripping	23+900	25+801	1.901	**11.77**	
		35+000	44+864	9.864		
2.	Earthworks - Fill	23+900	25+800	1.9	**9.76**	
		37+000	43+000	6		
		43+000	44+864	1.864		
3.	Culvert and Drainage Works	23+900	25+800	1.9	**7.00**	
		35+000	37+000	2		
		41+500	44+600	3.1		
4.	Subgrade	23+900	26+900	3	**12.86**	
		35+000	44+864	9.864		
5.	Subbase, Base and AC	23+900	25+800	1.9	**20.96**	
		25+800	26+900	1.1		One Lane
		26+900	27+800	0.9		Full
		27+800	28+000	0.2		One Lane
		28+000	44+864	16.864		
6.	Protection of works to subgrade	N/A	N/A	0	-	
7.	Protection of works to Final Earthworks	N/A	N/A	0	-	
8.	Bridgeworks	KM 42+600		0	-	
9	Road furniture	0	44,864.00	44.864	**44.86**	

The site of the works shall be within the road reserve and any other places as may be designated in the Construction Contract and as shown in the Book of Drawings.

The Phase 2 works shall include the following spur roads:

R1: Ngewa - Kamuchege (12.7 kms)
R2: Kagwe - Githunguri (12 kms)
R3: Kagwe – Mungere (4.1km)
R4: Nyamweru Loop (2.1 kms)

The total length of spur roads is **30.9kms.**

The Project location map is as shown below:

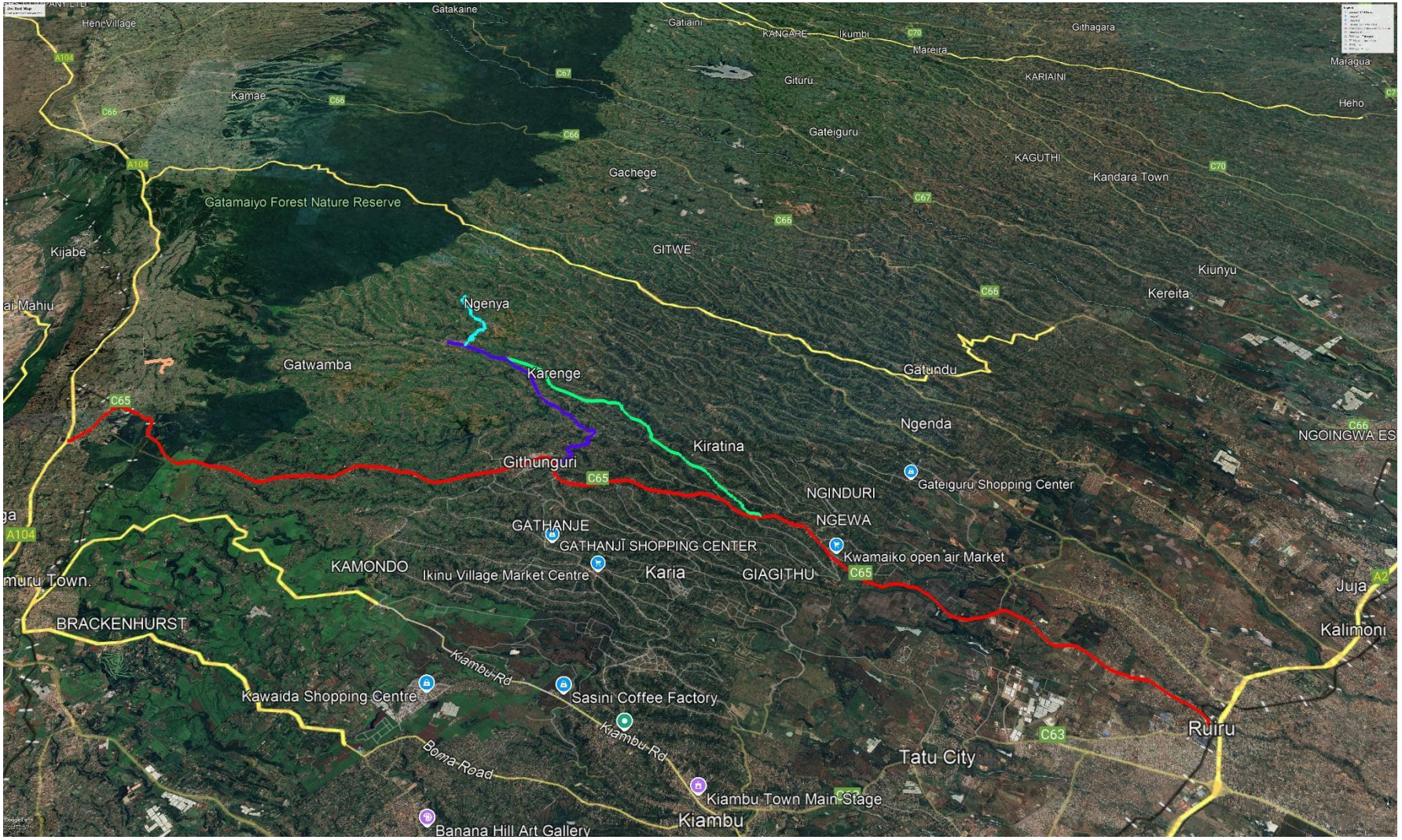

Figure 1: Project Location Map

102 SCOPE OF WORKS

102.1 PROJECT COMPONENTS

The proposed rehabilitation and improvement work to be executed under the Contract shall mainly comprise but are not limited to the following schemes:

A. Main Road (Uplands – Githunguri – Ruiru)

General scope:

7.0 m wide carriageway with 2 lanes,1.5 m wide shoulders (and footpaths where instructed) on each side of the road, Junctions and access roads as required, Road drains on the outer side of the shoulders, Road furniture and markings, Bus bays, Utilities relocation, Safety provisions and protection works, Landscaping, Protection works

Detailed Scope

a) Facilitation of the Supervision Staff

b) Site Clearance and Top Soil Removal

c) Earthworks to Formation Levels

1. Removal to spoil or reuse of the existing bituminous wearing course and GCS Base to an approved level as instructed by the Engineer.
2. Processing and compaction to 100% AASHTO T180 at OMC of the existing road Subbase or Base where the proposed road alignment follows that of the existing road.
3. Compaction of top 150 mm of original ground in both cuts and fill to 95% AASHTO T99 Density at OMC at realigned road sections.
4. Construction of top 300 mm of the road up to the formation level as Improved Subgrade at realigned road sections. The improved Subgrade shall be compacted in two layers each of 150 mm thickness, to 100% AASHTO T99 Density at OMC as per the standard specifications.

d) Construction of the Pavement Structure along the Existing Alignment as follows:

1. Provision, processing, watering and compaction cement improved gravel for sub-base for carriageway, shoulders, bus bays, accesses and junctions at realigned sections.
2. Processing, watering and compaction of existing GCS Base as Subbase for the carriageway, shoulders, bus bays, accesses and junctions.
3. Provision, processing and compaction of Cement Treated Graded Crushed Stone as base for the carriageway, shoulders, bus bays, accesses and junctions.

4. Prime the Base layer with MC-3000 cutback bitumen.
5. Provision, processing and compaction of Superpave asphalt concrete (AC) Type 1 as wearing course for the carriageway, shoulders, bus bays, accesses and junctions.
6. Prepare surface of carriageway, junctions, accesses etc. provide and spray K1 - 60 bitumen emulsion as tack coat for carriageway, shoulders, bus bays, junctions and accesses
7. Application of penetration grade 80/100 bitumen and single seal surface dressing using pre-coated 10/14 mm pre-coated chippings surface dressing on the carriageway, accesses and junctions.

e) Drainage and Protection works

1. Removal of existing inadequate and defective cross and access culverts, inlets and outlets structures and replace as instructed by the Engineer.
2. Construction of pipe culverts, headwalls, wingwalls and aprons to cross and access culverts inclusive of concrete surround
3. Construction of side and mitre drains and outfall channels to the whole road including improvement of other drainage and soil erosion protection works.
4. Carry out protection works (scour checks, stone pitching) as instructed by the Engineer.
5. Carry out any miscellaneous works that is not included above but may be deemed necessary by the Engineer for the execution and completion of the works.
6. The roadside ditches shall be jointed invert block drains with side slabs whose invert levels being at least 0.6 m below the road formation level

B. Spur Roads

a) Site Clearance and Top Soil Removal

b) Earthworks to Formation Levels

- Removal of top soil on the benches to the desired formation level as instructed by the Engineer
- Compaction of top 150 mm of original ground on the benches
- Cut and fill on benches as directed by the Engineer.
- Removal to spoil or reuse of the existing bituminous wearing course and GCS Base to an approved level as instructed by the Engineer.
- Processing and compaction of the existing road Subbase or Base as subgrade. The improved Subgrade shall be of 300mm thickness and compacted in layers each of 150 mm thickness

c) Construction of the Pavement Structure along the Alignment

I. ***Ngewa – Kamuchege (R1), Nyamweru Loop (R3) and Kagwe – Mungere (R4)***

1. Provision, processing, watering and compaction of natural material (G30) (*Refer to Pavement Design Guideline for Low Volume Seal Roads 1, 2017*) for sub-base and cement improved gravel for Base for the carriageway, shoulders, bus bays, accesses and junctions.
2. Curing and protection of the Subbase and Base material
3. 14/20 and 6/10 double seal surface dressing for wearing course and shoulders

II. ***R2 -Kagwe- Githunguri***

a) Provision, processing, watering and compaction of cement improved gravel for subbase for the carriageway, shoulders, bus bays, accesses and junctions

b) Provision, processing, watering and compaction of Cement improved gravel as base for the carriageway, shoulders, bus bays, accesses and junctions.

c) Curing and protection of the Cement Improved Gravel Base material

d) 50mm AC for carriageway for wearing course

e) 14/20 and 6/10 double seal surface dressing for shoulders

The road carriageway shall be 6.0 m wide with 1.0 m wide shoulders (and footpaths where instructed) and landscaped verge on both sides

f) Drainage and Protection works

1. Removal of existing inadequate and defective cross and access culverts, inlets and outlets structures and replace as instructed by the Engineer.
2. Construction of pipe culverts, headwalls, wingwalls and aprons to cross and access culverts inclusive of concrete surround
3. Construction of side and mitre drains and outfall channels to the whole road including improvement of other drainage and soil erosion protection works.
4. Carry out protection works (scour checks, stone pitching) as instructed by the Engineer.
5. The roadside ditches shall be jointed invert block drains with side slabs whose invert levels as instructed by the Engineer

C. Construction of footpaths

a. Preparation of the Subgrade to receive the pavement layers as per the standard specifications where instructed by the Engineer.

b. Provision, processing and compaction of 150 mm thick layer of natural gravel material Subbase and Base on the footpath.

c. Provision, spreading and compaction of a 50 mm thick layer sand on the footpath.

D. **Road Furniture**

a. Provision and erection of all road signs and markings as instructed by the Engineer.

b. Provide, lay and joint raised kerbs, precast concrete channels and invert block drains as instructed by the Engineer.

c. Plant selected grass on slopes of embankments and cuttings.

d. Provide and fix flex beam guardrail at high fill areas and at the approaches to the Road Bridge and a handrail on the bridge deck.

E. **Concrete Works**

a. Construction of major structures as instructed by the Engineer

F. **Other Ancillary Works**

a. Improvement of junctions and accesses as instructed by the Engineer

b. Protection of existing utility services and way leaves acquisition

c. Landscaping and planting of selected trees, flowering bushes and grass on slopes of embankments and cuttings

d. Protection works using stone pitching and gabions as necessary

G. Passage of Traffic

Regular maintenance of the existing road for safe and adequate passage of traffic during construction including diversion works as necessary to meet regulatory requirements

H. Dayworks

Any other activity not listed above but deemed necessary and instructed by the Engineer to be paid within the mode of payment stipulated either by day works or on measured basis

I. Maintenance

Maintenance and protection of the works during the construction period and defects liability period

103 CONTRACT DRAWINGS

Contract drawings have been bound in a book of drawings accompanying these Contract Documents as a separate volume. Additional copies of these drawings that

may be required by the Contractor can be obtained from the Engineer, in which case the Contractor will be required to reimburse the cost of producing such additional copies.

The Engineer may from time to time in order to enable the satisfactory completion of the Works, revise, amend, or supersede any of these drawings. It shall be the Contractor's responsibility to construct all Works in conformity with the latest revision, amendment or superseding drawings, provided that the Engineer has given to the Contractor in writing such reasonable prior notices of intention to revise, amend or supersede as the nature of the intended change requires and the relevant drawings have been issued to the Contractor.

The Contractor may be required to demolish, alter and/or correctly rebuild at his own expense any part of the Works not in conformity with the drawings currently forming part of the Contract at the time of construction of such Works, provided always that such current drawings had previously been issued to him.

Documents

The following manuals that are important and relevant to the contract, will not be issued with the tender documents but will be available for inspection during normal working hours at the offices of the Director (Development), Kenya National Highways Authority, P.O. Box 49712 - 0100, Nairobi, Kenya.

Road Design Manual:
Part 1: Geometric Design of Rural Roads
Part 3: Materials and Pavement Design for New Roads
Pavement Design Guideline for Low Volume Seal Roads 1, 2017

Manual for Traffic Signs:
Part 1: Road Markings
Part 2: Traffic Signs

104 PROGRAMME OF EXECUTION OF THE WORKS

The contractor shall provide the works programme, required under clause 14 of the Conditions of Contract, within 14 days of receipt of the Engineer's Order to commence work

The programme shall be coordinated with climatic and other conditions to provide for the completion of the works in the order and by the time specified.

The Contractor shall carry out the contract in accordance with the programme agreed with the Engineer, but he shall in no manner be relieved by the Engineer's approval of the programme, of his obligation to complete the works in the prescribed order and by the prescribed completion date and he shall from time to

time review his progress and make such amendments to his rate of execution of the works as may be necessary to fulfil his obligations.

The Contractor shall allow in his programme for construction of trial sections and carrying out tests upon them as directed by the Engineer in accordance with the provisions of Clause 129 of the Standard Specification. The time for completion of the Contract shall not be extended because of the time taken to carry out tests and evaluate trial sections.

105 ORDER OF EXECUTION OF WORKS

In addition to Clause 105 of the Standard Specification the Contractor shall carry out the Works such that a continuous and consecutive output of fully complete work is achieved.

107 CERTIFICATES OF COMPLETION

The minimum length of the road for which a certificate will be issued is: the entire length of a road segment of the project road when substantially completed. Sectional handing over maybe allowed on completion of the main road i.e Uplands – Githunguri- Ruiru B116 Road.

109 NOTICE OF OPERATIONS

Add the following sub- Clause.

Notification Terms

It shall be the Contractor's responsibility to notify the Engineer when any item of works scheduled are completed and ready for approval, and the contractor shall give sufficient notice to allow control test to be performed.

Explosive and Blasting

(a) The requirements of the Laws of Kenya governing explosives and other requirements and regulations of Government of Kenya and other authorities shall be complied with.

(b) No explosives of any kind shall be used without prior written consent of the Engineer.

(c) The Contractor shall be solely responsible for the provision, handling, storage and transporting of all explosives, ancillary materials and all other items of related kind whatsoever required for blasting.

111 NATIONAL SPECIFICATIONS

Add the following at the end of this clause

"The Contractor shall provide all such specifications not more than 60 days after commencement of contract and at least 14 days before the execution of work to which the specification is applicable."

117 HEALTH, SAFETY AND ACCIDENTS

Add the following:

In addition to providing, equipping and maintaining adequate first aid stations throughout the Works in accordance with the Laws of Kenya, the Contractor shall provide, equip and maintain adequate first aid and HIV/AIDS preventive materials stations throughout the works all in accordance with the laws of Kenya. Further the Contractor shall regularly conduct hygiene and HIV/AIDS campaigns among his workers. To carry out these tasks effectively, the Contractor shall employ a suitably qualified staff to impartially advise him and the Engineer on all the aspects of safety, health and environment. The Contractor shall allow in his prices and be responsible for the cost of all site safety, Health, Environment and welfare arrangements and requirements.

121 DIVERSION OF SERVICES

(a) The Contractor shall acquaint himself with the location of all existing services such as telephone lines, electricity cables, water pipes, sewers etc., before execution of any works that may affect the services. The cost of determining the location of the existing services together with making good or repairing of any damage caused all to the satisfaction of the Engineer shall be included in the BID rates.

(b) Subject to the agreement with the Engineer, the Contractor shall be responsible for removal of alteration and relocation of existing services.

(c) The Contractor shall indemnify the Employer against claims originating from damage to existing services or works.

123 LIAISON WITH GOVERNMENT AND POLICE OFFICIALS

The Contractor shall keep in close touch with the Police and the other Government officials of the area regarding their requirements in the control of traffic, or other matters, and shall provide all assistance or facilities, which may be required by such officials in the execution of their duties.

124 LAND FOR ALL CAMPS SITES AND FOR THE CONTRACTOR'S OWN PURPOSES, INCLUDING TEMPORARY WORKS.

Notwithstanding Clause 124 of the Standard Specification all requirements of land for temporary works and construction purposes shall be to the approval of the Engineer but the Contractor will make all necessary arrangements with the property

owners concerned and pay all charges arising there from. On or before completion of the Contract, the Contractor shall remove all temporary works and shall restore all such land to the condition in which it was immediately prior to the occupation thereof as far as is reasonable and practicable. No separate payment will be made to the Contractor on account of these items and the Contractor must make due allowance for them in his rates.

Notwithstanding Clause 120 of the Standard Specifications, the Contractor shall be required to appoint competent surveyors who will liaise with the Engineer on matters related to the demarcation of the existing road reserve, site measurements, removal and reinstatement of existing services.

127 INFORMATION FROM EXPLORATORY BORINGS AND TEST PITS

Omit the content of Clause 127 and substitute the following Sub-Clauses: -

127.1 Factual Materials Report

The Factual Materials Report for this Contract does not form part of the Contract Documents. However, the Report will be made available for the Contractor's information only, and any conclusions on issues such as suitability of materials, location of borrow pits, material quantities etc., made by the Contractor on basis of the Factual Materials Report, will be at his own risk.

127.2 Trial Sections

The Contractor shall allow in his programme for constructing trial sections and carrying out tests upon them as directed by the Engineer. Trials would normally be required at the start of each pavement layer and if changes of materials, method or equipment deem it necessary as directed by the Engineer.

The time for completion of the Contract shall not be extended because of the time needed to construct trial sections and evaluate the tests on them.

At least fourteen days before the work of laying any pavement layer is commenced, the contractor shall construct trial sections of at least 100 m in length and to the full construction width and the specified pavement layer thickness. For each trial section, the Contractor shall use the materials, mix proportions, mixing, laying, compaction plants and construction procedure that he proposes to use for the main work. The main work of laying the pavement layer shall not be commenced until this trial has been tested and approved by the Engineer.

No variation in the construction procedure, mix proportions, size, grading or source of any of the constituents shall be made without the agreement of the Engineer who may first require new trial sections to be carried out.

Trial sections, if found satisfactory, will be paid for under the rates in the Bill of Quantities for the appropriate items, as if the trial sections were part of the normal work. No separate payment will be made for trial sections and testing and the Contractor shall be deemed to have provided for this in his rates.

The Contractor shall make good, at his own expense, any trial sections that fail to meet the specified standards. The standards shall include, but not be limited to, material quality, layer thickness, levels and compaction.

128 STORAGE OF MATERIALS

All materials shall be stored on Site in a manner approved by the Engineer and the Contractor shall carefully protect from the weather all work and materials which may be affected thereby.

129 TEST CERTIFICATES

When instructed by the Engineer the Contractor shall submit certificates of test from the suppliers of materials and goods required in connection with the works as the Engineer may require.

Such certificates shall certify that the materials or goods concerned have been tested in accordance with the requirements of the specifications and shall give the results of all the tests carried out. The Contractor shall provide adequate means of identifying the materials and goods delivered to the site with the corresponding certificates.

130 PROGRESS PHOTOGRAPHS

Notwithstanding the provision of Clause 130 of the Standard Specifications, the Contractor shall not be responsible for taking of progress photographs. Progress Photographs shall be taken by the Engineer's Representative and relevant costs charged to the Contractor who will be reimbursed under Miscellaneous Accounts.

131 SIGNBOARDS

The Contractor shall provide and erect two (2) publicity signboards on each of the road links as directed by the Engineer. The Engineer shall, as shown in the Drawings, direct the minimum dimensions of the boards. The signs shall be printed reflective Vinyl Stickers on galvanised steel plates min 350mm high. Posts shall be galvanised steel. Main headings lettering shall be Yellow and min 80mm high, while subheadings lettering shall be White and min 60mm high as per the drawings.

132 HOUSING ACCOMMODATION FOR THE RESIDENT ENGINEER AND HIS STAFF, OFFICE AND LABORATORY INCLUDING FURNITURE

132.1 HOUSING ACCOMMODATION FOR ENGINEER'S SENIOR STAFF

The Contractor shall provide and maintain furnished houses as indicated in the drawing or as approved by the Engineer.

132.2 LIST OF FURNITURE FOR ENGINEER'S STAFF HOUSES

Each house shall be provided with new furniture, equipment and fittings to the approval of the Engineer as listed below respectively:

All the houses and furniture mentioned above shall revert to the Employer after the completion of the contract.

Payments shall be made under the relevant provisions in the Bills of Quantities. No separate payment shall be made for provision and maintaining of the above furniture for the RE's houses. This will be deemed to have been included in the rate for provision of the same under the appropriate bill items.

Item Description	Quantity per House Type				
	Type I	Type II	Type III	Type IV	Type V
Double Bed (5x6) with "Slumberland" Mattress	3	3	2	0	0
Single Bed (3 ½ x 6) with "Slumberland" Mattress	0	0	0	1	1
Dressing table with mirror and stool	0	0	0	0	0
Chest of 5 No. drawers with mirror	3	2	1	0	0
Wardrobe (movable)	3	2	2	1	1
Resident table	3	2	1	1	0
Bedroom chair	2	1	0	0	0
600mm x 450mm high medicine cabinet with mirror	2	1	1	1	1
Bathroom stool	0	0	0	0	0
Towel Rail	2	1	1	1	1
Dining Table (2m x 1m approx.)	1	1	1	1	1
Dining Chairs	6	4	4	0	0
Side Board	2	1	1	0	0
3-piece lounge chairs	2	1	1	1	1
Armchair with cushions	2	2	2	0	0
Coffee table 40 x 45cm high	2	1	1	1	1
Occasional tables, 70x70x45 cm high	1	1	1	0	0
Book case (2m long with 3 shelves)	1	1	1	1	1
Writing Desk with chair	1	1	1	1	1
Kitchen shelves (per sq. m)	1	1	1	1	1
Kitchen table (2m x 0.8m approx.)	3	2	2	1	1
Kitchen chair	3	3	3	1	1
Refrigerator (at least 19 cu.ft.) including a freeze compartment of about 3 cu.ft. capacity	1	0	0	0	0
Refrigerator (at least 7 cu.ft) including a freezer compartment	0	1	1	1	1
Cold water storage tank of at least 400 L capacity	1	1	1	1	1
Water filter at least 15 L capacity	1	1	1	1	1
Table lamps	3	2	2	1	0
Electric fan	1	1	1	1	1
Gas or Electric hot water unit for kitchen	1	1	1	1	1
Gas or Electric hot water unit for bathroom	1	1	1	1	1
Electric & Gas cooker with 4 burners, a grill and an oven	0	0	0	0	0
Electric cooker 2 elements	1	1	1	1	1
Primus stove	1	1	1	1	1
Solar lamp	2	2	2	1	1
Dustbin	1	1	1	1	1
Waste paper basket	3	1	2	2	2
Fire extinguisher at least 9L capacity	1	1	1	1	1
2m x 1.5m high curtain with lining	8	8	4	2	0
1m x 1.5m high curtain with lining	12	12	6	3	1

132.3 ENGINEER'S MAIN OFFICE

The contractor shall provide a furnished and equipped main office of plan area not smaller than 155 metre square that is equivalent of the MoPW Standard Resident Engineer's Office. This office shall be of weatherproof construction, provided with mosquito proof and burglar-proof windows and lockable doors and suitably insulated against heat and cold, fitted with air conditioning units, all to the satisfaction of the Engineer. The room to be occupied by the Engineer's Representative and its front office shall be provided with a floor carpet to be approved by the Engineer. All other floors shall be given a PVC tile finish using approved adhesive including 150mm wood skirting or superior finish. The windows shall be fitted with curtains and blinders.

A telephone shall also be provided for the Resident Engineer's office for his exclusive use. All the charges and fees related to the installation, maintenance and operation of the telephone including provision of internet services shall be deemed to have been included in the rates for providing and maintaining the Main Office.

The offices shall be provided with day and night watchmen and security lights, the cost of which shall be deemed to have been included in the rates for the offices.

The office for the Resident Engineer shall be completely separate from that of the Contractor.

Latrines and washrooms graded to staff seniority, together with a drinkable water supply and waterborne sewage disposal shall be provided for the office. The Contractor shall also provide 24 hours a day security and electricity supply to the offices and shall allow for any water and electricity consumed and for any statutory charges associated.

Measurement and payment for the Engineers office and laboratory shall be as specified in the standard specifications. The rate inserted for provision of the main office shall include the cost of complying with the requirements of clauses 117, 124, 125, 132, 133, 134, 135, 136 and 137 of the standard specifications. The office building shall revert to the Contractor at the end of the project.

The Contractor may be instructed by the Engineer under clause 58 of the General Conditions of Contract to make payments of general receipted accounts for such items as stationery, stores, furniture and equipment, claims and allowances for supervision personnel and any miscellaneous claims or the Engineer may direct the Contractor to purchase or pay for the above. The Contractor will, on provision of receipts, be paid under appropriate bill items in the BoQ.

The Contractor, when instructed, shall provide and install at the Engineer's office the Equipment specified below with a dealer's certificate and warranty:

a) Photocopying Machine 2No.

Digital copier with the following minimum specifications:

Color: Black & white
Copy Speed A4: 41 - 50 PPM
Print Speed A3: 20 PPM, A4 – 40PPM
Resolution: 600 x 600 dpi
2 x 500 sheet paper cassettes Standard
200 sheets Multipurpose Bypass Standard
Copier Memory 1024MB Standard Min - (Max 2GB) + 80 GB Standard
Printer Memory 1024MB Standard Min (Max 2GB) + 80 GB Shared with copier
25%- 400% Zoom
Paper size A6 – A3
Recommended monthly volume 6000 copies
Type: Free Standing

b) **Personal Computer (PC) 5 No.**

The rate inserted for the PCs shall include for the provision of the UPS, a Printer and the software specified below for each PC.

1. Processor	Intel Core i7 – 2600 (3.4GHZ, 8MB cache, 4 Cores)
2. RAM	8GB - DDR SDRAM
4. Hard Disk	SATA, 1 TB, and Min 7200 RPM
5. Display	17" TFT Colour SVGA with NVidia or Radeon graphics accelerator with min 1GB video RAM
6. Motherboard FSB speed: 1GHz	
8. Expansion slots	4No.
9. Ports	6 USB ports (minimum)
10. Operating system	Windows 10
11. Fully multimedia	4 speed CD ROM 52X (minimum) with sound card and two external speakers 10W minimum.
12. Network	Network Ready, Wi-Fi
13. Blu-Ray Drive, not anything less than DVD superdrive	
14. 2 years' warranty	

c) **Laptop 10No.**

The rate inserted for the Laptop shall include for the provision of a Printer and the software specified below for each laptop.

1.	Processor	Intel Core i7 or higher
2.	RAM	DDR SDRAM 1GHz speed, 8GB (minimum)
3.	Disk Cache	1024 MB (minimum)

4. Hard Drive 1 TB 5400 rpm SATA
5. Video Graphics – NVIDIA GeForce 940M (2GB DDR3L dedicated)
6. Keyboard Full-size island-style backlit with numeric keypad
7. Expansion slots - 1 multi format-SD media card reader, 1 HDMI, 1 headphone/microphone combo, 1 RJ45
8. Ports 4 USB ports 3.0 (1 USB Boost)
9. Operating system Windows 10
10. Pointing Device - Imagepad with multi-touch gesture support
11. Network card Integrated 10/100/1000 Gigabit Ethernet LAN
12. Wireless Connectivity – 802.11a/b/g/n/ac and Bluetooth 4.0 combo
13. Sound - Bang & Olufsen with 4 speakers and 1 subwoofer
14. Optical Drive - SuperMulti DVD burner
15. Two years' warranty
16. Battery life: min 6 hours
17. Built-in webcam min 2MP

d) Laser jet Printer specifications

1. Speed	20ppm
2. Memory	32MB expandable to 80MB
3. Resolution	1200Xx1200dpi
4. Compatibility	MS Windows 95/98/2000/XP/Vista
5. Power input	220-240V
6. Paper size	A6 – A4 (A3 for 1No. printer)

1No. Laptop shall be supplied with a printer capable of printing in A3 paper size. While the rest PCs and laptops to be supplied with A4 LaserJet printers of model Hp2050 or better approved.

e) UPS specifications

1. Rating	650 VAC (minimum)
2. Input Voltage	220-240V (minimum)
3. Output	220-240V (minimum)
4. Output frequency	50-60HZ
5. Battery module	minimum 60 minutes' backup time on 50% rated a. Sealed Lead-acid b. Short recharge time (max. 5 hours for 100%)
6. Protection	Output overload Input output short-circuit

f) Software

1) Microsoft Office (Latest Version) Professional with licence

2) Autodesk Civil3D (Latest Version)
3) Antivirus: McAfee Virus Scan Professional (Latest Version)
4) Adobe Acrobat Pro (Latest Version))

Prior to purchase of the computers, laptops and printers, the contractor shall submit the specifications of the same to the Engineer for approval. The Personal Computers, Laptops, printers, UPSs and Photocopying Machine shall revert to the Employer at the end of the Contract. The contractor shall be paid for these items under appropriate bill items in the BoQ.

LIST OF FURNITURE FOR ENGINEER'S OFFICE

ITEM	DESCRIPTION	No.
1	Executive office desk	2
2	Executive office chair	2
3	Conference table 12 seater	1
4	Standard office desk 2.2x0.9 lockable drawers	6
5	Standard office chairs	3
6	Office desks 1.4x0.9 lockable drawers	10
7	Office chairs	22
8	Office desks 3x1 drawers	9
10	Filing cabinets 6 drawers	8
11	Filing cabinets 4 drawers	3
12	Curtains	As applicable
13	Office cupboard	3
14	Refrigerator min. capacity 1.0 m^3	1
15	Water dispenser (hot and cold)	2
16	Waste paper basket	10
17	Stapling machine (ofrex) and pins	3
18	Paper punch	3
19	Scientific calculator (fx 992s)	10
20	Fully equipped first Aid Kit	2
21	Electric heater fans	4
22	Wall clocks battery powered	5
23	Filing trays	12

All furniture and equipment bought under the Contract shall revert to the Contractor. Payment for provision of the office **including the furniture mentioned above** shall be paid against the appropriate bill items in the BOQ.

Note: No separate payment shall be made for provision and maintaining of the above furniture for both the RE's office and houses. This will be deemed to have been included in the rate for provision of the same under the appropriate bill items.

132.4 ENGINEER'S LABORATORY AND SURVEY EQUIPMENT

The Contractor shall provide and maintain for the duration of the contract the Engineer's laboratory as shown in the Book of Drawings and provide all the laboratory equipment, reagents and survey equipment as required by the Engineer. The Contractor shall be paid under appropriate bill items in the Bills of Quantities or on provision of receipts as required by the Engineer.

The laboratory shall be sited adjacent to the Resident Engineer's main office and shall revert to the contractor at the end of the contract.

The laboratory shall have piped potable water supply and a continuous electricity supply adequate for lighting, heating and operating the laboratory equipment.

The laboratory shall have a height from floor to ceiling of not less than 2.75 metres and all rooms shall be fitted with electric lighting and power points as instructed by the Engineer's Representative, and each door shall be fitted with a good quality mortise lock and provide with two keys.

Soaking tanks for CBR specimens shall be provided at floor level in the laboratory. Concrete cube curing tanks of adequate size shall also be provided. Both the CBR tanks and concrete cube curing shall have drainage pipes built-in.

The following rooms and facilities shall be provided in the Laboratory: -

(i) Office

This room shall have a total floor area of not less than 14 square metres and a total window area of not less than 2 square meters. The door and windows shall be fitted with fly screens covered with mosquito gauze. The floor shall be of concrete with a float finish. The walls shall be lined and ceiling provided.

A display board of soft board or similar approved material, with a minimum surface area of 3 square metres shall be provided and securely fixed to the wall.

(ii) Main Laboratory

This room shall have a total area of not less than 55 square meters and a total window area of not less than 7 square metres. The external entrance shall be a double door and single doors shall be provided for access to the adjacent offices. The external door and all windows shall be fitted with fly screens covered with mosquito gauze.

The floor shall be of concrete and float finished. The room shall be fitted out as indicated by the Engineer's Representative with three rigidly constructed work benches each minimum 2 metres long by 1-metre-wide by 1 metre high and with top comprising either metal lined hard wood or steel float finished concrete at least 75mm thick and suitably reinforced, with a sink minimum size 600mm long by 450mm wide by 300mm deep fitted with a tap and waste pipe. Wall shelves, 450mm in width and having a surface area of at least 6 square metres, shall be provided and securely fitted.

Two display boards of soft board or similar approved material, each with minimum area of 3 square metres, shall be securely affixed to the walls as directed by the Engineer's Representative.

(iii) Small Laboratory Room

This room shall have a total floor area of not less than 20 square metres and a total window area of not less than 2 square metres. The windows shall be fitted with fly screens covered with mosquito gauze. A single door shall provide access to the main laboratory room. The floor shall be fitted out as indicated by the Engineer's Representative with two rigidly constructed work benches each of minimum dimensions 2 metres long by 1-metre-wide by 1 metre high with a top comprising either metal lined hardwood or a steel float concrete finish of at least 75mm thickness and suitably reinforced, with a sink of minimum size 600mm long by 450mm wide by 300mm deep fitted with a tap and waste pipe and concreted to the water supply for the main laboratory room. An approved air extractor fan shall be fitted through an outside wall.

(iv) Store Rooms

These rooms having a total floor area of not less than 20 square metres shall be provided adjacent to the main laboratory building in a position to be indicated by the Engineer's Representative.

(v) Concrete Slab for Sample Drying

A reinforced concrete slab 100mm thick and of total area not less than 20 square metres shall be provided adjacent to the main laboratory building in a position to be indicated by the Engineer's Representative. The slab shall have a smooth finish to the satisfaction of the Engineer.

The contractor may be directed to pay for stationery, equipment or reagents that are foresaid and also pay for servicing and repair of the laboratory equipment being used on the project.

The equipment shall be of approved manufacture, and shall be made available to the Engineer for the Engineer's exclusive use throughout the Contract, not later than three (3) weeks after the Engineer's order to supply. All equipment shall be ready to use and complete to perform the tests. The equipment shall revert to the Employer on completion of the Contract

Any delays to the Contractor or the Contractor's activities caused by the Engineer being unable to perform survey work, field or laboratory tests due to the contractor's failure to supply and/or maintain the said equipment shall be deemed to have been caused entirely by the Contractors own actions, and any consequences of such delays shall be interpreted as such.

The payment to comply with this requirement is provided in the Bill of Quantities and ownership of all equipment shall revert to the Employer after the completion of the Works.

Failure by the Contractor to provide or maintain the equipment shall make him responsible to bear all costs that may be incurred as a result of the Engineer's staff using alternative means of communication, including delays in supervision and approval of Works by the Engineer.

132.5 MOBILE PHONES FOR ENGINEER'S STAFF AND OFFICE

The Contractor shall, if so instructed by the Engineer provide, connect and maintain mobile phones for the exclusive use by the Engineer and for the duration of the contract. The Contractor shall provide air-time for these mobile phones as directed by the Engineer and be reimbursed under appropriate items in the Bills of Quantities.

133 TIME FOR ERECTION OF THE ENGINEER'S OFFICE AND LABORATORY

All houses, offices and laboratories to be provided under the Contract shall be handed over to the Engineer in finished and fully habitable condition not later than sixty days after the Engineer's order to commence work (Clause 41 of the Conditions of Contract).

No construction of the Works will be permitted until the Engineer's offices and laboratories have been accepted by the Engineer as finished and able to function efficiently.

Allowance has been in the Bills of Quantities for provision of alternative arrangements for houses, offices and laboratories acceptable to the Engineer for his staff within the above sixty day period. These arrangements may include the use of hotels, rented accommodation, hire of caravans, etc. In the case where the houses, offices and laboratories are not completed after sixty days, the Contractor will

thereafter be responsible for all costs of such temporary arrangements, including that of additional transport.

All equipment shall be made available to the Engineer, for his exclusive use throughout the Contract, not later than three (3) weeks after the Engineer's order to supply.

135 MAINTENANCE OF THE ENGINEER'S STAFF HOUSES, OFFICES LABORATORIES, FURNITURE AND EQUIPMENT

In 1st paragraph, delete "until the end of the Period of Maintenance" and substitute "till the issue of the Taking Over Certificate for the whole of the Works, and if required for a period thereafter until the Contractor has completed any outstanding work"

Add the following at the end: -

135.1 Provision of Maintenance and Security

The Contractor shall maintain all buildings, access, services, facilities, furniture and equipment provided by him and/or the Employer until the issue of the Taking-over Certificate for the whole of the Works, and if required for a period thereafter until the Contractor has completed any outstanding work.

The Contractor shall maintain all furniture and equipment provided by him in a useable state of repair and shall replace promptly any item that becomes unserviceable or is lost.

The Contractor shall provide cleaners, grounds men, and day and night watchmen for housing camp and offices as directed or instructed by the Engineer on site, the cost of which shall be included in the rates for providing houses, offices and laboratory.

Additional armed security shall also be provided as instructed by the Engineer and payment done under the appropriate item in the Bill of Quantities.

137 ATTENDANCE UPON THE ENGINEER AND HIS STAFF

The Contractor shall pay wages (including all overtime) and house all attendant staff to fulfill the requirements of Clause 137 of the Standard Specification.

The list of junior support staff required by the Engineer is indicated below: -

- Administrator - 1 No.
- Clerk/Secretary - 1 No.
- Lab Technician – 2 No.
- Lab Attendant - 6 No.
- Leveller - 2 No.

- Chainman - 6 No.
- Inspector of works – 4 No.
- Graduate Engineer – 3 No.

The Contractor will be paid on a prime cost basis plus a percentage for overheads and profits under appropriate items in the Bills of Quantities. The payment referred to in this clause shall exclude the cost of maintaining the offices in compliance with clause 137, paragraphs 1, 2 and 4 of the standard specifications which are deemed to be included in the rates for providing the Office.

138 VEHICLES AND DRIVERS FOR THE ENGINEER AND HIS STAFF AND METHOD OF PAYMENT

The Contractor shall **when instructed** to do so provide and maintain in good working condition for the exclusive use of the Engineer and his staff throughout the contract, brand new vehicles, as described in the Bill of Quantities.

The Contractor shall insure comprehensively the vehicles for any licensed drivers and shall provide competent drivers during normal working hours and whenever required by the Engineer including recognized days of rest.

Should any vehicle supplied not be in road worthy condition, the Contractor shall provide an acceptable equivalent replacement vehicle until such time as the original vehicle is repaired to the satisfaction of the Engineer and returned for use.

Payment for the vehicles (up to 4,000Km per veh.month), shall be by vehicle months. Payment for mileage above 4,000Km per vehicle month, shall be made at a rate per Kilometre. These payments shall be inclusive of all fuels, lubricants, servicing, insurance, maintenance, drivers and repairs. The rate shall include any overtime the drivers might be due or any other allowances in addition to the normal working hours. Payment shall be made under appropriate items in the Bills of Quantities.

The vehicles shall revert to the Contractor at the end of the contract.

139 RECEIPTED ACCOUNTS

The Contractor may be instructed by the Engineer to make payments of general miscellaneous accounts for such items as stationary, stores and equipment and miscellaneous supervision personnel and claims or the Engineer may direct the Contractor to purchase or pay for the above. The Contractor will be paid on a prime cost basis plus a percentage for overheads and profits under appropriate items in the Bills of Quantities.

140 PAYMENT OF OVERTIME FOR ENGINEER'S JUNIOR STAFF

In the last line delete the words "shall be at the Contractor's expense" and substitute with "including the approved percentage for administrative overheads shall be paid by the Contractor to the Engineer".

If the Contractor wishes to execute permanent works outside the Engineer's normal working hours as stated in Clause 45.1 of the Conditions of Contract, then the payment for overtime for the Engineer's junior staff shall be reimbursed in full by the Contractor to the Engineer plus a 20 percent additional amount to cover for the Engineer's administrative overheads.

If the Contractor wishes to execute the works on regular basis outside the Engineer's normal working hours, over a prolonged period, the Engineer may, if he deems it necessary, employ additional supervisory staff for which the required salaries, plus twenty (20%) percent additional amount to cover for the Engineer's administrative overheads shall be reimbursed in full by the Contractor to the Engineer. In addition, the Contractor shall provide the required accommodation for such staff at his own cost. The Contractor shall not be reimbursed any of these costs.

141 MEASUREMENT AND PAYMENT

Delete Sub-Clause 141 (a) entirely and substitute with: -

a) No Preliminary item has been included in this Contract. All Contractor's mobilisation and general costs shall therefore be included in relevant rates in the Bill of Quantities.

Delete Sub-Clause 141 (m) entirely

142 ENVIRONMENTAL PROTECTION AND WASTE DISPOSAL

Add at the beginning;

The Contractor shall ensure so far as reasonably practicable to the satisfaction of the Engineer that the impact of the construction on the environment shall be kept to a minimum and that appropriate measures are taken to mitigate any adverse effects during construction.

After extraction of materials, all borrow pits shall be back-filled to the satisfaction of the Engineer. In particular borrow pits near the project road shall be backfilled in such a way that no water collects in them. However, if a borrow pit is located at such a site where water that may collect in can be used by the local people without creating conflict, then such borrow pits could be improved to

remain as a water pan up on completion of works. The Engineer's Representative will issue instructions regarding such borrow areas during the time of construction.

142.1 Landscape Preservation

(a) General

The Contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of the Works. Except where clearing is required for permanent works, approved construction roads or excavation operations, all trees, native shrubbery and vegetation shall be preserved and shall be protected from damage by the Contractor's construction operations and equipment. The edges of clearing and cuts through trees, shrubbery and vegetation shall be irregularly shaped to soften the undesirable visual impact of straight lines. Movement of labour and equipment within the right-of-way and over routes provided for accesses to the Work shall be performed in a manner to prevent damage to grazing land, protected areas, crops or property.

Except as otherwise provided in Section 5 of the Specification, special reseeding or replanting will not be required under these specifications; however, on completion of the Work, all work areas not seeded shall be scarified and left in a condition which will facilitate natural re-vegetation, provide for proper drainage and prevent erosion. All unnecessary destruction, scarring, damage or defacing of the landscape resulting from the Contractor's operations shall be repaired, replanted, reseeded or otherwise corrected and directed by the Engineer and at the Contractor's expense.

(b) Construction Roads, Access Roads and Haulage Routes

The location, alignment and grade of construction roads shall be subject to approval of the Engineer. When no longer required by the Contractor, construction roads shall, if required by the Engineer, be restored to the original contour and made impassable to vehicular traffic. The surfaces of such construction roads shall be scarified as needed to provide a condition which will facilitate natural re-vegetation, provide for proper drainage and prevent erosion.

(c) Construction Facilities

The Contractor's workshops, office and yard area shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On abandonment, all temporary buildings, including concrete footings and slabs and all construction materials and debris shall be removed from the site. The area shall be re-graded, as required, so that all surfaces drain naturally, blend with the natural terrain and are left in a condition that will facilitate natural re-vegetation, provide for proper drainage and prevent erosion.

(d) Blasting Precautions

In addition to any requirements of local regulations, the Contractor shall adopt precautions when using explosives, which will prevent scattering of rocks, stumps or other debris outside the Work area and prevent damage to surrounding trees, shrubbery and vegetation or harm to persons and personnel in the work area. Blasting should be done during the day, and residents within the vicinity of the blast site should be given ample warning including the time and date of the blasting operation.

142.2 Preservation of Trees and Shrubbery

(a) Preservation

All trees and shrubbery which are not specifically required to be cleared or removed for construction purposes shall be preserved and shall be protected from any damage that may be caused by the Contractor's construction operations and equipments. The Contractor shall plant trees at locations defined by the Engineer and special care shall be exercised where trees or shrubs are exposed to injuries by construction equipment, blasting, excavating, dumping, chemical damage or other operations; and the Contractor shall adequately protect such trees by use of protective barriers or other methods approved by the Engineer. The removal of trees or shrubs will be only after prior approval by the Engineer.

The layout of the Contractor's construction facilities such as workshops, warehouses, storage areas and parking areas; location of access and haul routes; and operation in borrow and spoil areas shall be planned and conducted in such manner that all trees and shrubbery not approved for removal by the Engineer shall be preserved and adequately protected from either direct or indirect damage by the Contractor's operations.

Except in emergency cases or when otherwise approved by the Engineer, trees shall not be used for anchorages. Where such use is approved, the trunk shall be wrapped with a sufficient thickness of approved protective material before any rope, cable or wire is placed.

(b) Repair or Treatment of Damage

The Contractor shall be responsible for injuries to trees and shrubs caused by his operations. The term "injury' shall include, without limitation, bruising, scarring, tearing and breaking of roots, trunk or branches. All injured trees and shrubs shall be repaired or treated without delay, at the Contractor's expense. If damage occurs, the Engineer will determine the method of repair or treatment to be used for injured trees and shrubs as recommended and undertaken by an experienced horticulturist provided by and at the expense of the Contractor. All repairs or treatment of injured trees shall be performed at the expense of the Contractor.

142.3 Prevention of Water Pollution

(a) General

The Contractor's construction activities shall be performed by methods that will prevent entrance or accidental spillage, of solid matter, contaminants, debris and other pollutants and wastes into streams, flowing or dry water courses, lakes and underground water sources. Such pollutants and wastes include, but are not restricted to, refuse, garbage, cement, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts and thermal pollution and siltation from eroded areas scarred by the earth works and excavated surfaces. De-watering work for structures foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses shall be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds or by other approved means. Excavated materials or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines or other watercourse perimeters where they can be blown away or washed away by high water or storm runoff or can in any way encroach upon the watercourse itself.

Waste water from aggregate processing, concrete batching, or other construction operations shall not enter streams, watercourses or other surface water without the use of such turbidity control methods as settling ponds, gravel-filter entrapment dykes, approved flocculating processes that are not harmful to fish, recirculation systems for washing of aggregates or other approved methods. Any such wastewater discharged into surface waters shall contain the least concentration of settleable material possible. For the purpose of these Specifications, settleable material is defined as that material which will settle from the water by gravity during a 1-hour quiescent detention period.

(b) Compliance with Laws and Regulations

The Contractor shall comply with all applicable Kenyan Laws, orders, regulations and water quality standards concerning the control and abatement of water pollution.

142.4 Abatement of Air Pollution

The Contractor shall comply with applicable Kenyan laws and regulations concerning the prevention and control of air pollution.

Notwithstanding the above in conduct of construction activities and operation of equipment, the Contractor shall utilize such practicable methods and devices as available to control, prevent and otherwise minimize atmospheric emissions or discharges of air contaminants.

Such practicable methods and devices include transport of water over long distances in tanks and/or water are deemed to extraction from new boreholes, as necessary to meet the applicable laws and regulations.

Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments or other inefficient operating conditions shall not be operated until corrective repairs or adjustments are made.

Burning of materials resulting from clearing of trees and brush, combustible construction materials and rubbish will be permitted only when atmospheric conditions for burning are considered favourable and when authorised by the Engineer. In lieu of burning, such combustible materials may be disposed off by other methods as provided in Sub clause 142.9 hereof. Where open burning is permitted, the bum piles shall be properly constructed to minimise smoke and in no case shall unapproved materials, such as tires, plastics, rubber products, asphalt products or other materials that create heavy black smoke or nuisance odours, be bumed.

142.5 Dust Abatement

During the performance of the work required by these Specifications or any operations appurtenant thereto, whether on the right-of-way provided by the Employer or elsewhere, the Contractor shall furnish all the labour, equipment, materials and means required and shall carry out proper and efficient measures wherever and as often as necessary to reduce the dust nuisance and to prevent dust which has originated from his operations from damaging crops, orchards, cultivated fields and dwellings or causing a nuisance to persons. The Contractor will be held liable for any damage resulting from dust originating from his operations under these Specifications on the right-of way or elsewhere. The Engineer may direct sprinkling or other measures for dust abatement if necessary to obtain adequate control.

The cost of complying with this paragraph shall be included in the prices tendered in the Bill of Quantities for other items of Work.

142.6 Noise Abatement

The Contractor shall comply with applicable Kenyan laws, orders and regulations concerning the prevention, control and abatement of excessive noise. The movement of heavy vehicles should be restricted to working hours.

142.7 Preservation of Historical and Archaeological Data

Should the Contractor or any of his employees in the performance of his Contract discover evidence of possible scientific, prehistorical or archaeological data, he will notify the Engineer immediately giving the location and nature of the finding. Written confirmation shall be forwarded within 2 days. The Contractor shall

exercise care so as not to damage artifacts or fossils uncovered during excavation operations and shall provide such co-operation and assistance as may be necessary to preserve the finds for removal or other disposition by the Employer.

Where appropriate by reason of a discovery, the Engineer may order delays in the time of performance or changes in the Work or both. If such delays or changes or both are ordered, the time of performance and Contract Price shall be adjusted in accordance with the applicable Article 28 and 35 in the General Conditions.

The Contractor shall insert this Sub-Clause in all Subcontracts, which involve the performance of Work on the terrain of the site.

142.8 Pesticides

Pesticides include herbicides, insecticides, fungicides, rodenticides, pesticides, surface disinfectants, animal repellents and insect repellants. Should the Contractor find it necessary to use pesticides in Work areas of this contract, he shall submit his plan for such use to the Engineer for written approval. The Contractor shall read and comply with all labelling requirements when using pesticides.

The cost of complying with this Sub-Clause shall be included in the prices tendered in the Bill of Quantities for other items of Work.

142.9 Cleanup and Disposal of Waste Materials

(a) Cleanup

The Contractor shall, at all times, keep the construction area, including storage areas used, free from accumulations of waste materials or rubbish. All waste water and sewage from office, residential and mobile camps shall be piped to soak pits or other disposal areas constructed in accordance with local government regulations, and where and when such regulations require it, the Contractor shall obtain a permit or other appropriate documentation approving the disposal methods being used.

All used fuels, oils, other plant or vehicle fluids and old tyres and tubes shall be collected to a central disposal point, on a regular basis and disposed of as specified below. l household, office, workshop and other solid waste shall be collected to a central disposal area, on a daily basis and disposed in a manner approved by the Engineer.

Servicing of plant, equipment and vehicles shall whenever possible be carried out at a workshop area. This workshop area shall be equipped with secure storage areas for fuels oils and other fluids constructed in such a way as to contain any spillages which may occur and similar storage where used fluids can be stored securely prior to their disposal.

When servicing of plant, equipment and vehicles is carried out away from the workshop area it shall be done at locations and in such a manner as to avoid spillage and contamination of streams and other drainage courses. Any spillages shall be cleaned up by either burning in place or collecting the contaminated soils and burning them at the central disposal area, all to the satisfaction of the Engineer.

Prior to completion of the Work, the Contractor shall remove from the vicinity of the Work all plant facilities, buildings, rubbish, unused materials, concrete forms and other like material, belonging to him or used under his direction during construction. All Work areas shall be graded and left in a neat manner conforming to the natural appearance of the landscape as provided in Sub-Clause 142.1.

Any residue deposited on the ground from washing out transit mix trucks or any similar concrete operations shall be buried or cleaned up in a manner acceptable to the Engineer. In the event of the Contractor's failure to perform the above work, others may perform the work at the expense of the Contractor, and his surety or surety shall be liable therefore.

(b) Disposal of Waste Material

(i) General

Waste materials including, but not restricted to, refuse, garbage, sanitary wastes, industrial wastes and oil and other petroleum products, shall be disposed of by the Contractor in accordance with applicable national laws of Kenya. Disposal of combustible materials shall be by burying, where burial of such materials is approved by the Engineer; by burning, where burning of approved materials is permitted; or by removal from the construction area. - Disposal of non-combustible materials shall be by burying, where burial of such materials is approved by the Engineer, or by removal from the construction area. Waste materials removed from the construction area shall be dumped at an approved dumping site.

(ii) Disposal of Material by Burying.

Only materials approved by the Engineer may be buried. Burial shall be in pits, the location, size and depth of which shall be approved by the Engineer. The pits shall be covered by at least 0.6 m of earth material prior to abandonment.

(iii) Disposal of Material by Burning

All materials to be burned shall be piled in designated burning area in such a manner as will cause the least fire hazards. Burning shall be thorough and complete and all charred pieces remaining after burning, except for scattered small pieces, shall be removed from the construction area and disposed of as otherwise provided in this Sub-Clause.

All burning activities are to be supervised. The Contractor shall, at all times, take special precautions to prevent fire from spreading beyond the piles being burned and shall be liable for any damage caused by his burning operations. The Contractor shall have available, at all times, suitable equipment and supplies for use in preventing and suppressing fires and shall be subject to all laws and regulations locally applicable for pre-suppression, suppression and prevention of fires.

(iv) Disposal of Material by Removal

Material to be disposed off by removal from the construction area shall be removed from the area prior to the completion of the Work under these Specifications. All materials removed shall become the property of the Contractor.

Materials to be disposed off by dumping shall be hauled to an approved dump. It shall be the responsibility of the Contractor to make any necessary arrangements with private parties and with local officials pertinent to locations and regulations of such dumping. Any fees or charges that are to be paid for dumping of materials shall be paid by the Contractor and shall be included in the prices tendered in the Bill of Quantities for other items of Work.

(c) Water resource use

The Contractor shall not use the existing water sources, both surface and groundwater, to the detriment of the existing community. Since it will be essential for the contractor to construct their own boreholes to meet their needs, caution is required. If borehole water is used in large quantities a record will be kept of the ground water level in the surrounding of the borehole and sufficient care will be given to avoid any effect on other boreholes used by surrounding local communities. The water table level will be reported in the Contractor's Journal and continuation of pumping will be subject to the engineer's approval. The Contractor is encouraged to ensure that the water quality of the borehole be maintained over the life of his use of the facility, with appropriate measures to isolate it from run-off draining down into it. This will facilitate leaving the borehole operational for local community use after decommissioning of the road construction camp. However, before leaving any borehole or other water sources for local community use, the Contractor should liaise with both the local community leaders and the administration to ensure that the location of the water source will not bring about intra- or inter-community conflict. Where such conflict is inevitable, the contractor, in close consultations with the engineer, local leaders and administration, will be required to decommission the water source or alternatively provide an equivalent water source to adjacent communities.

(d) Hunting and other Use of Natural Resources:

(i) The Contractor is required to prohibit his workers from hunting, trapping,

killing or other use of natural resources (with the exception of vermin) on the site or on adjacent lands.

(ii) The Contractors must develop a code of conduct to ensure that their workers do not consume game meat from the area, whether supplied by the locals or killed by themselves

(iii) Intense construction activities must not be undertaken at night within or close to the National Park

(iv) Both solid and liquid waste including empty containers should be managed in such a manner as to avoid exposing wildlife to possible poisoning or disease infection. Empty containers should not be strewn carelessly but disposed of in a responsible manner

(v) Fuelwood or charcoal as well as rustic construction wood required for fencing or general construction should preferably be harvested in a controlled manner, and clear felling of trees or shrubs in an area should be forbidden.

142.10 Measurement and Payment for Environment Protection and Waste Disposal

Except as specifically included in the Bill of Quantities or otherwise provided above, no separate measurement or payment will be made for any work included in this Clause, and relevant cost of all these requirements shall be included by the Contractor in his rates in the Bill of Quantities for other items of Work.

144 COPIES OF ORDERS AND REQUISITIONS

The Contractor shall provide the Engineer with copies of all orders for supply of materials and goods required in connection with the works as the Engineer may require.

145 SHORTAGE OF BITUMEN AND OTHER MATERIALS

The Contractor shall make provisions for obtaining bitumen and other materials required for the Contract if they are not available locally. In particular, the Employer shall not be liable for any additional costs due to local lack of bitumen or any other materials.

All materials testing shall be in accordance with Section 2 of the Standard Specifications.

202 TESTING BY THE CONTRACTOR

Add *the following:*

202.1 Contractor's Testing

The provision of the Engineer's laboratory and testing equipment, as specified in Section 1 of this Special Specification, does not relieve the Contractor of his obligation to provide laboratory and testing equipment and execute his own testing, in conformity with the specified requirements in the Standard Specification.

205 SOILS AND GRAVEL

Add the following:

205.1 California Bearing Ratio (CBR)

Whenever in the Contract Document a minimum California Bearing Ratio (CBR) is specified, the CBR of the material shall be determined at the specified state of compaction after four days soaking in the case of neat materials, and after seven days curing plus seven days soaking in the case of cement or lime improved materials.

211 BITUMINOUS BINDERS

a) Requirements

Straight run bitumen in addition to the requirements of the Standard Specification the ash content of penetration grade bitumen shall not exceed 5% by weight

b) Types of Bitumen

Prime coat shall be type MC30 unless otherwise stated. Tack coat shall be K1-70 emulsion. For surface dressing the binder shall be 80/100 pen grade bitumen cut back or straight run while binder for asphalt concrete shall be 60/70 pen grade bitumen

228 WORKMANSHIP AND QUALITY CONTROL

The Contractor shall, not later than 4 weeks after the notice to commence the Works, submit a project specific Quality Management System, including the Work Method Statements and Quality Audit for major items of work, showing how all the Contractor’s systems will ensure that all the works will conform to the Contract

documents. The onus rests with the Contractor to produce work which conforms in quality and accuracy of detail to all the requirements of the Specifications and Drawings, and the Contractor shall, at his/her own expense, institute a quality control system and provide experienced engineers, foremen, surveyors, materials technicians, other technicians and other technical staff, together with all transport, instruments and equipment, to ensure adequate supervision and positive control of the Works at all times. The Contractor shall provide chainmen and labourers as necessary for the Engineer to carry out checks on the Works

The Contractor shall conduct tests or have them conducted continually on a regular basis, to check the properties of natural materials and processed natural materials and of products manufactured on the site, such as concrete and asphalt. The Contractor shall remain fully responsible for any defective material or equipment provided by him. Similarly, the quality of all elements of the Works shall be checked on a regular basis so as to ensure compliance with the specified requirements

The intensity of control and of tests to be conducted by the Contractor in terms of these obligations shall be adequate to ensure that proper control is being exercised.

Where any natural materials or products made from natural materials are supplied, and upon completion of each element of the construction work, the Contractor shall test and check such materials, products and/or elements for compliance with the specified requirements and shall submit his results to the Engineer for approval. Such submission shall include all his measurements and test results and shall furnish adequate proof of compliance with the specified requirements

No specific pay items are provided as compensation for the above obligations, including the provision of all samples delivered to the Engineer, the repair of places from which samples were taken, and the provision of the necessary personnel and testing apparatus and facilities, for which compensation shall be included in the bid rates of the Contractor for the various items of work to which these obligations apply.

The Contractor shall submit to the Engineer for examination, the results of all relevant tests, measurements and levels indicating compliance with the Specifications on completion of every part of the Work

SECTION 3 - SETTING OUT & TOLERANCES

301 SETTING OUT

a) In addition to the provisions of clause 3.01(a) if the traverse points to be used for the setting out are close to the existing carriageway and interfere with construction works then the Contractor will have to relocate them to a location where they will not be disturbed. The co-ordinates and heights of all traverse points so located shall be listed and provided to the Engineer for checking and/or approval. Contractor shall also monument the new centreline every 200m along straight and all salient points along curves by a pin in the concrete beacon before commencement of any works.

The road reserve boundary posts shall have 12mm diameter steel pins embedded in concrete, 200mm long with 25mm exposed to the air, sticking out form its top surface. This pin shall be co-ordinated and heighted and result of the same shall be provided to the Engineer for approval. Cost of these works shall be included in the rates as no separate item has been provided.

Commencement of the works shall not be permitted until this basic survey data has been provided and approved by the Engineer for at least 5 Kms of the road.

b) Detailed Setting Out

Reference pegs shall be 50mm by 50mm in section 600mm long driven 400mm firmly into ground and painted white above the ground. The offset from centre line shall be indicated by small nail 20mm to 25mm long with its head driven flush with the top of the peg. Chainages, offset and reference elevation shall be clearly indicated to the sides of the peg to the satisfaction of the Engineer.

After cutting of benches and prior to commencement of earthworks or subgrade works, Contractor shall take cross-sections again and submit the copy of the same to Engineer for agreement. These cross-sections shall then be used as basis of measurement for all subsequent layers, unless otherwise stated.

302 TOLERANCES

Add the following:

c) Pavement Widths

For Pavement widths for subbase, base and wearing course, the allowable tolerances shall be 0 to +50 mm.

d) Pipe Culverts

The maximum deviation from the specified line of a drainage pipe shall be: -

Horizontal	-	20mm in 3.0 m
Vertical	-	30 mm in 10.0 m

SECTION 4- SITE CLEARANCE AND TOP SOIL STRIPPING

401 SITE CLEARANCE

Site Clearance shall be carried out as directed by the Engineer.

Add the following as the last paragraph in Sub-clause (a):

Site clearance is not required over the gravelled width of existing road and shoulders. No measurement and payment for site clearance will be made for this width. The remaining area within the road reserve including sides of existing embankments and cuttings shall be cleared as instructed by the Engineer. This operation shall also include the removal of all trees, except for some trees as directed by the Engineer. The Contractor shall provide paint and all the assistance the Engineer may require to mark the trees which **should not** be removed during site clearance.

The Contractor shall take care not to uproot or damage trees which are within the road reserve but outside the construction width. After the Contractor has staked out the extent of the road, the Engineer, with the assistance of the Contractor, shall mark out the trees to be removed. After removal, the trunks and branches of these trees shall be cut up into pieces not more than 2.0m in length, transported and neatly stored at the nearest Ministry of Roads camp or otherwise in a position to be indicated by the Engineer. No additional payment shall be made for complying with these requirements and it is deemed the Contractor will have included its cost in the rates for site clearance.

402 REMOVAL OF TOPSOIL

Topsoil shall include up to 200mm depth of any unsuitable material encountered in existing or newly constructed drains, drainage channels, and accesses. It shall be reused on embankment slopes.

403 REMOVAL OF STRUCTURES, FENCES AND OBSTRUCTIONS

When instructed by the Engineer, the Contractor shall demolish or remove any structure. Measurement for the works shall be done on dayworks basis and payments made under the appropriate item in the Bills of Quantities.

SECTION 5 – EARTHWORKS

501 SCOPE OF SECTION

The scope of this section includes all earthworks associated with the Contract, including roadside amenities, service roads, walkways and any widenings

503 CLASSIFICATION OF MATERIAL

Add the following to (a) Hard material:

Hard material is material that can be excavated only after blasting with explosives or boring and wedging or the use of a mechanical breaker fitted with a rock point in good condition and operated correctly. Boulders of more than $0.3m^3$ occurring in soft material shall be classified as hard material.

Add the following to (b) Soft material:

Unsuitable materials include except top soil:

a. All material containing more than 5% by weight of organic matter (such as topsoil, material from swamps, mud, logs, stumps and other perishable material)
i. All material with a swell of more than 3%.
ii. All clay of plasticity index exceeding 45 or of liquid limit exceeding 70.
iii. All material having moisture content greater than 105% of optimum moisture content (AASHTO T99)

504 PREPARATION PRIOR TO FORMING EMBANKMENT

Add the following at the end:

In cuttings, the contractor shall excavate to a level that would accommodate the 300mm subgrade and the existing ground below this **MUST** be processed and compacted in accordance with clause 504 of the standard specifications.

Where benching is required for existing pavement or embankment slopes to accommodate earthworks, subgrade or subbase for widening the road, the rate for compaction of existing ground shall be deemed to cover this activity.

Excavation in the pavement of the existing road shall be kept dry. In the event of water penetrating the underlying layer, construction of the subsequent layers shall be postponed until the underlying layers are dry enough to accommodate the construction plant without deforming or otherwise showing distress.

Step construction shall be carried out per layer at the joint where excavating both vertically and perpendicular to the direction of the travel. The step shall be 300 mm

perpendicular to the direction of the travel and 150 mm vertical unless otherwise instructed by the Engineer.

Special care shall be taken when compacting the new material at the joint ensuring that specified density is achieved.

505 CONSTRUCTION OF EMBANKMENTS

Only material approved by the Engineer shall be used in embankments. Soft fill material shall comply with the following requirements:

- Organic matter less than 5% by weight
- CBR of not less than 10% for carriageway and shoulders measured after 4-day soak on a laboratory mix compacted to a dry density of 95% (AASHTO T 99)
- Swell less than 1% on the laboratory mixed sample

Improved subgrade layer is defined on the Drawings and shall comply with the following requirements:

- CBR of not less than 14% measured after 4day soak on a laboratory mix compacted to a dry density of 100% (AASHTO T 99)
- Plasticity Index less than 30%
- Swell less than 1% on the laboratory mix sample.
- Placed in layers not exceeding 150mm thick

Subgrade shall mean the upper 450mm of earthworks, either in-situ or in fill and subgrade shall be provided as part of the earthwork operation, and payment shall be made as fill.

No extra payment will be made for haulage of suitable material from borrow pits as the overhaul costs shall be deemed to have been factored in the rates inserted in the Bills of Quantities.

508 COMPACTION OF EARTHWORKS

At pipe culverts, all fill above ground level around the culverts shall be compacted to density of 97% MDD (AASHTO T180) up to the level of the top of the pipes or top of the surround(s), if any and for a width equal to the internal diameter of the pipe on either side of the pipe(s) or surround(s) as applicable.

At locations adjacent to structures (up to 100m away from structure), all fill above ground level up to the underside of the subgrade shall be compacted to density of 95% MDD (AASHTO T180). In case of fill around box culverts this should be carried out for the full width of the fill and for a length bounded by the vertical plane passing through the ends of the wingwalls

Notwithstanding the provision of clause 503 of the standard Specification, Compaction of subgrade material (i.e. material immediately below formation) in cut areas shall not be carried out by the contractor in areas where the formation is formed in hard material, unless specific instructions to the contrary are issued by the Engineer

Where improved sub-grade material shall be required, the material shall have a CBR greater than 14% and this shall be compacted and finished to the same standards and tolerances as those required for normal subgrade and clauses in the specifications applying to normal subgrade shall also apply.

509 MASS-HAUL DIAGRAM

Delete Clause 509 entirely and substitute "No Mass-Haul diagram has been provided with the Documents. The Contractor shall be responsible for locating suitable materials for constructing earthworks along the alignment and elsewhere and shall include in his rates for fill, spoil and for the cost of haulage".

511 BORROW PITS

Replace the first two paragraphs by the following:

Fill material which is required in addition to that provided by excavation shall be obtained from borrow pits to be located and provided by the Contractor and approved by the Engineer.

515 SIDE DRAINS

Whenever excavation works in side drains constitutes a separate operation from the bulk earthworks, such excavation shall be classified as catchwater drains under Section 8 of the Specifications

517 MEASUREMENT AND PAYMENT

Notwithstanding the provisions of clause 517 of the standard specifications, the rate for compaction of fill in soft material shall allow for the requirements of clause 508 of the special specification and no extra payment shall be made for compaction around pipe culverts (97% MDD AASHTO T180)

Quantities for embankment widening shall be measured using the final compacted volume of fill material over the existing embankment after removal of topsoil. Payment for fill for widening shall be made under Item 5.01 of the Bill of Quantities. No payment shall be made to the Contractor for any additional earthworks resulting from his construction methods, or for working space for his construction plant and equipment, or for complying with the requirements of

Clause 504. The Contractor shall include the cost of benching in his rates and prices.

The rate for cut to spoil shall also allow for cutting to spoil in any waterlogged areas.

No separate payment shall be made for overhaul, and the cost of haulage shall be included in the Contractor's rates and prices for earthworks.

The rates in the Bill of Quantities shall also include for earthworks associated with roadside amenities, service roads, walkways and any widenings

SECTION 6 - QUARRIES, BORROW PITS, STOCKPILES AND SPOIL AREAS

601 GENERAL

Notwithstanding any indications to the contrary in the Standard specification the Engineer will not make available to the Contractor any land for quarries, borrow pits, stockpiles and spoil areas, except for those areas in road reserves specifically approved by him

The contractor will be entirely responsible for locating suitable sources of materials complying with the Standard and Special Specifications, and for the procurement, Wining, haulage to site of these materials and all costs involved therein. Similarly the contractor will be responsible for the provision and costs involved in providing suitable areas for stockpiling materials and spoil dumps. Should there be suitable sites for spoil dumps or stockpiles within the road reserve forming the site of the works the Contractor may utilise these subject to the approval of the Engineer

No additional payment will be made to the Contractor to cover costs arising from the requirements for this Clause and the Contractor must include these costs in the rates inserted into the Bills of Quantities.

603 PROVISION OF LAND

Add to Clause 603 as first paragraphs replacing paras:

The Employer will not make available to the Contractor any land for quarries, borrow pits stockpiles and spoil areas, except for those areas in road reserves specifically approved by him.

The Contractor will be entirely responsible for locating suitable sources of materials complying with the Specifications, and for the procurement, winning and haulage to site of these materials and all costs involved therein. Similarly, the Contractor will be responsible for the provision of stockpile areas and spoil dumps. Should there be suitable sites for spoil dumps or stockpiles within the road reserve forming the site of the Works, the Contractor may utilize these, subject to the approval of the Engineer.

Add as last para:

No additional payment will be made to the Contractor to cover costs arising from the requirements for this Clause and the Contractor must include these costs in the rates inserted into the Bill of Quantities.

605 SAFETY AND PUBLIC HEALTH REQUIREMENT

Add the following as first para to Clause 605:

When working the material sites, the Contractor shall time and arrange his works in such a way that at no times the public safety is endangered in any way.

607 SITE CLEARANCE AND REMOVAL OF TOPSOIL AND OVERBURDEN

Add the following to Clause 607:

Faces of quarries being higher than 4 metres shall be shaped sloping 1:10 out of the face. All quarries and borrow pits shall be permanently fenced with 5 strand barbed wire which shall be located 5 metres off the edge of the face. After reinstatement, the bottom of a quarry shall be covered with 0.20 m of red coffee soil and 0.15 m of topsoil.

Add the following Clause 611

611 REINSTATEMENT OF BORROW AREAS

On completion of his operations in a borrow area, the Contractor shall reinstate the entire area so as to blend with the surrounding area and to permit the re-establishment of vegetation. For this purpose, the borrow area shall be shaped to even contours. All material in and around the borrow area, whether spoil from road building operations, excess stock-piled material, oversize material left in the borrow pit, material resulting from clearing and grubbing operations and excess overburden, shall be used or disposed off as directed by the Engineer. Material not capable of supporting vegetation shall be buried and used in shaping the borrow area and subsequently covered with vegetable soil. All available soft material shall be spread evenly to the thickness directed and where sufficient material is not available for this purpose to cover the entire area, the remaining portions shall be scarified along the contours so as to avoid undue erosion.

All haul roads shall be obliterated and the surface scarified, earth banks constructed to prevent erosion and all damaged fences and other structures reinstated.

The shaping and reinstatement of the borrow pit shall be done in such a way that the borrow pit will be properly drained whenever practicable and where required, the Contractor shall place earth banks to divert any surface water away from the borrow area.

The reinstatement of any borrow pit shall be to the entire satisfaction of the Engineer, and the Contractor shall submit to the Engineer a signed certificate from the landowner stating that he is fully satisfied with the reinstatement of any borrow area.

SECTION 7 - EXCAVATION AND FILLING FOR STRUCTURES

703 EXCAVATION OF FOUNDATIONS FOR STRUCTURES

Replace the second para as follows:

Before commencing excavation for the foundation of any structure, the Contractor shall open up one or more trial pits within the areas of the foundation as directed by the Engineer's representative before excavating for the foundation. Where a trial pit is excavated to a level below the founding level of the structure, it shall be backfilled to that level with approved material or concrete as directed by the Engineer's representative.

Unless otherwise instructed by the Engineer, all excavated surfaces in material other than hard material, on which foundations for structures shall be placed, shall be compacted to 100% MDD (AASHTO T.180) immediately before structures are constructed.

Paragraph 4, last line: - Replace "95%" with "100%" and "T99" with "T180"

707 BACKFILLING FOR STRUCTURES

Replace third para last line with:

Each layer shall be thoroughly mixed, watered or dried as necessary and shall be compacted to a minimum of 100% MDD (AASHTO T.99).

709 EXCAVATIONS FOR RIVER TRAINING AND NEW WATER COURSES

Add the following;

Payments for river training and establishment of new watercourses shall only be made where such work constitute permanent works. Works done for road deviation or other temporary works shall not qualify for payment.

710 STONE PITCHING

Stone pitching to drains, inlets and outlets of culverts, to embankments and around structure shall consist of sound unweathered rock approved by the Engineer. The stone as dressed shall be roughly square in shape with minimum dimensions of 200x200 mm for normal thickness of stone pitching. Cement mortar Grouting will be done for all stone pitching areas and the top line of the stone pitching should be grouted/sealed with concrete class 15/20. The cement shall be mixed with sand in the ratio of 1:3 by volume to form the grout.

The surface to receive the pitching shall be compacted and trimmed to slope and the stone laid, interlocked and rammed into the material to give an even finished surface. Soil erosion is rampant along the project location and this can be minimized by ensuring that proper protection works is carried out along the drains using stone pitching. Most of the sections shall be stone pitched especially areas where we have steep slopes to minimize undermining of the road by rain water or as may be instructed by the Engineer.

In areas where stone pitching has been damaged, the Contractor shall identify such areas and notify the Engineer for his agreement of the extent of the Works required and his approval and instructions to proceed with the Works. Stone Pitching Repair and reconstruction shall be carried out in accordance with Clause 710 of the Standard Specifications.

711 GABIONS

Where instructed by the Engineer the Contractor will install gabions as protection works to washout areas or bridge Piers and or Abutments. Gabions shall be constructed in accordance with Clause 711 of the Standard Specification.

In cases where existing gabions have been damaged, the Contractor shall identify them and notify the Engineer for his agreement of the extent of the Work required and his approval and instructions to proceed with the Works.

The Works shall involve removal of the damaged gabions / rocks, excavation to the correct levels and grades as directed by the Engineer, and in accordance with Clause 711 of the Standard Specifications and reconstruction with new gabions and other necessary materials as necessary. The damaged gabions shall be recovered and transported to KeNHA's Regional Director's offices.

712 RIP-RAP PROTECTION WORK

Quarry waste or similar approved material shall be used to backfill scoured and eroded side, outfall and cut-off drain. The material shall be compacted to form a flat or curved surface preparatory to stone pitching of drainage channels, existing and new scour checks as directed by the Engineer.

The surface to receive the pitching shall be compacted and trimmed to slope and the stone hand laid, interlocked and rammed into the material to give an even finished surface. The interstices of the Pitching shall be rammed with in-situ material. The in-situ material immediately behind the pitching shall be compacted to minimum density of 95% MDD compaction (AASHTO T180).

713 MEASUREMENT AND PAYMENT

Add the following to Sub-Clause 713(k):

No distinction shall be made in payment for the angle at which gabions are constructed.

No separate payment shall be made for gravel for blinding or hauling to spoil unsuitable excavation material and the cost of such shall be included in rates and prices.

714 BACKFILL BELOW STRUCTURES

Add the following:

Where instructed this shall be carried out in compliance with the requirements of Clause 507 and 804 of the Standard Specification.

SECTION 8 - CULVERTS AND DRAINAGE WORKS

All concrete works for culverts and other drainage structures shall be done in accordance with Section 17 of the specifications

801 SCOPE OF SECTION

Amend as follows:

The operations specified in this section apply to the installation of drainage works and reinstatement and improvement of the same.

In addition, this Section covers: -

- Installation of 600 mm, 900 mm or 1200 mm diameter pipe culverts using the balloon casting technology or precast pipes rings.
- Desilting and cleaning of existing pipes and outfall drains to make them free flowing.

804 EXCAVATION FOR CULVERTS AND DRAINAGE WORKS

The Standard Specifications are amended as follows:

a) In paragraph 6, line 3, and in paragraph 7, line 5 and in paragraph 11, line 6, "95% MDD (AASHTO T99)" and insert "97% MDD (AASHTO T180)".

b) Removal of Existing Pipe Culverts

Where instructed by the Engineer, the Contractor shall excavate and remove existing culvert pipes and the void left after removal of culvert pipes shall be widened as necessary to accommodate new concrete bedding, pipe and haunching.

The void left by removal of pipes and end-structures shall be carefully preserved in order to accommodate replacement with 600 mm, 900 mm or 1200 mm diameter pipe culverts as directed by the Engineer.

Regarding backfill, reference is made to Clause 812.

c) Excavation for Culverts and Drainage Works

The Contractor shall carry out all excavations for new culverts and drainage works to the lines, levels, inclinations, and dimensions shown on the Drawings or as instructed by the Engineer.

805 EXCAVATION IN HARD MATERIAL

In the Standard Specifications, Sub-clauses 805(a) and 805 (b) delete ""95% MDD (AASHTO T99)" and insert "97% MDD (AASHTO T180").

In sub-clause 809(a), paragraph 1, line 1, substitute "95% MDD (AASHTO T99)" with "97% MDD (AASHTO T180").

In sub-clause 809(c), paragraph 2, line 4, between the words "compacted" and "and shaped" insert the words "to "97% MDD (AASHTO T180").

Hard material is material, which can be excavated only after blasting with explosives, or barring and wedging or the use of a mechanical breaker fitted with a rock point in good condition and operated correctly. Boulders of more than $0.2m^3$ occurring in soft material shall be classified as hard material.

809 BEDDING AND LAYING OF PIPE CULVERTS

In sub-clause 809(a), paragraph 2, line 1, substitute "95%" with "100%".

Add the following to the Clause:

Concrete pipes shall be laid on a 50mm thick concrete bed of class 15/20 and the pipes shall be bedded on 1:3 cement: sand mortar at least 50mm thick and extending the full length of the barrel.

The rates inserted shall allow for compaction of the bottom of excavation to 100% MDD (AASHTO T180).

Add the following Sub-Clause 809(d):

Bedding, Laying and Surround for Concrete Pipe Culverts Cast In-Situ

In addition to the requirements of the Standard Specification, where the inflatable balloon method of casting culverts in-situ is used, thorough pre-construction trials shall be carried out and the necessary adjustments made to ensure that: -

i. Line and grade of the culverts is achievable
ii. The balloons and the pressure gauge/machine are in good working conditions
iii. The inner concrete barrel surface immediately in contact with the inflated balloon form shall achieve class F3 finish.

Besides this the following amendments shall be made: -

i. Where inflatable balloons are used, the surround shall be 200mm.
ii. Concrete surround shall be “class 20/20”.

iii. BRC A193 mesh will be provided within the surround and bed as provided for in the drawings or as instructed by the engineer.

The Contractor may propose an alternative method of casting culverts in-situ, which shall be subject to the approval of the Engineer. Culverts shall be constructed to conform with dimensions shown on the drawings.

Measurement and payment for culverts cast in-situ by use of balloon method or any other approved method shall be made per volume of concrete under the existing bill items. The rates inserted shall allow for compaction of the bottom of excavation to 100% MDD (AASHTO T.99) and the BRC mesh used.

810 JOINTING CONCRETE PIPES

Add as follows;

The concrete pipes for the culverts shall have ogee joints and will be jointed by 1:2 cement: sand mortar and provided with fillets on the outside as described in clause 810 of the Standard Specification.

811 CONCRETE BEDS, SURROUNDS AND HAUNCHES

Amend the Standard Specification line 1 of the second paragraph, to read as follows:-

All concrete for beds shall be of class 15/20 whilst concrete for surrounds and haunches shall be of class 20/20 for cross drain culverts, complying with Section 17 of this Specification formed to the dimensions shown on the drawings or as instructed by the Engineer.

812 BACKFILLING

In the Standard Specifications, clause 812

1). Delete paragraph 6 “for pipe culverts ….. depth of 150mm”, entirely.

2). Wherever the expression "dry density of 95% MDD (AASHTO T. 99)" occurs delete and replace with "dry density of 100% MDD (AASHTO T.99)".

The rates entered for laying of pipe culverts shall allow for backfilling to pipe culverts and compacting to 100% MDD (AASHTO T.99) and these works shall **not** be measured and paid for separately.

812.1 Filter Fabric for Backfilling Behind Structures, Drains and Revetment Works

Where filter fabric is specified, it shall be durable non-woven geotextiles or synthetic fibres, unaffected by soil acidity, soil alkalinity and bacteria. The fabric

shall be made by an approved, reputable manufacturer and shall have a mass and strength at least equal to the following criteria:

	Mass g/m2	Wide Strip Tensile Strength kN/m2	Mullen Burst Strength kPa
Under and For Drainage Material	180	Mean 12/12	2160
Behind bridges, Box culverts, Under Gabions, Gabion Mattresses or Grouted Rip –Rap	250	Mean 18/18	3040
Under Rip-Rap and Rockfill	300	Mean 21/21	4200

The mesh size of the fabric shall be sufficient to effectively retain the material on which it is placed but shall not be greater than 150 microns.

The fabric shall be installed in accordance with the manufacturer's instructions. The fabric shall be placed on levelled ground, with sharp rocks and other objects which are likely to damage the fabric being removed and all pits and depressions being backfilled and compacted.

The fabric shall be overlapped by a minimum of 300 mm and stitched at joints in such a manner that the strength of the joints is at least 50 per cent of the strength of the fabric.

Rip-rap or gabions or other materials, as applicable, shall be placed carefully on the filter fabric in such a way as to avoid damage to the fabric. In any event construction procedures shall ensure no damage to the filter fabric or impairment of its design function. Should the filter fabric be damaged, it shall be replaced, including removal of the overlay material, in a manner approved by the Engineer.

No mechanical plant shall traffic over filter fabric unless a minimum thickness of 200 mm of fill material has been placed over the fabric.

813 PRECAST CONCRETE OPEN CHANNELS

Add the following to the standard specification clause 813: -

813.1 Half Round Open Channels

These shall be provided as directed by the Engineer and in compliance with sections 813 and 820 of the Standard Specifications.

813.2 Invert Block Open Channels

These shall be provided as directed by the Engineer and in compliance with sections 813 and 820 of the standard specifications.

Where directed by the Engineer, the Contractor shall excavate in any material provide and place concrete for the bedding, backfill and remove surplus material to spoil, provide, lay and joint precast concrete invert blocks, side slabs, slotted drains and gulley chambers.

Precast concrete invert block side drains and gulley chambers shall comply with the requirements of BS 340, and shall be laid in accordance with the drawings.

Precast concrete invert block drains and side slabs shall be formed of concrete of the class specified and to the dimensions shown on the drawing. Drains shall not normally be laid to a radius of a curvature less than 10 times the bed width or a diameter of the drain.

Invert block drains shall be constructed in the positions and to the levels and dimensions shown on the drawings or as directed by the Engineer. The earth sides to such channels shall be neatly finished to a slope of 1: 1 or such other slope as the Engineer may direct. Invert block drains and side slabs shall be laid on 100 mm thick compacted approved gravel material and neatly jointed with mortar consisting of 1:3 cement: sand by volume.

813.3 Invert Block drain

Where instructed, the Contractor shall excavate, compact the excavated bed to 97% MDD AASHTO (T180), backfill as necessary with selected material compacted to 97% MDD AASHTO (T180) lay and joint invert block drains of 300mm diameter with two side slabs.

814 SUBSOIL DRAINS

Add the following:

In the event of excavation for repairs exposing local seepage, springs or high water table, the Engineer may instruct the provision of counter fort or French drains.

These drains shall consist of a trench excavated to the alignment, width, depth and gradient instructed by the Engineer and backfilled with approved compacted clean hard crushed rock as specified in Clause 814 of the Standard Specification. Where these drains lie within the carriageway, the carriageway shall be reinstated with compacted graded crushed stone or stabilised gravel and surfaced with hot asphalt or a surface dressing as instructed by the Engineer.

Payment will be made in accordance with Clause 820 of the Standard Specification.

814 SUBSOIL DRAINS

Add at the end:

814.1 French Drains

In the event of excavation for repairs exposing local seepage, springs or unacceptably high-water table, the Engineer may instruct the provision of counter fort or French drains.

These drains shall consist of a trench excavated to the alignment, width, depth and gradient instructed by the Engineer, and backfilled with approved compacted clean hard crushed rock material as specified in clause 815 of the standard specification. Where these drains lie within the carriageway the carriageway shall be constructed only after the subsoil drain has been completed and approved by the Engineer.

817 MITRE DRAINS, CUT-OFF DRAINS, CATCHWATER DRAINS, SIDE DRAINS, CULVERT OUTFALL DRAINS AND EARTH DAMS

Add the following Sub-Clauses:

817.1 Cleaning Existing Drains

In areas of existing side drains, mitre or outfall drains where such are blocked, the Engineer shall instruct the Contractor to clean and clear the drains to free flowing condition.

The work shall consist of:

(a) Stripping and removal of any extraneous material to spoil including vegetation and roots in the drains to the satisfaction of the engineer.
(b) Spreading of any spoil to the satisfaction of the Engineer.
(c) Shaping the drains to free flowing condition as directed by the Engineer.

No extra payment will be made for cleaning of existing chains, and the costs shall be included in other Bill items.

817.2 Channels

The Engineer may instruct that the Contractor provides open channels in place of existing sub drains where the latter may be damaged or in any other place. The rates entered by the Contractor in the Bill of Quantities must include for removal and disposal of any sub drain material, excavation to line and level, backfilling and compaction as directed by the Engineer.

The channels shall be constructed of precast class 20/20 concrete of minimum 80 mm thickness and lengths or widths not exceeding 1000 mm. Joints shall be at least 15 mm wide filled with 1:2 cement sand mortar.

817.3 Spoil Material

The Contractor shall be responsible for removal from site of all materials excavated in the course of undertaking works in this section of the specifications, unless suitable for re-use, and deposit of the material in a spoil dump to be approved by the Engineer.

819 CLEANING AND MAINTENANCE

Add the following:

819.1 Desilting of Pipe Culverts

Where instructed, the Contractor shall desilt the existing pipe culverts by removing all the material from the pipe to make them clean and free flowing.

No separate payment will be made for such work and provision should be included in the rates.

820 MEASUREMENT AND PAYMENT

Add Sub-Clause 823(r): -

Item : Concrete for balloon cast pipes/culverts cast in-situ
Unit : m^3

The rate for concrete for each size of culvert instructed shall include for the surround and for the bedding as instructed including the A193 BRC mesh and shuttering, calculated from the dimensions given in the drawings or as directed by the Engineer.

The rate shall also include for the cost of providing and placing the concrete and complying with the requirements of Clauses 809, 810, 814, 819 and 1713 of the Standard Specification.

No extra payment shall be made for provision of inflatable forms/balloons and other requirements for casting culverts in-situ and the Contractor shall be deemed to have provided for these in his rates and prices.

Add Sub-Clause 823(s): -

Item : Invert Block Drain
Unit : m

The payment for the invert block drain shall include the cost of the bottom drain and two side slabs and shall be measured in a linear metre.

Add Sub-Clause 823(t): -

Item : Geotextile
Unit : m2

The payment for the geotextile shall be in square metres and shall include the cost of providing and placing as per the specifications or as instructed by the engineer

SECTION 9 - PASSAGE OF TRAFFIC

901 SCOPE OF THE SECTION

Add the following Sub-Clauses

901.1 TRAFFIC CONTROL AND DEVIATIONS

a) Programme for the Control of Traffic

Following the award of the Contract, the Contractor shall submit to the Engineer a detailed Traffic Control Plan at the sections where the corridor overlaps an existing road. Such programme shall be approved by the Engineer before the Contractor commences work, and shall show amongst other things the method of protection of the public and give details of the hours of operation, location types and numbers of traffic safety devices, barricades, warning signs, flagmen and the like. The Programme for Passing of Traffic shall be in accordance with and complementary to the Programme of Works submitted under Article 17 of the Condition of Contract.

In the preparation of this Traffic Control Plan, the Contractor should take into consideration the following: -

- The Contractor shall conduct his operation in such a manner that no greater length or amount of work is undertaken than he can carry out efficiently having due regard to the rights and convenience of the public.
- If the Contractor proposes a road closure he shall provide an alternative routing of the traffic which must be approved by the Engineer.
- No revisions shall be made to the approved Traffic Control Plan without the prior written permission of the Engineer, and the Contractor shall allow 14 days for the Engineer to review any request for a revision of the Traffic Control Plan.
- The Traffic Control Plan shall conform in all aspects with the requirements of this Special Specification.

Temporary road signs, lights, marks, barriers, etc. for construction shall be in accordance with the laws of Kenya and shall include approved warning, mandatory, prohibitory and priority signs to the satisfaction of the Engineer, including, but not be limited to, signs giving warning of construction works, reduction in speed, overtaking prohibited, road narrows, etc. Under no circumstances will work be allowed on the carriageway or shoulders of the road without such signs in both directions.

b) Penalty to Comply with the Requirements of Section 9

The failure or refusal to comply on part of the Contractor and or maintain the deviation, improve and maintain the existing road ahead of the works at the proper time, or to take the necessary actions for the safety and convinience of the public traffic as required by the statutory authorities, or as instructed by the Engineer, shall be sufficient cause for the Employer to apply a deduction of Kshs. One Hundred and Fifty Thousand (150,000) per day from any monies due to the Contractor, until all provisions prescribed have been complied with to the satisfaction of the Engineer.

c) Contractor's Inspection of the Site

The Contractor should allow for the costs of complying with the requirements of this clause in his rates. The Contractor will be deemed to have inspected the site and satisfied himself to the adequacy of his bid for these works and no additional payments will be made to the Contractor for any expenditure on traffic control or the provision of deviations. The Employer shall not be liable for inadequate prior investigations of this nature by the Contractor.

(d) Standard of Construction works

The standard of all works carried out under this Section shall comply with the requirements of the appropriate sections of these Specifications.

902 IMPROVEMENTS TO EXISTING ROAD

Where instructed by the Engineer, the Contractor shall carry out improvements to any existing roads adjacent to or affected by the Works in accordance with Clause 903 of the Standard Specification except for items (c) and (i) of the clause.

903 MAINTENANCE OF EXISTING ROAD

The Employer shall hand-over the existing roads to the contractor at the commencement of the Contract. The Contractor shall be responsible for all repairs and maintenance during the duration of the Contract in accordance with Clause 903 of the Standard Specification.

Where instructed by the Engineer, the Contractor shall lay on the existing road at or ahead of the works a gravel wearing course of suitable approved material with the properties detailed in 904(c) below.

Where the existing road is paved, the contractor shall maintain it by repairing the potholes and edge breaks using asphalt concrete. The work shall include, but not limited to, excavating and trimming around the pothole or edge break and removing deleterious material.

The Contractor shall regularly inspect the road and carry out such repairs and maintenance to the satisfaction of the Engineer. If at any time, the Engineer draws the Contractor's attention to a road section which requires maintenance, the contractor shall promptly repair the section. The contractor shall be legally responsible for any accident or damage attributable to his failure to maintain the road.

904 CONSTRUCTION OF DEVIATIONS

Add the following at the relevant paragraphs:

(a) **General**

In addition to requirement of this clause, the maximum length of deviation road shall be restricted to 4 Kms at any given time unless otherwise instructed. The Contractor shall construct and complete deviations to the satisfaction of the Engineer before commencing any permanent work on the existing road. Also, during these works the contractor is supposed to provide a detour of adequate pipe culverts for pedestrian and traffic crossing where there is bridge works.

Contractor will be allowed to open further 4 Km of the deviation road only when 80% of the permanent work has been completed on first one and he will not be allowed to open further 4 Km till he has completed first 4 Km of the road and has it opened to traffic.

Where the old road exists near the main road, the Contractor shall use this road as deviation road.

b) **Geometry**

The carriageway width of the deviations shall not be less than 6.5m wide and suitable for 2-way lorry traffic unless otherwise specified.

c) **Construction**

Unless otherwise instructed gravel wearing course for the deviation shall be 150 mm compacted thicknesses complying with section 10 of the Standard Specification. The Contractor shall allow in his rate for removal of any unsuitable material before placing of gravel wearing course, as this will not be paid for separately.

In addition to provision of this clause, Contractor is required to sprinkle water at least 4 times a day at the rate of 1 - 1.4 litres/m^2 in regular interval to minimise the effects of dust. Latest sprinkling time shall be one hour before the sunset.

906 PASSAGE OF TRAFFIC THROUGH THE WORKS

The Contractor shall arrange for passage of traffic through the works during construction whenever it is not practicable to make deviations. The contractor shall be reimbursed in accordance with the standard specifications.

Any damage caused by passing traffic through the works shall be made good at the contractor's own cost.

907 SIGNS, BARRIERS AND LIGHTS

Add the following to Clause 907:

The Contractor shall be responsible for the provision, erection, maintenance and removal of all temporary signs and barriers necessary for safety and convenience, to pass traffic not only upon the existing road to be repaired, but also on all minor and private roads off the site of the Works which are used as deviations.

Temporary "Advance Detour Signs" shall be erected before any road junction and a "Detour Sign" shall be erected at the junction of the deviation route and other minor roads where there is any possibility of the diverted traffic mistaking the route of the detour, and there shall be mounted on the same posts, a sign bearing the inscription "Detour".

In addition, any hazard such as a narrow bridge, drift, level crossing, steep hill, sharp bend, etc. occurring on the deviation shall be marked by the Contractor with the appropriate sign, if the existing sign is inadequate or none exists. All sharp bends and all places where the shoulder is higher than 2.0 m above the natural ground shall be marked with painted posts.

909 ASSISTANCE TO PUBLIC

In addition to provision of clause 909, the Contractor shall maintain close liaison with the relevant authorities to clear any broken down or accident vehicles from the deviations and the main road, in order to maintain smooth and safe flow of the traffic.

911 CONTRACTOR'S CONSTRUCTION TRAFFIC

Add the following new Clause 911.1 and 911.2.

911.1 Insurance

The Contractor's attention is particularly drawn to Clause 18, "Insurance" of the Conditions of Contracts, and the Contractor shall indemnify the Employer against and shall insure against all losses and claims for injuries or damage to any person or any property which may occur due to the passing of traffic, whether through the

Works, or on specially constructed deviations, or on existing public or private roads used as deviations.

912 MEASUREMENT AND PAYMENT

(a) Improvement of the Existing Road

The cost of complying with the requirements of Clause 902 of this Specification is deemed to be included in the rate for maintenance of passage of traffic.

(b) Maintenance of the Existing Road

The Contractor will be paid by the cubic metre of compacted gravel used to maintain the existing road.

(c) Construction of Deviation

The Contractor will be paid by the kilometre to the nearest 0.1 km along the centreline of the deviation subject to the following: -

(i) Road Deviation

The Contractor shall be paid only 50% of the rate for this when he completes deviation road to the satisfaction of the Engineer. The balance shall be paid in equal monthly installments over the contract period, as he satisfactorily maintains the deviation (as per clauses 904 and 905) when it is in operation.

(ii) Deviation using Pipe Culverts

The Contractor shall be paid only 50% of the rate for this when he completes deviation to the satisfaction of the Engineer. The balance shall be paid in equal monthly installments over the contract period, as he satisfactorily maintains the deviation when it is in operation. The Contractor shall be paid full amount when the bridge under construction will be in use.

(d) Passage of Traffic Through the Works

Payment shall be made on Lump Sum basis in accordance with Clause 912(d) of the Standard Specification.

(e) Provision of Signs and Barriers

The Contractor will be paid by in accordance with Clause 912(c) the Standard Specification.

(f) Assistance to Public

The Contractor will be deemed to have included the cost of all other items in this section elsewhere in his rates and prices, and no separate payment shall be made

SECTION 11 – SHOUDERS

1101 GENERAL

Shoulders shall be constructed as per the drawings and in accordance with sections 5, 12, 15 and 16 of the specifications as appropriate.

SECTION 12 - NATURAL MATERIAL SUBBASE AND BASE

1203 MATERIAL REQUIREMENTS

Natural materials for base and subbase shall conform to the specifications given in Section 12 of the Standard Specifications for cement or lime improved base and subbase.

1209 MEASUREMENT AND PAYMENT

Natural material for subbase and base shall be measured by the cubic metre placed and compacted upon the road calculated as the product of the compacted sectional area laid and the length.

The method of measurement shall be “method - A” as in the standard specifications.

No extra payment will be made for haulage of gravel material as the overhaul costs shall be deemed to have been factored in the rates inserted in the Bills of Quantities.

SECTION 13 – GRADED CRUSH STONE SUBBASE AND BASE

1303 MATERIAL REQUIREMENTS

The material for Graded Crushed Stones base shall comply with requirements for stone class B 0/40 for Base. After compaction and compliance with the requirements of clause [40] of this specification below, the subbase/base graded crushed stone material shall have a maximum of 8% of particles smaller than 0.75mm and the resultant layer shall comply with all the requirements of section 13 of the standard specification. The crushing ratio for all graded stone pavement material shall be minimum of 100%.

1306 LAYING AND COMPACTING GRADED CRUSHED STONE SUBBASE AND BASE

Add the following section:

Graded Crushed stone shall be laid by a paving machine.

1309 TREATED MATERIALS

The GCS material shall be improved with 2% cement for bonding and permeability purposes.

SECTION 14 - CEMENT TREATED MATERIALS

1401 CEMENT TREATMENT

1401.1 Cement

Cement for improvement shall be CEM II, 42.5N Portland Cement manufactured to KS EAS 18-1: 2001 - Part 1, KS 1725: 2001 standards. The cement content for the treated material shall be between 2-3% of the total weight of gravel to be improved. In adopting the cement content for improvement care shall be taken to ensure that base quality improved gravel for sub-base is avoided. The Engineer shall exercise his discretion to any variation in the rate of application of the cement, which he may see fit to order from time to time.

1401.2 Lime Treatment

Lime treatment will be as outlined in the Standard Specifications for road and bridge construction. The lime content of the stabilized material shall be as indicated by the Engineer.

1401.3 Moisture Content and Compaction

The moisture content of the treated material shall be as directed by the Engineer but nevertheless within the range of 95% to 105% of the Optimum Moisture Content (AASHTO T180). Minimum compaction shall be 97% MDD (AASHTO T180").

1401.4 Mixing

The material to be treated and the cement shall be mixed in an approved batching plant.

1401.5 Laying and Compaction

Laying

Treated gravel shall be placed by using a self-propelled spreader finisher fitted with an electronic level control device, and level control shall be from a tensioned wire supported at every 5m intervals. The graded crushed stone shall be finished to the tolerances given for base in Section 3 of these Specifications.

Compaction

The moisture content of the treated material shall be as directed by the Engineer but nevertheless within the range of 95% to 105% of the Optimum Moisture Content (AASHTO T 180). Minimum compaction shall be 95% MDD (AASHTO T 180).

1409 PROTECTION AND CURING

Protection and curing shall be carried out in accordance with the provisions of Clause 1409 (i) of the Standard Specification. The treated sub-base layer shall be kept continuously damp by spraying with water for seven days after laying to be followed by laying of GCS base-Course.

1412 MEASUREMENT AND PAYMENT

Stabilizer

The provision of the stabilizer shall be measured by the tonne calculated as the specific weight of stabilizer added to the material.

Mix-in Stabilizer

Mixing stabilizer into the material shall be measured by the cubic metre of treated material calculated as the product of the compacted sectional area treated and the length.

SECTION 15 - BITUMINOUS SURFACE TREATMENTS

PART A - GENERAL

1501A GENERAL

Quality control, workmanship and equipment shall be to current international best practice. Bituminous surface treatments shall be carefully designed by the Contractor, taking into account traffic volumes, ALD of the chippings, surface conditions and requirements for specific locations. Application rates of the bitumen spray and the chippings will be approved by the Engineer prior to any trail sections of the work, but the under listed is anticipated and can be used for guidance purpose, i.e.: -

a) Chippings

10/14mm size pre-coated chippings at a spread rate of 80-100 square meters per cubic meter as single seal.

b) Bitumen Spray Rates

0.8 - 1.2 l/m^2 of 60/70 penetration grade bitumen (cut back or straight run) for the single seal.

PART B - PRIME COAT AND TACK COAT

1502B MATERIALS FOR PRIME COAT AND TACK COAT.

For prime coat, the binder shall be a medium-curing cutback MC30 unless otherwise directed by the Engineer.

The rate of spray of bituminous prime coat refers to the gross volume of the cutback bitumen, that is to say the volume of the bitumen plus dilutants.

The rates of spray of the prime coat shall be as instructed by the Engineer and shall generally be within the range 1.0-1.2 litres/square metre.

Prime coat shall be applied to all gravel surfaces that are to receive asphalt concrete.

The tack coat shall consist of bitumen emulsion K1-70 unless otherwise directed by the Engineer.

The rates of spray of the tack coat shall be as instructed by the Engineer and shall generally be within the range 0.5 - 0.8 litres/square metre.

PART C – SURFACE DRESSING

1502C MATERIALS FOR SURFACE DRESSING

Binder

The bituminous binder shall be 60/70 penetration grade bitumen (cut-back with kerosene fuel in accordance with prevailing road temperatures or straight run), and conforming to Clause 211 of the Standard Specification.

The Contractor jointly with the Engineer shall carry out a minimum of five (5) bitumen affinity tests on each single size aggregate stockpiles to be used into the works and if any result is less than 95% coverage, then the binder shall be blended with **ColAmin** or similar approved adhesive additive as per manufacturer's instructions at 0.2 - 0.5% by mass of binder. The Contactor shall propose optimum dosage of the adhesive additive by carrying out bitumen affinity tests on the crushed aggregates for approval by the Engineer.

Chippings

Chippings shall be of class 2 material and shall comply in all respects with Clause 1502C of the Standard Specification. The contractor's attention is drawn to the requirements of Clause 1502C and 1504C of the Standard Specification with regard to cleanliness and dust content of chippings for surface dressing. Should it prove necessary in the Engineer's opinion to wash chippings, no extra payment will be made to the contractor for this operation.

1503C SPRAY AND SPREAD RATES OF BITUMEN AND CHIPPINGS

Spray and Spread Rates for bitumen and chippings cannot be calculated until samples of the chippings to be used are available for test.

After submission of samples and completion of laboratory tests on chippings and binder, the Contractor shall in the presence of the Engineer and the Chief Materials Engineer or representatives, lay trial sections of seal at various rates of spray and spread as directed by the Engineer and in accordance with clause 1503C of the Standard Specification.

Should any change occur in nature of source of chippings or bitumen, the Contractor shall advice the Engineer accordingly who will then decide if any revisions are required to the spray and spread rates.

If any changes are required, the Contractor shall carry out further trials as instructed by the Engineer.

Payment for binder and chippings will be based on the instructed spray and spread rates used which may not necessarily be those specified. The Engineer will specify

the spray rates of bitumen as residual bitumen per square meter. Actual spray rates used by the Contractor must be adjusted to compensate for any cutter added.

1505C PRECOATED CHIPPINGS

Chippings utilized for surface dressing works under this contract shall be pre-coated in accordance with clause 1505C of the Standard Specification. The binder used for pre-coating chippings shall be MC30 cut-back bitumen.

The amount of bituminous binder used to pre-coat chippings will be as instructed by the Engineer and will normally be between 0.4% and 1.0% residual bitumen as percentage of the total dry weight.

Prior to laying any pre-coated chippings the Contractor shall prepare trial mixes of bitumen and chippings in the presence of the Engineer. After completion of trial mixes the Engineer shall issue written instructions to the Contractor indicating the amount of binder to be added in pre-coated chippings. The Contractor shall maintain this proportion unless the surface or nature of the chippings changes when the Contractor shall repeat the trials and the Engineer will issue revised instruction.

No separate payments shall be made for the pre-coating exercise. The contractor shall have included in his rates the cost of complying with this clause.

1511C MEASUREMENT AND PAYMENT

(a) Seal coat

Seal coats shall be measured by the litre, for each type of bituminous binder for each seal coat, calculated as the product of the area in square metres sprayed and the rate of application in litres/square metres instructed, corrected to 15.6 ºC.

(b) Chippings

Chippings shall be measured by the cubic metre of each nominal size for each class calculated as the product of the area in square metres covered and the reciprocal of the instructed rate of application in square metres/cubic metre or the actual rate of application in square metres/cubic metre whichever calculation gives the lower volume.

SECTION 16 - BITUMINOUS MIX BASES, BINDER COURSES AND WEARING COURSES

All Bituminous mixes works shall be done in accordance with the standard specifications.

PART A – GENERAL

1603A CONSTRUCTION PLANT

(d) Compaction plant

To achieve specified densities, it is expected that vibrating rollers will be required. To achieve satisfactory results, it is essential that thorough preconstruction trials be carried out to ensure that the vibrating rollers are set up at the optimum amplitude and frequency for the material being laid, that they do not break down aggregate particles and that the optimum compaction temperatures are established to allow compaction without creating ripple effects or other distortions of the surfacing.

1605A DESIGN AND WORKING MIXES

Delete the second paragraph and insert the following:

At least two months, prior to laying asphalt concrete, the contractor jointly with the Engineer shall carry out design mixes STRICTLY complying with SUPERPAVE requirements (clause 1602B, 1603B & 1604B) using approved constituent materials.

The design process shall be phased as follows:

Phase1: Testing of constituent materials to confirm compliance
Phase 2: Laboratory mix designs complying with all the specifications
Phase3: Plant mixing to confirm compliance with laboratory parameters
Phase 4: Site trials

Should any changes occur in the nature or source of the constituent materials, the Contractor shall advice the Engineer and a new mix design shall be established using the procedure set above

1606A SITE TRIALS

Delete the second paragraph and insert the following:

"The trials shall be carried out to: -

a) Test materials designed in the laboratory so that a workable mix, which satisfies the specification requirements, can be selected.

b) To enable the Contractor to demonstrate the suitability of his mixing and compaction equipment to provide and compact the material to the specified density and to confirm that the other specified requirements of the completed asphalt pavement layer can be achieved."

Renumber paragraph 5 from "(v) –(vi)" to read "(v)-(viii)".

1607A MIXING OF AGGREGATES AND BITUMEN

Delete the second and third paragraphs, then add the following:

The aggregates, minus the filler, prepared as specified above, shall be accurately weighed and conveyed into the mixer in proportionate amounts of each aggregate size required to meet the Job-Mix Formula. The required amount of bitumen for each batch shall be introduced into the mixer. In batch mixing, the bitumen shall be added after the aggregates have been introduced into the mixer and mixed for 5 to 10 seconds. The filler shall be added after the bitumen and mixing shall continue after addition of the filler for at least the time recommended by the plant manufacturer, or as much extra time as is necessary to obtain a homogeneous mixture, but for no longer.

Aggregate and bitumen shall each be heated to enter the mixing chamber at temperatures selected within the range 150 to 170ºC. The temperature of the stone at entry to the mixing chamber shall not be more than 15ºC higher than that of the bitumen; the temperature of the bitumen shall be such that on entry to the mixer its kinematic viscosity is in the range 150 – 300 centistokes. The temperature of the aggregate and bitumen at entry into the mixing chamber shall be chosen within the above limits and having regard to the prevailing air temperature and haulage distance to ensure that the temperature of the mix is between 135ºC and 165ºC when it is laid and not less than 120ºC when rolling is commenced. If excessive displacement occurs under the roller the minimum rolling temperature may be reduced at the sole discretion of the Engineer.

The volume of the aggregate and bitumen shall not be so great as to extend above the tips of the mixer blades when the blades are in vertical position. All overheated and carbonised mixtures, which foam or show indication of moisture, will be rejected. When moisture is detected in the finished mixture, all aggregates in the bins shall be removed and returned to the stockpiles.

1608A TRANSPORTING THE MIXTURE

Delete entire clause and insert the following:

The mix shall be transported from the mixing plant to the spreader in trucks having tight, clean, smooth beds, which have been treated to prevent adhesion of the mixture to the truck bodies. Gasoline, kerosene, diesel fuel or other solvents shall not be used for this purpose. Loads shall be covered by waterproof canvas or metal sheets during wet weather. Vehicles shall be insulated when the air temperature and/or length of haul make this necessary to maintain the temperature between the specified limits. Any loads wetted excessively by rain will be rejected. Hauling over freshly laid material will not be permitted.

1609A LAYING THE MIXTURE

Add the following;

Mixtures that have a temperature of less than 135^{o}C when dumped into the spreader, will be rejected. The spreader shall be adjusted and the speed regulated so that the surface of the course will be smooth and the course of such depth that, when compacted, it will conform to the cross-section shown on the Drawings. Lanes shall be parallel to the road centreline.

Add the following:

All joints shall present the same texture, density and smoothness as other areas of the surfacing. The joints between old and new lanes or sections shall be carefully formed in such manner as to ensure a continuous bond between the old and new pavement. All contact surfaces at cold joints, joints with manholes, pits, etc. shall be coated with a thin, uniform coat of MC70 or other medium curing bitumen.

1610A COMPACTION

Add the following:

Tests for conformity with the smoothness and levels specified shall be made by the Contractor immediately after initial compaction and any deviations in excess of the specified tolerances shall be corrected by loosening the hot surface with rakes and removing or adding material as necessary before continuing the rolling. The speed of the rollers shall not exceed 5 km/h and shall at all times be slow enough to avoid displacement of the hot mixture. Any displacement of the mixture occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once by loosening the surface with rakes and re-rolling. Rolling of the surfacing shall be continued until all roller marks are eliminated and the required density is obtained.

The rollers shall not be permitted to stand on surfacing which has not been fully compacted. Precautions shall be taken to prevent the dropping of oil, grease, gasoline, or other foreign matter on any layer. The Contractor shall provide

competent workmen who are capable of performing all work incidental to the correction of all surfacing irregularities.
After final rolling, no vehicular traffic of any kind shall be permitted for at least 24 hours.

1611A FINISHING, JOINTS AND EDGES

Add the following:

Construction joints in the various pavement layers shall be staggered by at least the following distances:

a) Joints in binder course relative to joints in wearing course: 500mm
b) Joints in DBM base relative to joints in wearing course: 400mm

The Contractor shall produce a plan showing the position of all pavement construction joints for approval by the Engineer before pavement construction commences.

Transverse joints in DBM base, binder and wearing course shall be staggered by at least 500mm. The roller shall pass over the unprotected end of the freshly laid mixture only when laying of the surfacing is to be discontinued for such length of time as to permit the mixture to become cold. Otherwise 500mm at the end of the lane shall be left uncompacted.

Cold transverse joints shall be cut back to expose an even, vertical surface for the full compacted thickness of the course and painted with medium curing cutback bitumen as specified above. The fresh mixture shall be raked uniformly against the joint, and carefully compacted to ensure a good bond with the cold material.

The Contractor shall adjust any kerbs, gulley pots and chambers in accordance with final finished road level before laying the final wearing course.

1614A TOLERANCES

*Add the following at the end of the second paragraph***:**

Passing sieves between 1.0 mm and 0.075 mm sieves	± 3% (by total weight of dry aggregate including mineral filler)
Passing 0.075 mm sieve	± 2% (by total weight of dry aggregate including mineral filler)

1615A ROAD REINFORCEMENT GRID

Where shown on the drawings or where directed by the Engineer, asphalt reinforcement in form of geotextile shall be used to reduce reflective cracking and/or to act as water barrier.

Paving geotextile reinforcement composite shall consist of 'ARMAPAL' reinforcement geosynthetic or similar approved. It shall meet the following physical requirements.

Property	Units	Requirements	Test method
Tensile strength	KN/m	50	SABS 02210 - 88
Elongation at break	%	<7	SABS 02210 - 88
Melting point	°c	260	ASTM D276
Bitumen Retention	l/m²	1.2	

Where the use of reinforcing for asphalt has been specified, the Contractor shall, at least three months before the material is to be used, submit samples of the type he/she intends to use, together with complete specifications of the material, load-strain relationship of the material, as well as the manufacturer's instructions for use, to the Engineer for approval. Where the material does not carry the mark of an acknowledged standards authority, the Engineer may instruct the Contractor to have the material tested by an approved laboratory and to submit the results**.**

1616A MEASUREMENT AND PAYMENT FOR ROAD REINFORCEMENT

Item: Geogrid reinforcement netting
Unit: square metres (m²)

The rate shall include for supplying, cutting, place in accordance with the manufacturer’s specification, a geotextile reinforcement on the existing surfacing or new surface before laying the dense bitumen macadam or other overlay material. The rate shall include for tacking the material, with tack coat if required and any clout nails.

PART B - ASPHALT CONCRETE FOR SURFACING

1601B DEFINITION

The Asphalt concrete shall be SUPERPAVE (SUperior PERforming Asphalt PAVEment). Modifications to the Standard Specification have been made below to correspond with SHRP SUPERPAVE system recommendations on the design of Hot Mix Asphalt (HMA). The design of hot mixes shall be in accordance with the procedure detailed in Overseas Road Note 19- "A guide to the design of hot mix asphalt in tropical and subtropical countries" and MS2 – "Asphalt Mix Design Methods, 7th Edition by Asphalt Institute".

The Contractor shall provide copies of ORN 19 and MS2 to the Engineer at the start of the Project. The salient features with reference to Standard Specification are summarized below.

1602B MATERIALS FOR ASPHALT CONCRETE

a) Penetration Grade Bitumen

Delete Sub-Section (a) and replace with:

The bitumen shall be penetration grade, and shall meet the requirements of Table 4.3 in ORN 19 as summarized below

TEST		Test Method (ASTM)	Pen 40/50	Pen 60/70	Pen 80/100
Based on original bitumen penetration					
at 25^0C		D5	40-50	60-70	80-100
Softening point (^{o}C)		D36	49-59	46-56	42-51
Flash point (^{o}C)	Min	D92	232	232	219
Solubility in trichloroethylene (%)	Min	D 2042	99	99	99
TFOT heating for 5 hr at 163^0C		D 1754			

a) Loss by mass (%)	Max		0.5	0.5	0.5
b) Penetration (% of original)	Min	D5	58	54	50
c) Ductility at 25^0C	Min	D 113	-	50	75

The bitumen for asphalt concrete works shall be 60/70 penetration grade. The Contractor jointly with the Engineer shall carry out a minimum of five (5) bitumen affinity tests on each single size aggregate stockpiles to be used into the works and if any result is less than 95% coverage, then the binder shall be blended with **ColAmin** or similar approved adhesive additive as per manufacturer's instructions at 0.2 - 0.5% by mass of binder. The Contactor shall propose optimum dosage of the adhesive additive by carrying out bitumen affinity tests on the crushed aggregates for approval by the Engineer

b) Aggregate

The coarse aggregate shall be entirely crushed rock from a source which is known to give high values of stability (>9kN) in the Marshall test. Crushed river gravel shall not be used. Aggregates shall meet the requirements given in Table 16B-1(b) below (Extracted from ORN 19, Table 4.1)

Table 16 B-1(b) Requirements of Aggregate

Property	Test	Property
Cleanliness	Sand equivalent for 4.75mm fraction [1]	> 40
	Plasticity index for materials passing 0.425mm sieve [2]	<4
	Linear shrinkage for materials passing 0.425mm sieve, %	<2
Particle shape	Flakiness Index (FI) [3]	<25
Strength	Aggregate Crushing Value, (ACV) [4]	< 25
	Aggregate Impact Value, (AIV) [4]	<25
	10% FACT (dry) kN [4]	> 160
	Los Angeles Abrasion, (LAA) [5]	<30

Abrasion	Aggregate Abrasion Value [4]	< 14
Soundness [7] 5cycles % loss	Sodium Sulphate Soundness (SSS) Coarse aggregate Sodium Sulphate Soundness (SSS) Fine aggregate Magnesium Sulphate Soundness (MSS) Coarse aggregate Magnesium Sulphate Soundness (MSS) Fine aggregate	<10 <16 <15 <20
Polishing	Polished Stone Value	>57
Water absorption	Water absorption , % [6]	<2
Bitumen affinity	Immersion Mechanical Test: Index of retained Marshall stability ,% [8]	>75
	Static Immersion Test, % coating retained [9]	>95
	Retained Indirect Tensile Strength % at 7% VIM [10]	>79

1. AASHTO T176
2. British Standard 1377: Part 2
3. British Standard 812: Part 105
4. British Standard 812: Part 110 to 114
5. ASTM C131 and C 535
6. British Standard 812: Part 2
7. AASHTO T104
8. D Whiteoak (1990)
9. AASHTO T 182
10. AASHTO T 283

Fine aggregate (passing a 6.3mm sieve) shall consist of entirely crushed rock produced from stone having a Los Angeles Abrasion of not more than 40%

Aggregates for bituminous mixes shall be stored in single size in separate bins or on areas covered with tightly laid wood planks, sheet metal, hard compacted gravel, concrete or other hard and clean surfaces. The surface shall be self draining, and in such a manner that will preclude the inclusion of foreign material. Aggregates of different grades and sizes and from different sources shall be stored in separate piles, and if these piles are close together they shall be separated by bulk heads

1603B GRADING REQUIREMENTS

The grading of the mixture of coarse and fine aggregate shall be as per the particle size distribution for SUPERPAVE Gradation Requirements detailed under table 6.3 of MS2.

For better workability of asphalt concrete designed to refusal density and for laying thickness of 50mm, the Maximum Aggregate Size (MAS) shall be limited to 19mm.

The Contractor shall investigate number of gradings so that a workable mix, which also retains a minimum of 3% voids at refusal density, is identified. Restricted Zone boundaries shown under table 3.3 of MS2 shall be used as guidance towards identifying a such a grading.

1604B REQUIREMENTS FOR ASPHALT CONCRETE

The mixture shall comply with the requirements given in table 6.5, MS2. Adopt 20-year ESAL (in millions) as 4.9.

In addition, under Marshall Mix Design Criteria, the mixture shall comply with the requirements given in table 7.2, MS2 .

The proportion, by weight of total mixture, of bitumen shall be 4.5 - 6.0 % for 19mm MAS. This shall be termed the nominal binder content. The binder content of the working mix will be instructed by the Engineer following laboratory and site trials.

In order to determine the suitability of a coarse aggregate source, a Marshall test programme shall be carried out. It will be advantageous to use crushed rock, which is known from past experience to give good results

Having established the suitability of the aggregate source several gradings shall be tested in the laboratory, including that used for the Marshall test. The blended grading shall include coarse, intermediate and fine grading that pass below the restricted zone, which shall increase the degree of interlock. For each mix, samples shall be made up to a range of bitumen contents at reducing interval of 0.25% from the nominal binder content and compacted using a gyratory compactor. Compaction to refusal shall be by vibratory hammer in accordance with the procedure described in BS 598 (Part 104: 1989), to establish relationships between bitumen content and VIM at refusal density for all the gradings

It should first be confirmed that compaction on one face of the sample gives the same refusal density as when the same compaction cycle is applied to both faces

of the same sample. The procedure, which gives the highest density, must be used and shall be submitted to the Engineer for approval.

From the above bitumen content - VIM @ refusal density relationship, it shall be possible to identify a bitumen content which corresponds to VIM of 3% for each grading.

To determine the workability of the mix, compaction trials should be undertaken in these gradings with designed binder content @ 3% VIM. It is advisable to establish two or more gradings for compaction trials.

The compaction trials will identify a workable mix which can be made to a bitumen content which gives 3% VIM at refusal density and meeting the SUPERPAVE mixture requirements. The mixes identified in compaction trials should be manufactured to the laboratory design bitumen content and to two other bitumen contents. Cores will be cut to determine the density of the compacted material, this core will then be reheated to 145+/-5^{0}C in the appropriate mould and compacted to refusal using the vibrating hammer. To be acceptable the cores cut from the compaction trial must have a density equivalent to at least 95% of refusal density.

The results of all the mix design options, laboratory and site trials for the adopted mix and the Contractor's recommendations are to be submitted to the Engineer for approval.

1605B MIXING AND LAYING ASPHALT

The temperature of the bitumen and aggregates when mixed shall be 110+/-3^{0}C above the softening point (Ring and Ball) of the bitumen.

Compaction should commence as soon as the mix can support the roller without undue displacement of material and with the temperature of the mix >120^{0}C, and completed before the temperature of the mix falls below 90^{0}C.

1606B COMPACTION

Rolling shall be continued until compaction of the completed layer attains a minimum mean value of 95% of refusal density (no value less than 93%) and until the voids measured in the compacted layer are within the specified range as appropriate.

1608B SEALING BITUMINOUS SURFACE

After the wearing course has been trafficked and bitumen has hardened, the wearing course shall be sealed with class 2, 10/14 mm pre-coated chippings in accordance with Clause 1505C. The period of hardening will depend on the traffic

level and should be such that the chippings will not become embedded in the wearing surface. The Contractor will propose and the Engineer will approve a section to be ready for sealing.

PART C – DENSE BITUMEN MACADAM FOR BASE

1601C DEFINITION

Dense bitumen macadam produced from fresh materials shall comply with the "SUPERPAVE" requirements given in clauses 1602B, 1603B, 1604B, 1605B, 1606B and 1608B of these Special Specifications, except where modified below.

1603C REQUIREMENTS FOR DENSE BITUMEN MACADAM

The nominal binder content shall be 4.0 - 5.0 % for 37.5mm MAS. The binder content of the working mix will be instructed by the Engineer following laboratory and site trials. For Marshall Mix Design Criteria, Modified Marshal Method for large aggregates shall be adopted as detailed under section 7.5 of MS2. The Maximum Aggregate Size (MAS) shall be limited to 37.5mm

SECTION 17 - CONCRETE WORKS

1703 MATERIALS FOR CONCRETE

All materials shall comply with the requirements of Section 1703 of the standard specifications.

Cement for all concrete works shall be CEM I, 42.5N Portland Cement manufactured to KS EAS 18-1: 2001 - Part 1, KS 1725: 2001 standards.

1703 DESIGN OF CONCRETE MIXES

The following classes of concrete shall be designed and mix proportions approved for use as follows:

- Class 15/20 for all blinding to structures and precast pipe culvert beds and surrounds
- Class 25/20 for all culvert headwalls, wingwalls, aprons, toewalls
- Class 30/20 for bridge all bridge members: abutments, piers, beams and deck

Specifications for construction materials and quality control shall be in accordance with the standard specifications.

1713 FINISHES ON UNFORMED SURFACES

All unformed finishes shall be as follows:

(i) All unformed surfaces in contact with water or the eye shall be finished to class UF 3 Finish in accordance with the standard specifications.

(ii) All unformed surfaces in contact with soil or on which asphaltic concrete is to be laid shall be finished to class UF 2 Finish in accordance with the standard specifications.

The payment for such finishes shall paid in accordance with the standard specifications and as captured in the bill items.

1725 SURFACE FINISHES

All formed finishes shall be as follows:

(i) All formed finishes in contact with water or the eye shall be finished to class F3 finish in accordance with the standard specifications.

(ii) All formed surfaces in contact with soil shall be finished to class F 2 Finish in accordance with the standard specifications.

The payment for such finishes shall paid in accordance with the standard specifications and as captured in the bills items.

1728 REINFORCEMENT FOR CONCRETE

All reinforcement to concrete shall be hot rolled high yield deformed bars complying with BS 4449 and steel mesh fabric to BS 4483.

1741 MEASUREMENT AND PAYMENT

a) Item: Concrete

Amend clause 1741 (a) (iv) of standard specifications to read "class UF 3 finish"

b) Item: formwork for formed surface finishes

Amend the following to Clause 1741 (e) of the Standard Specification:
Unit m² of formwork shall cover inclined formwork of all slopes and angles.

Followings are additional specifications;

1742 MATERIALS FOR CONCRETE

This work shall consist of placing selected approved material of 250mm minimum diameter (for the case of rock fill) on the foundation put after excavation to receive levelling concrete in accordance with these specifications and in conformity with the lines, grades and cross sections shown on the Drawings as directed by the Engineer.

(a) Materials

Selected rock: The selected rock boulders to be placed for this work shall be hard, sound, durable quarry stones as approved by the Engineer. Samples of the stone to be used shall be submitted to and approved by the Engineer before any stone is placed.

The maximum size of the stone boulders shall be 300mm.

(b) Construction Method

After completion of the structural excavation the surface of the loose soil shall be levelled and compacted. Then the stone of the above sizes shall be placed in one layer of 250mm over the compacted bed where the bottom slab will rest. Coarse sand shall be spread to fill up the voids in the stone boulders, and compaction with vibratory compactors should be performed to make this layer dense whereon a concrete of levelling course shall be placed.

(c) Measurement and payment

Measurement for the bedding materials shall be made in cubic metres for the completed and accepted work, measured from the dimension shown on the Drawings, unless otherwise directed by the Engineer.

Payment for the bedding Materials for Levelling Concrete Works shall be full compensation for furnishing and placing all materials, all labour equipment, tools and all other items necessary for proper completion of the work in accordance with the Drawings and specifications and as directed by the Engineer.

1742 (A) LEVELLING CONCRETE (CLASS 15/20) FOR BOTTOM SLAB INCLUSIVE OF COST OF FORM WORKS

This work shall consist of placing and levelling lean concrete class 15/20 over the prepared bed of stone boulders in the foundation for bottom slab and wing walls in accordance with these specifications and which conformity with the lines, grades, thickness and typical cross-sections shown on the drawings unless otherwise directed by the Engineer.

(a) Materials for Levelling Concrete

Requirement for the concrete class 15/20 is specified as follows: -

Design compressive strength (28) days	:	15N/mm^2
Maximum size of coarse aggregate	:	20mm
Maximum cement content	:	300 kg/m^3.

Maximum water/cement ration of 50% with slump of 80mm.

(b) Construction Method

The bed of stone boulders upon which the levelling concrete will be placed shall be smooth, compacted and true to the grades and cross-section shall be set to the required lines and grades.

(c) Measurement and payment

Measurement for levelling concrete (class 15/20) shall be made in cubic metres completed and accepted levelling concrete work measured in place which is done in accordance with the Drawings and the Specifications.

Payment for this work shall be the full compensation for furnishing and placing all materials, labour, equipment and tools, and other incidentals to Specifications and as directed by the Engineer.

Pay item No. 17/02 Levelling Concrete Works (Class 15/20) for Box Culvert and wing walls inclusive of Cost of Form works.

1742(B) REINFORCING BARS OF BRIDGE ABUTMENT WALLS, PIERS & DECK SLABS AND CULVERT WALLS & SLABS.

This work shall consist of furnishing, fabricating and placing in the concrete of the bottom slab, top slab, median wall, sidewalls, wing walls and aprons for the culverts and deck slab, Abutment walls and Piers, Pile caps and piles for the Bridges, reinforcing bars of the quality, type and size in accordance with these specifications in conformity with the requirements shown on the Drawings.

(a) Material:

Reinforcing bars shall be deformed and shall meet the requirements of British standard BS4461, unless otherwise called for the drawings or approved by the Engineer.

No reinforcing bar shall be delivered without a certificate guaranteeing the yield stress. The reinforcing bars shall be kept off the ground, free from dirt, oil, grease, or avoidable rust and stored within a building or provided with suitable covers.

If it is necessary for the Engineer to ascertain the quality of the reinforcing bars, the Contractor shall test the reinforcing bars, at his own expense, by means as directed by the Engineer.

(b) Construction Method

(i) Bar Bending Schedule:

The Engineer shall provide the Contractor with bending schedule showing the location, types, sizes, bending dimensions and cut lengths of the reinforcing bar required to be fixed in the works.

(ii) Cutting and Bending:

Qualified personnel shall be employed for the cutting and bending, and proper application shall be provided for such work.

Bars shall be cut and bent cold to the dimensions indicated and with equipment and methods approved by the Engineer.

Stirrups and tie bars shall be bent around a pin having a diameter not less than 15 times the minimum diameter of the bar. Bends of other bars, where full tension in the bar may occur, shall be made around a pin having a diameter not less than 7.5 times the bar diameter as shown on the Drawings.

Reinforcing bars shall be accurately formed to the shapes and dimensions indicated on the Drawings, and shall be fabricated in a manner that will not injure the materials.

(c) Placing

Reinforcing bars shall be accurately placed in proper position, and so that they be firmly held during placing of concrete.

Bars shall be tied at all intersections by using annealed iron wire 0.9mm or larger diameter, or suitable clips.

Distances from the forms shall be maintained, corrected by means of metal hangers, metal blocks, metal supports or other supports approved by the Engineer.

The Engineer shall inspect reinforcing bars after placing. When a long time has elapsed after placing reinforcing bars, they shall be cleaned and inspected again by the Engineer before placing concrete.

(d) Splicing and Joint

When it is necessary to splice reinforcing bars at points, position and methods of splicing shall be determined based on strength calculations and approved by the Engineer.

In lapped splices, the bars shall be lapped by the required length, and wired together at several points by using annealed iron wire larger than 0.9mm.

Exposed reinforcing bars intended for bonding with future extensions shall be effectively protected from injury and corrosion.

Oxyacetylene welding joint of reinforcing steel shall be done only if authorised by the Engineer in writing.

(e) Measurement and Payment

Bending and installation of reinforcing bar of piers and abutments shall be measured in terms of tons. The length of steel bar of each size will be shown on the drawings in which the bar length for splicing is excluded. In computing the weight to be measured, the theoretical weights of bars of the cross-section shown on the Drawings or authorised shall be used.

These weights are given in the following table: -

Bar type and the Cross-section in millimetres	Weight of Bar in Kilogramme—per 12m length of bar
Y10	7.40

Y12	10.66
Y16	18.95
Y20	29.60
Y25	46.30

1742 (C) FORMWORK FOR BRIDGE DECK SLAB, ABUTMENT WALL, PIERS, PILECAPS AND PILES AND CULVERT WALLS & SLABS

This work shall consist of all temporary moulds for forming the concrete for culvert walls and slabs together with all temporary construction required for their support. Unless otherwise directed by the Engineer all formworks shall be removed on completion of the walls and slabs.

(a) Materials

Forms shall be made of wood or metal and shall conform to the shape, lines and dimensions shown on the Drawings.

All timber shall be free from holes, loose material, knots, cracks, splits and warps or other defects affecting the strength or appearance of the finished structure.

Release Agents – Release agents shall be either neat oils containing a surface activating agent, cream emulsions, or chemical agents to be approved by the Engineer.

(b) Construction Method

1) Formworks

Formworks shall be designed to carry the maximum loads which may be imposed, and so be rigidly constructed as to prevent deformation due to load, drying and wetting, vibration and other causes. After forms have been set in correct location, they shall be inspected and approved by the Engineer before the concrete is placed.

If requested, the Contractor shall submit to the Engineer working drawings of the forms and also, if requested, calculations to certify the rigidity of the forms.

Unless otherwise described in the Contract, all form joints for exposed surfaces of concrete shall form a regular pattern with horizontal and vertical lines continuous throughout each structure and all construction joints shall coincide with these horizontal and vertical lines. PVC pipes of 50mm diameter for weep holes shall be arranged as shown on the Drawings.

Unless otherwise specified, formwork shall be designed to form chamfers at all external corners whether or not such chamfers are shown on the Drawings to prevent cracks and other damage from arising.

The inside surface of forms shall be cleaned and coated with a releasing agent to prevent adhesion of the concrete. Release agents shall be applied strictly in accordance with the manufacturer's detailed instructions. The release agent shall be applied to the formwork prior to erection. Release agent must not come into contact with reinforcement. Immediately before concrete is placed, the forms shall be thoroughly cleaned and freed from sawdust, shavings, dust, mud or other debris by hosing with water. Temporary openings shall be provided in the forms to drain away the water and rubbish.

b. Scaffolding

All scaffolding required to support the forms shall be designed and constructed to provide necessary rigidity and support the loads without appreciable deflection or deformation.

Details, plans and structural and flexural calculations for scaffolding shall be submitted to the Engineer for approval, but in no case shall the Contractor be relieved of his responsibility for the results obtained by use of these plans, etc.

c. Removal of formwork

The time at which the formwork is truck shall be the Contractor's responsibility and the forms shall not be removed until the concrete strength has reached 20 N/mm^2.

d. Measurement and Payment

Formwork shall be measured as the net area, in square metres, in contact with the finished concrete surface of the walls and slabs. No measurement shall be allowed for formwork of temporary construction joints.

Payment for the Formworks shall be full compensation for furnishing, erecting, jointing all the forms for the concrete including furnishing and applying release agent, and construction of the required scaffolding to support the forms, all conforming to the shape, lines, grade and dimensions of the structure as shown on the Drawings, all in accordance with the Drawings and as directed by the Engineer.

1742(D) CONCRETE WORKS (CLASS 25/20)

This work shall consist of furnishing, mixing, delivering and placing of the concrete for the construction of culvert walls and slabs, in accordance with these Specifications and in conformity with the requirements shown on the Drawings.

Concrete class 25/20 shall be used for culvert wingwalls and slabs. The requirements of Concrete class 25/20 are provided as follows unless otherwise the Engineer will designate any alteration.

Design compressive strength (28 days) : 25N/mm^2
Maximum size of coarse aggregates : 20mm
Maximum water/cement ratio of 45% with slump of 80mm

a) Concrete Materials

1. Cement:

Cement shall be of Ordinary Portland type and shall conform to the requirements of BS 12 or equivalent.

The Contractor shall select only one type or brand of cement or others. Changing of type or brand of cement will not be permitted without a new mix design approved by the Engineer. All cement is subject to the Engineer's approval, however, approval of cement by the Engineer shall not relieve the Contractor of the responsibility to furnish concrete of the specified compressive strength.

Conveyance of cement by jute bags shall not be permitted. Storage in the Contractor's silo or storehouse shall not exceed more than two (2) months, and age of cement after manufacture at mill shall not exceed more than four (4) months. The Contractor shall submit to the Engineer for his approval the result of quality certificate done prepared by the manufacturer.

Whenever it is found out that cement has been stored too long, moist, or caked, the cement shall be rejected and removed from the project.

2. Aggregates

(a) Fine and coarse aggregates must be clean, hard, strong and durable, and free from absorbed chemicals, clay coating, or materials in amounts that could affect hydration, bonding, strength and durability of concrete.

Grading of aggregates shall conform to the following requirements:

a) Grading of Fine Aggregates

Sieve Size	Percentage by Weight Passing
10 mm	100
6.3 mm	89-100
2.5 mm	60-100
1.2 mm	30-100
0.6 mm	15- 54

0.3 mm	5- 40
0.15 mm	0 - 15

b) Grading of Coarse Aggregates

Size of Coarse Aggregate	40	30	25	20	15	10	5	2.5
Amounts finer than each standard sieve percentage by weight	100	-	-	90-100	-	30-69	0-10	-

c) Other requirements for aggregates are as follows:

i. Fine Aggregates

Fitness Modulus, AASHTO M-6 : 2.3 – 3.1
Sodium Sulphate Soundness, AASHTO T104 : Max. 10% loss
Content of Friable Particles AASHTO 112 : Max 1% by weight
Sand Equivalent, AASHTO T176 : Min. 75

ii. Coarse Aggregate

Abrasion, AASGTO T96 : Max. 405 loss
Soft Fragment and shale, AASHTO M80 : Max. 5% by weight
Thin and elongated Pieces, AASHTO M80 : Max. 15%

3. Water

All sources of water to be used with cement shall be approved by the Engineer. Water shall be free from injurious quantities of oil, alkali, vegetable matter and salt as determined by the Engineer.

4. Admixture

Only admixture, which have been tested and approved in the site laboratory through trial mixing for design proportion shall be used.

Before selection of admixture, the Contractor shall submit to the Engineer the specific information or guarantees prepared by the admixture supplier.

The Contractor shall not exclude the admixture from concrete proportions.

b) Proportioning Concrete

The Contractor shall consult with the Engineer as to mix proportions at least thirty (30) days prior to beginning the concrete work. The actual mix proportions of cement, aggregates, water and admixture shall be determined by the Contractor under supervision of the Engineer in the site laboratory.

The Contractor shall prepare the design proportions which has 120% of the strength requirement specified for the designated class of concrete.

No class of concrete shall be prepared or placed until its job-mix proportions have been approved by the Engineer.

c) Concrete Work

i. Batching shall be done by weight with accuracy of:

Cement : ½ percent
Aggregate : ½ percent
Water and Admixture : 1 percent.

ii. Equipment should be capable of measuring quantities within these tolerances for the smartest batch regularly used, as well as for larger batches.

The accuracy of batching equipment should be checked every month in the presence of the Engineer and adjusted when necessary.

iii. Mixing and delivery

Slump of mixed concrete shall be checked and approved at an accuracy of +25mm against designated slump in these specifications.

iv. Concrete in hot weather

No concrete shall be placed when the ambient air temperature is expected to exceed thirty three degrees celsius (330c) during placement operations.

v. Concreting at night

No concrete shall be mixed, placed or finished when natural light is insufficient, unless an adequate approved artificial lighting system is operated, such night work is subject to approval by the engineer.

vi. Placing

In preparation of the placing of concrete, the interior space of forms shall be cleaned and approved by the Engineer prior to placing concrete. All temporary members except tie bars to support forms shall be removed entirely from the forms

and not buried in the concrete. The use of open and vertical chute shall not be permitted unless otherwise directed by the engineer.

The Contractor shall provide a sufficient number of vibrators to properly compact each batch immediately after it is placed in the forms.

d) Measurement and Payment

Measurements for the Concrete Works Class 25/20 of culvert walls and slabs shall be made in cubic metres for the walls and slabs actually constructed, measured from their dimensions shown on the Drawings. Payment for the Concrete Works (Class 25/20) of culvert walls and slabs shall be the full compensation for furnishing all materials of the concrete mixing, delivering, placing and curing the concrete, equipment and tools, labour and other incidental necessary for the completion of the work in accordance with the Drawings and these Specifications and as directed by the Engineer.

1742(E) CONCRETE WORKS (CLASS 30/20)

a) Description

This work shall consist of furnishing, mixing, delivering and placing of the concrete for the construction of the in-situ beams, deck slab and columns, in accordance with Standard Specifications and in conformity with the requirements shown on the Drawings.

b) Concrete Materials

i. Cement

Cement shall be of Portland type and shall conform to the requirements of **KS1725: 2001 CEM 1 42.5 N for ordinary Portland cement** or equivalent.

The Contractor shall select only one type or brand of cement or others. Changing of type or of cement will not be permitted without a new mix design approved by the Engineer. All cement is subject to the Engineers approval however, approval of cement by the Engineer shall not relieve the Contractor of the responsibility to furnish concrete of the specified compressive strength.

Conveyance of cement by jute bags shall not be permitted. Storage in the Contractors silo or store house shall not exceed more than two (2) months, and age of cement after submit to the Engineer for his approval the result of quality certificate done prepared by the manufacturer.

Whenever it is found out that cement have been stored too long, moist, or caked, the cement shall be rejected and removed from the project.

ii. Aggregates

Fine and coarse aggregates must be clean, hard, strong and durable, not susceptible to ASR and free from absorbed chemicals, clay coating, or materials in amounts that could affect hydration, bonding, strength and durability of concrete. The aggregates should conform to BS 882.

Grading of aggregates shall conform to BS 812.

Other requirements for aggregates are as follows:

Fine Aggregates

Fitness Modulus, AASHTO M-6	: 2.3 - 3.1
Sodium Sulphate Soundness, AASHTO T104	: Max. 10%loss
Content of Friable Particles AASHTO 112	: Max. 1% by weight
Sand Equivalent, AASHTO T176	: Min. 75

Coarse Aggregate

Abrasion, AASHTO T96	: Max. 405 loss
Soft Fragment and shale, AASHTO M80	: Max. 5% by weight
Thin and elongated pieces, AASHTO M80	: Max. 15%

iii. Water

All sources of water to be used with cement shall be approved by the Engineer. Water shall be free from injurious quantities of oil, alkali, vegetation and salt as determined by the Engineer.

iv. Admixture

Only admixture, which have been tested and approved in the site laboratory through trial mixing for design proportion shall be used. Before selection of admixture, the Contractor shall submit to the Engineer the specific information or guarantees prepared by the admixture supplier. The Contractor shall not exclude the admixture from concrete proportions.

v. Strength Requirements

Concrete Class 30/20 shall be used for bridge main beams (Girders), cross beams, deck slab abutments, piers pile caps and piles. The requirements of Concrete Class 30/20 are provided as follows unless otherwise the Engineer will designate any alteration:

Design compressive strength (28) days	: 30N/mm²
Maximum size of coarse aggregates	: 20mm
Minimum cement content	: 340kg/m³

Maximum cement content : 540kg/m³
Maximum water/cement ratio of 45% with slump of 80mm

c) Proportioning Concrete

The Contractor shall consult with the Engineer as to mix proportions at least thirty (30) days prior to beginning the concrete work. The actual mix proportions of cement, aggregates, water and admixture shall be determined by the Contractor under supervision of the Engineer in the site laboratory.

The Contractor shall prepare the design proportions which has 120% of the strength requirement specified for the designated class of concrete.

No Class of Concrete shall be prepared or placed until its job-mix proportions have been approved by the Engineer.

d) Concreting Work

i. Batching

Batching shall be done by weight with accuracy of;

Cement	: 1/2 percent
Aggregate	: 1/2 percent
Water and Admixture	: 1 percent

Equipment should be capable of measuring quantities within these tolerances for the smallest batch regularly used, as well as for larger batches. The accuracy of batching equipment should be checked every month in the presence of the Engineer and adjusted when necessary.

ii. Mixing and Delivery

Slump of mixed concrete shall be checked and approved against designated slump in these specifications. The time elapsing from when the water is added to the mix until the concrete is deposited in place at the site of the work shall not exceed thirty (30) minutes in case that the concrete is hauled in non agitative type trucks or carries, nor more than sixty (60) minutes in case that it is hauled in truck mixers or other carriers with agitators.

iii. Concrete in Hot Weather

No concrete shall be placed when the ambient air temperature is expected to exceed 33oC during placement operations.

iv. Concreting at Night

No concrete shall be mixed, placed or finished when natural light is insufficient, unless an adequate approved artificial lighting system is operated, and such night work is subject to approval by the Engineer.

v. Placing

In preparation of the placing of concrete, the interior space of forms shall be cleaned and approved by the Engineer prior to placing concrete. All temporary members except tie bars to support forms shall be removed entirely from the forms and not buried in the concrete. The use of open and vertical chute shall not be permitted unless otherwise directed by the Engineer. The Contractor shall provide a sufficient number of vibrators to properly compact each batch immediately after it is placed in the forms.

e) Measurement and Payment

Measurements for the Concrete Works Class 30/20 of beams, deck slab and columns shall be made in cubic metres for the walls and slabs actually constructed, measured from their dimensions shown on the Drawings.

Payment for the Concrete Works (Class 30/20) of beams, deck slab and columns shall be the full compensation for furnishing all materials of the concrete mixing, delivering, placing, finishing horizontal surfaces to class UF2 finish, and curing the concrete, equipment and tools, labour and other incidentals necessary for the completion of the work in accordance with the Drawings and these Specifications and as directed by the Engineer.

1742(F) CAST-IN-PLACE REINFORCED CONCRETE FRICTION PILING

a) Materials

Material used in the permanent foundation work shall comply with the requirements specified for the particular material under this clause.

(i) Rock (for rock fill)

Stones shall be hard, angular, natural or quarry stones of such quality that they will not disintegrate on exposure to water or weathering. Crushed stone used as stone fill shall originate from sound unweathered rock approved by the Engineer. The stones shall be free from soil, clay or organic material. Not more than 10% of the total volume of rock fill shall consist of stones with a mass of less than 0.5 times the specified mass and not more than 10% of the total volume of rock fill shall consist of stones with a mass of more than 5 times the specified mass. At least 50% of the total volume of rock fill shall consist of stones the mass of which exceeds the specified mass.

(ii) Granular fills

Granular material used for constructing the compacted granular fill shall be approved granular material of at least gravel subbase quality.

(iii) Sand fills

Sand used for filling the caissons shall be clean, hard sand free from lumps of clay or organic or other deleterious matter.

(iv) Temporary Pile casings

Temporary Pile casings shall have sufficient strength not to be distorted during the concreting process, and they shall be sufficiently watertight to prevent water leaking through the casing walls during the placing of concrete.

(v) Grouting

The grout shall consist of Portland cement, water and a plasticizing admixture (Sika PowerPlus or approved equivalent) to improve workability. The water/cement ratio shall be as low as possible consistent with the necessary workability.

(vi) Concrete

Concrete for cast-in-place piles shall be a rich coherent mix of high workability and cement content meeting all requirements for the specified class as provided below.

Portland cement concrete requirements

Max. size of Coarse Aggregate	**28 days compressive Strength (min)**	**Consistency (range in slump)**		**Maximum Permissible water/cement ratio water/cement ratio**
(mm)	(N/mm^2)	(mm)	(mm)	
20	30	150	180	0.5

Workability and slump requirements are given in the table below:

Piling Mix Workability	**Slump**		Typical Conditions of Use
	Minimum (mm)	Range (mm)	

A	75	75 - 150	Placed into water-free unlined or permanently lined bore of 600 mm diameter or over, or where casting level lies below temporary casing; reinforcement widely spaced , leaving ample room for free movement of concrete between bars

Piling Mix Workability	**Slump** Minimum (mm)	Range (mm)	**Typical Conditions of Use**
B	100	100 - 200	Where reinforcement is not spaced widely; where cut-off level of concrete is within temporary casing; where pile bore is water-free and the diameter is less than 600 mm
C	150	150 or more	Where concrete is to be placed by tremie under water or drilling mud or by pumping.

The Contractor shall submit the details of the proposed additive for the Engineer's approval with appropriate supporting data on laboratory trial mix results. The dosing of retarders shall ensure initial setting time of not less than five (5) hours corresponding to the ambient temperature at which the concreting is proposed to be carried out.

b) Founding

In consequence of possible variations of the anticipated founding conditions, the dimensions and founding levels specified or shown on the Drawings may have to be varied during construction in accordance to Conditions of Contract.

No bases, caissons or piles shall be founded unless authorised by the Engineer. Each founding level shall be accurately measured and recorded and agreed on. The term "founding level" used in these Specifications shall be deemed to have the following meanings in respect of:

i.Foundation fills

The surface of the in-situ material that has been prepared to receive foundation fills.

ii.Bases

The underside of the base.

iii.Piles

The underside of the under-ream, bulbous base or rock socket, the tip of the pile shoe or lower pile end, as may be relevant.

iv.Caissons

The underside of the cutting edge.

c) Foundation Piling

Piling of the foundations to the Four Bridges shall entail the following:

i. Cast-in-situ and properly vibrated reinforced concrete friction piles with circular cross sections as illustrated by the drawings

ii. Pile bore shall be excavated by rotary and/or percussive means using short augers, buckets, grabs or other boring tools to advance the open bore. Temporary casing shall be used to support the wall of the bore prior to concreting, subject to the approval of the Engineer

iii. All holes shall be drilled to the tip elevation determined from investigations and approved by the Engineer. Rejected boreholes shall be filled with Class 20/20 concrete by the Contractor at his own expense

iv. The Contractor shall take all such measures and provide such strengthening and bracing as is necessary and to the approval of the Engineer to ensure that the temporary casing is not disturbed, overturned, over-stressed or under-eroded in any condition and shall be such that it will not disturb the freshly cast concrete and/or permanent lining and/or reinforcement

v. The temporary casing shall be free from significant distortion and/or shall be uniform cross-sections throughout each continuous length. During concreting they shall be free from encrusted concrete or any internal projections which might prevent the proper formation of the pile

vi. The piles shall be cast in pre-bored cavities with retractable steel tube linings

vii. The casting process shall be carried out in lifts of not more than 900mm

viii. After each pour, the casing shall be retracted allowing for an overlap of 150mm between the casing and the concrete

ix. The concrete shall be thoroughly vibrated before the next lift is poured

d) Code of Practice

All workmanship, materials, tests and performance in connection with the piling work are to be in conformity with the B.S. Code of Practice CP 8004: Foundations.

e) Setting Out

The Contractor will be responsible for setting out the substructure bases and the positions of piles and shall maintain the setting out of the substructure bases, whilst carrying out his work. No separate payment shall be made for this work and the Contractor must make allowance for this in his rates for piling.

f) Lengthening of Piles

Where it becomes necessary to lengthen a pile at the top, the Contractor shall submit his proposal to the Engineer for his approval.

g) Construction Requirements

The diameter and length of reinforced concrete piles shall be as detailed by the Consultant as shown on the shop drawings and will not have permanent lining. Drawings shall be submitted to the Engineer for approval. Concrete shall meet all the specified requirements for Class 30/20.

Cover for the reinforcement of at least 75 mm thickness shall be provided in all cast in-situ bored piles constructed over water or very soft ground, or as directed by the Engineer.

h) Position and Cut-Off Levels of Piles

All piles are to be formed to within 75 mm of the position shown on the drawings, and no pile shall deviate from the vertical alignment by more than one half (0.5) degree.

If any pile deviates from the required position by more than this amount, the Contractor will be required to provide two further piles free of charge, or alternatively, will be required to pay the additional cost of enlarging the pile caps.

No method of forcible correction will be permitted.

i) Obstructions

Should the Contractor encounter, in the boring of piles any unnatural obstructions which cannot be removed or displaced by· normal methods, he shall immediately inform the Engineer who may order the obstruction to be removed, payment being made by Day works Rates, or the pile to be relocated.

If a bored pile is to be relocated, the hole for the original pile shall be cleaned out and backfilled, to the satisfaction of the Engineer, with Class 30/20 concrete to the level approved by the Engineer.

The Contractor will be paid for the work at the same rate as for the good piles, the payment length being from the cut-off level directed by the Engineer to the base of the hole.

In the event that the Engineer orders the obstruction to be removed, then the standing time for the piling rig in excess of two hours from the time of informing the Engineer of the obstruction shall be paid by the rig hour rate. This rate shall be deemed to cover all the costs incurred by the rig standing. Standing time less than 2 hours from the time of informing the Engineer of the obstruction will not be paid for.

j) Preparation for Concreting

The Contractor shall not proceed with the concreting of the pile until the Engineer gives specific approval to do so after satisfying himself of the following:

i. Adequacy of the Contractor's equipment and arrangement.

ii. Proficiency of his personnel.

iii. Cleanliness of the borehole, and

iv. Contractor shall have suitable lighting arrangements at all times for the Engineer to inspect the entire length of the shells, pipe or hole before placing the reinforcing steel or concrete.

Prior to concreting a pile, a sample of slurry shall be taken from the base of the borehole using an approved sampling device and its specific gravity shall be determined and submitted for the Engineer's approval.

k) Placing of Concrete

- The tremie shall be of not less than two hundred and fifty (250) mm diameter made of watertight construction.

- The means of supporting the tremie shall be such as to permit the free movement of the discharge end of the concrete.

- The tremie pipe shall be fitted with a travelling plug, which shall be placed at the top of the pipe before charging the tremie pipe with concrete, as a barrier between the concrete and water, so as to prevent water entering the tube and mixing with the concrete

- The tremie shall be carefully lowered into the borehole, so that the end of the tube shall rest at about one hundred and fifty (150) mm above the bottom of

the borehole, with reinforcement; the borehole, and the hopper end of the tremie tube shall be filled with concrete as aforesaid. It shall be slightly raised, so that when the concrete reaches the bottom it flows out of the lower end of the tube and fills the bottom of the borehole.

- Thereafter, the rate of withdrawal of the tremie shall be gradual so as to ensure the end of the tremie pipe is always one and a half (1.5) metres below the top of the concrete in the borehole. An allowance shall be made for the top five hundred (500) mm of concrete in the borehole during concreting being unsatisfactory.

- When the next batch is placed in the hopper, the tremie shall be slightly raised but not out of the concrete at the bottom, until the batch discharges to the bottom of the hopper. This operation shall be controlled by calculating the volume of concrete required to fill one linear meter of pile and then by measuring the rate of withdrawal of the tube corresponding to the volume of the batch in the hopper. The flow shall then be retarded by lowering the tube.

- The depth of the concrete in the borehole shall be measured at intervals to keep a. constant check that the tremie pipe bottom is immersed in concrete.

- Concreting in each pile shall be carried out in a continuous operation without stoppages until the pile has been completed.

- The Contractor shall take precautions to ensure that the concrete is free of voids and shall prevent the entry of water and/or collapse of soil into concrete.

- Concreting shall continue until the concrete has reached an elevation of five hundred (500) mm higher than the designated pile cut off level shown on the shop drawings or as otherwise directed by the Engineer.

- The concrete shall be placed in one continuous 'operation from tip to cut-off elevation and shall be carried out in such a manner as to avoid segregation. The method of placing the concrete and the consistency (slump) shall be to the satisfaction of the Engineer.

- No shell or pipe shall be filled with concrete until all adjacent shells, pipes or piles within a radius of three (3) m or five (5) times the pile diameter: whichever is greater, have been driven to the required resistance.

(i) Withdrawal of temporary casing

If the method of construction involves withdrawal of temporary casing as concreting proceeds a sufficient head of concrete shall be maintained above the bottom of the temporary casing to ensure that no voids are formed within the pile and to prevent the entry of ground water and to prevent the collapse of soil into the concrete.

If such entry or collapse should occur, the temporary casing shall be re-driven before the concrete has set and all defective concrete shall be removed or the construction of the pile shall be abandoned, in which case the provision of the clause herein which refers to "Defective Piles" shall apply.

The withdrawal of the temporary casing shall be carried out before the adjacent concrete has taken its initial set.

The method and timing of withdrawal must be such as to ensure that the space between the pile and the surrounding ground shall be filled with concrete.

(ii) Cutting of Piles

Tops of piles shall be embedded in the concrete footing as shown on the structural drawings.

Concrete piles shall, when approved by the Engineer, be cut off at such a level that at least 50 mm of undamaged pile can be embedded in the structure above, but not more than 150 mm, unless otherwise specified or directed by the Engineer. If a pile is damaged below this level, the Contractor shall repair the pile to the satisfaction of the Engineer. The longitudinal reinforcement of the piles shall be embedded in the structure above to a length equal to at least (40) times the diameter of the main reinforcing bars.

When· the cut-off elevation for a cast-in-place concrete pile is below the elevation of the bottom of the pile cap, the pile may be built up from the butt of the pile to the elevation of the bottom of the cap by means of a reinforced concrete construction method, to be submitted to the Engineer for approval

(iii) Defective Piles

Any pile completed with defects such as damage during casting in-situ, placed out of its proper location, incapable or partially capable of permanently carrying the load which it is intended to carry, driven below the elevation fixed by the Engineer, due to the immature setting of the concrete in the pile or due to cavity/collapse of the borehole fully or partially, or due to any cause of which the Engineer shall be the sole judge to determine, shall be corrected at the Contractor's expense by one of the following methods approved by the Engineer

- A second pile shall be driven or cast adjacent to the defective pile
- The Contractor shall undertake such additional tests/works as the Engineer may specify to provide additional foundations to supplement the defective piles and so modify the structure to be supported as to ensure that load will be transferred safely to the additional foundations of existing pile. The Contractor shall be responsible for the cost of such additional functions and tests and/or of the extra work carried out in such modifications to the

structure.

- A concrete pile shall be considered defective if it has a visible crack or cracks, extending around the perimeter of the pile, or any defect, which, in the opinion of the Engineer, affects the strength or service life of the pile.

- When a new pile is driven or cast to replace a rejected one, the Contractor at his expense, shall enlarge the footing as deemed necessary by the Engineer.

(iv) Pile records

The Contractor shall keep records of the piles driven or installed. A copy of the record shall be given to the Engineer within two (2) days after each pile is driven. The record form to be used shall be approved by the Engineer.

On completion of the piling for each structure, the Contractor shall deliver to the Engineer a drawing recording the exact location and the final depth (tip elevation) of all piles.

l) Site Supervision

Full details of the Personnel in charge of the piling operation, including their qualification and experience, shall be submitted by the Contractor to the Engineer for his approval. He shall also retain an approved and competent English-speaking foreman on the Works, while piling is in progress, and shall keep at the Site of the Works copies of all the drawings, Specifications, instructions and a complete log and records of all piles formed or driven with details of the set obtained, if any, and the actual length of each completed pile. These shall be available to the Engineer for inspection at all times. The Contractor shall provide necessary assistance to the Engineer to enable him to keep a similar record.

m) Measurement and Payment

For cast in-situ driven and bored concrete piles of specified diameter, the measurement shall be the length in meters of the accepted pile that remains in the finished structure complete in place.

The contract unit rate for cast in-situ driven and bored piles shall include the cost of empty boring, concrete, temporary casing and all other items as specified in this specification.

1743 - CONCRETE BLOCK PAVING

17A/01 General

This section includes:

- Interlocking concrete paver units (manually installed)
- Bedding and joint sand
- Edge Restraints

17A/02 Delivery, storage and handling

Delivery; Materials must be delivered materials in manufacturers original, unopened, undamaged containers packaging with identification labels intact. Concrete pavers are to be delivered to site in steel banded or plastic wrapped packaging capable of transfer by fork lift or clamp lift.

Storage and protection; Materials must be stored and protected such that they are kept free from mud, dirt and other foreign materials. Concrete paver cleaners and sealers are to be stored as per manufacturer's instructions.

17A/03 Interlocking concrete pavers

Precast concrete blocks shall comply with the requirements of BS EN 1338

Precast concrete paving blocks shall be chamfered and shall conform to BS EN 1338 and the shape, dimensions, tolerances, colors and performances and classes required are as described below.

Shape	Rectangular
Sizes	200mm x 100mm x 100mm
Colour	Grey
Pattern	Heringbone

Precast paving blocks shall be laid in accordance with BS 7533-3.

17A/04 Edge restraints

Edge restraints shall be provided around the complete area of blocks.

Temporary restraints must be provided to prevent paving units moving during construction or for areas that cannot be completed for some time.

Edge restraints may be formed by existing structures, kerbs, channels, edgings, blocks set on concrete, etc. Edge restraints shall be capable of preventing the loss of laying course sand and the sideways movement of blocks, and of supporting anticipated traffic loads.

17A/05 Bedding and jointing material

The laying course material shall comply with the grading requirements specified below.

Sieve size (mm)	Percentage by mass passing (%)	
8	100	100

Sieve size (mm)	Percentage by mass passing (%)	
6.3	95	100
4	85	99
0.5	30	70
0.063	0	1.5

The jointing sand shall be clean, hard, non-plastic, and free from deleterious matter and silt, symmetrically shaped, natural or manufactured from crushed rock.

Stone dust, mason dust and limestone screenings shall not be used. The jointing material (sand) shall conform to the grading requirements as specified below.

Sieve size (mm)	Percentage by mass passing (%)
2	100
1	85 – 99
0.5	55 – 100
0.063 (fines content)	1– 2

17A/06 Sub – layer for pavement

The Contractor shall ensure that the sub-grade, sub – base and base materials and preparation shall comply with the requirements of the standard and special specifications.

The surface levels for each layer shall not deviate from the design levels specified and tolerances stated below (16A/08).

The finished base sub-layer shall have, immediately before overlaying, a close-textured surface, be free from compaction planes, ridges, cracks or loose material and show no movement under the compaction plant. The contractor shall proceed with the laying of bedding sand and interlocking concrete pavers only after the sub-grade, sub–base and base conditions are approved and accepted by the Resident Engineer/Supervisors Representative.

Any drainage provided within the sub-layer shall be completed in conjunction with the sub-layer construction before the laying course is placed. Drainage inlets shall be protected with filter fabrics to prevent ingress of laying course material.

17A/07 Laying

Paving units

Concrete block paving units shall not be installed during heavy rain or on saturated sand.

Concrete block paving units shall be placed either mechanically or by hand, on the prepared laying course in the nominated pattern. String lines will be used to check alignment of paving blocks joint (bond) lines shall not deviate more than +/- 15mm in 15m. The order of laying which maintains an open face should be used. After final compaction the surface course must conform to the surface tolerance levels.

Cutting and Trimming

Cut blocks should only be incorporated at the perimeter of the pavement, at intermediate restraints and around obstacles. Sizes smaller than one quarter of the original plan size should be avoided. Blocks should be trimmed to fit after laying full paving blocks.

Joint filling

Prior to commencing the joint filling process all debris must be swept off the pavement surface and the following checked for compliance:

surface level tolerances	± 6mm
flatness of the pavement	10 mm under 3m straight edge
difference in levels between blocks	2mm
joint width	2mm to 5mm and consistent
joints are correctly aligned	+/- 15mm in 15m
there are no damaged or cracked blocks	

Necessary corrective action must be taken to ensure the pavement conforms to the specification.

Jointing material shall be brushed into the joints to completely fill the joints, followed by two or more applications of the vibrating plate compactor over the surface course. Additional jointing material shall be added to top up the joint as necessary after compaction.

No joints should be left unfilled and uncompacted at the completion of a day's work, except for areas less than 1 m from an unrestrained edge.

Compaction

A plate compactor with minimum plate area of 0.25SM capable of 75KN per unit area of plate at a frequency of 65 – 100 Hz shall be used to bed the blocks into the laying course by making at least two passes.

Prior to compaction all debris must be removed from the surface. Compaction should not occur within 2m of unrestrained edges of paving units.

17A/08 Tolerance of surface level and surface regularity

The maximum permissible deviations from the design level of the different layers are

Sub – base	+5mm, -10mm
Road base	+5mm, -10mm
*Laying course (bedding sand)	40mm thickness, -5mm, +10mm
Surface course	± 6mm

The bedding sand must not be used as a leveling course to fill voids in the base surface as this will lead to subsequent settlement. Before commencement of the block laying, the preceding work i.e. base construction and edge restraints shall be checked to ensure they are in compliance with the tolerances stated above. Particular attention shall be paid to the base levels and tolerances to ensure that when the block layer is completed the sand laying course nowhere exceeds 50mm in thickness.

The absolute maximum thickness of bedding sand layer shall be 50mm. Where this thickness is exceeded the Contractor will scarify, add material, shape and re-compact the base layer at his own expense to ensure compliance.

Where blocks are laid abutting drainage channels and outlets for pedestrian areas or fittings, the surface of the blocks shall be between 3mm and 6mm above the channel or fitting.

Where blocks are laid abutting gullies or drainage fittings, the surface of the blocks shall be between 5mm and 10mm above the gully grating and frame.

17A/09 MEASUREMENT AND PAYMENT

Item: Interlocking concrete block paving

Unit: m^2

Interlocking block paving shall be measured by the square metre of the finished pavement area.

The rate shall include for provision of all materials, including precast concrete paving blocks, bedding sand, edge restraints, cutting & shaping of concrete blocks around the periphery of the pavement area, as necessary, to comply with the construction drawings.

The rate shall also include for compaction of bedding and all measures required to produce the finished paved areas within the tolerances specifie

SECTION 19 – STRUCTURAL STEEL

1901 APPLICABLE STANDARDS.

The latest applicable corresponding standards shall be applicable in lieu of those indicated in the Standard Specifications. In particular the following standards shall be applicable:

a) Steel

EN 10021, EN 10025-1, EN 10025-2
EN 10025-3
EN 10025-4
EN 10029 EN 10034 EN 10051
EN 10056-2 EN 10163-1
EN 10163-2 EN 10163-3
EN 10204 BS 4-1

(b) Bolts, Anchor Rods, Nuts and Washers

EN ISO 898-1
EN 20898-2
EN 14399-1, EN 14399-2
EN 14399-4
EN 14399-6
EN ISO 4017
EN ISO 4034, EN ISO 4032
DIN 7989-1
EN ISO 4026 DIN 976-1 DIN 125 DIN 529

(c) Galvanizing

EN ISO 1461, EN ISO 10684

(d) Elastomer

EN 1337-3
Structural bearings - Part 3: Elastomeric Bearings.

SECTION 20 - ROAD FURNITURE

2001 ROAD RESERVE BOUNDARY POSTS

Road reserve boundary posts shall be provided as directed by the Engineer and in compliance with Standard Specification clause 2001. They shall be placed at 100m intervals along the boundary of the road reserve.

2003 EDGE MARKER POSTS

Edge marker posts shall be Verge Master MK 111 plastic posts manufactured by Glasdon Ltd. of Blackpool UK or equivalent approved by the Engineer. They shall be provided as directed by the Engineer and in compliance with the requirements of Standard Specification clause 2003

2004 PERMANENT ROAD SIGNS

Permanent Road Signs shall be provided as directed by the Engineer and in compliance with the requirements of the "Manual for Traffic Signs in Kenya" Part II and standard Specification clause 2004.

The posts for the signs shall be cylindrical galvanised wrought iron tubes of minimum 75mm diameter and vandal-proofed by in-filling with concrete class 15/20.

The sign plates shall be made from approved metal or plastic sheet 3mm thick and vandal-proofed by the drilling of 3mm diameter holes at 100mm centres.

The rate inserted for the signs shall include for all the costs of complying with this clause.

2004B EXISTING ROAD SIGNS

Where directed by the Engineer, the Contractor shall take down road signs including all posts, nuts, bolts and fittings, and remove and dispose of the concrete foundation and backfill the post holes. The signs shall be stored as directed by the Engineer.

Measurement and payment for taking down road signs shall be made by the number of signs of any type and size taken down, cleaned and stored as directed.

2005 ROAD MARKING

Paint for road marking shall be internally reflectorized hot applied thermoplastic material in accordance with Clause 219 of the Standard Specification complying to BS 3262 and BS 6088.

The rates inserted in the Bills of Quantities for road marking shall include for prior application of approved tack coat.

2005A RAISED PAVEMENT MARKERS – ROAD STUDS

Add the following as new add-on Clause:

MATERIAL

Road studs are moulded of Acrylonitrile Butadiene Styrene (ABS) conforming to ASTM Specification D1788 – 68, Class 5-2-2 shell filled with inert, thermosetting compound and filler. The lens portion of the marker is of optical menthyl methacrylic.

CONSTRUCTION

The Road Stud shall be constructed of high impact ABS containing a multi-biconvex glass lens reflector system. It shall be of monolithic construction, and not less than 98.5mm2. The height of the marker shall not exceed 17mm and the underside shall contain a non-honeycomb base (flat).

REQUIREMENTS

The markers shall conform to the following requirements:

a) Colour

Shall be white, yellow or red as specified and the Retro – reflectance values should conform to the testing procedures of ASTME 809.

b) Impact Resistance

The marker shall not crack or break when tested using a 1000gram weight from a height of 1 metre. (ASTM D 2444) or BS 3900 Part E3.

c) Resistance to Water Penetration

There shall be no water penetration behind the lens after submerged in a water bath at 70 + 50oF for 10 minutes. And it should still meet the reflectance Requirement as stipulated by BS 998.

d) Heat Resistance

Shall comply with the initial brightness as per BS 873 Part IV of 1978

e) Night Visibility

The marker shall be bright as per BS 873 Part IV of 1978

f) Compression Resistance

There shall be no cracking sound at a pressure lower than 25 tones as per BS 873 Part IV of 1978.

g) Corrosion Resistance

After immersing a sample of Road stud in a solution containing 30g/1 of sodium chloride for thirty (30) days, there shall not be any signs of corrosion, (BS 998).

***Note**: These markers are intended for application directly to pavement surfaces and are compatible with raised pavement makers. These adhesives should be of high quality and tested for conformance to customer requirements.*

ADHESIVES

i) They shall be of Resin Type - Epoxy of 2 different components Part 1 and 2 i.e. Adhesive and Reactor without any volatile solvents in both.

ii) Pot life: not less than 20 minutes at 20^{o}C

iii) Rotational cure time: between 20 and 30 minutes at 20^{o}C

iv) Hard cure: Between 40 and 60 minutes at 20^{o}C

APPLICATION INSTRUCTION

Preparation of Pavements

Make sure that the road surface is absolutely dry and free of oil and grease**.**

Mixing of Adhesive

Pour component B into the container of component A. Stir mixture by hand with a wooden or metal stick until uniform Grey Tint without a striate is obtained.

Installation

Pour the mixture on to the underside of the road stud. Then place the road stud firmly on the road surface. Adhesive should stand out for about 5mm to 10mm over the edges of the stud.

Protection from the Traffic

Protect studs from traffic for 2 hours until the adhesive has properly hardened. Try by touching the adhesive.

Number of studs needed for laboratory tests

In order to approve a particular type of road stud, 4 sample road studs of each colour shall be submitted.

2006 GUARDRAILS

Guardrail posts shall be concrete 210 x 210 mm set vertically at least 1.2m into the shoulder as per the drawings and as directed by the Engineer.

Beams for guardrails shall be "Armco Flexbeam" or similar obtained from a manufacturer approved by the Engineer.

“Swareflex” ART 3240 or similar approved guardrail reflectors two way reflective one side red and another white shall be installed on the flex beams every 4m.

The rate inserted shall include for provision of the flex beams, posts, Swareflex reflectors, flex beam end bits and installation in accordance with the standard specifications and drawings.

2007 KERBS

(a) Vertical Joints

Vertical joints between adjacent kerbs shall not be greater than 10 mm in width and shall mortar consisting of 1:3 cement: sand by volume.

(b) Transition between flush and raised kerbs

The transition between flush and raised kerbs (e.g. at bus bays) shall be termed as ramped kerbs and shall occur within a length of 2.0m

2008 KILOMETRE MARKER POSTS

Kilometre marker posts shall be provided as directed by the Engineer and in compliance with Standard Specification Clause 2008.

2011 BOLLARDS

Where directed by the Engineer, the contractor shall provide and install class 20/20 200mm diameter reinforced concrete bollards concreted 300mm into the ground.

2012 RETRO-REFLECTIVE ROAD STUDS “Cats eyes”

All retro-reflective road studs shall comply with BS 873: Part 4. The Contractor shall provide details and the manufacturer’s certificate of the studs he proposes to use in the works to the Engineer for approval. The studs shall be installed at locations shown on drawings or instructed by Engineer.

The studs are moulded of Acrylonitrile Butadiene Styrene (ABS) conforming to ASTM Specification D1788-68, class 5-2-2 shell filled with inert, thermosetting compound and filler. The lens portion of the marker is of optical menthyl methacrylic.

The road stud shall be constructed of high impact ABS containing a multi-biconvex glass lens reflector system. It shall be of monolithic construction, and not less than 98.5mm2. The height of the marker shall not exceed 17mm and the underside shall contain a non-honeycomb base (flat).

The colours shall be white, yellow or red and the retro-reflectance complying to ASTME 809. The impact resistance shall be to ASTM D 2444 or BS 3900 part 3. The studs shall be resistant to water penetration and corrosion resistant to BS 998. The adhesive shall be of resin type Epoxy of part 1 (adhesive) and part 2 (reactor) without any volatile solvents in both and have pot life of not less than 20mins at 20°C.

2013 ROAD HUMPS

Where shown on the drawings or directed by the Engineer, the Contractor shall provide, place, trim, shape and compact to line and level road humps.

Road humps shall be constructed in asphaltic concrete or concrete class 20/10 to the dimensions shown on the drawings or directed by the Engineer.

Road humps should be painted with white thermoplastic paint of 45 ° diagonal strips as shown on the drawings.

2014 FLAT TOPPED ZEBRA CROSSING

Where shown on the drawings or directed by the Engineer, the Contractor shall provide, place, trim, shape and compact to line and level flat-topped zebra crossing

2015 SERVICE DUCTS

Where instructed by the Engineer, the Contractor shall construct services ducts beneath the carriageway and shoulders/footpaths. The ducts shall consist of 150 mm PVC ducts. The minimum clearance between the road formation and the top of the duct surround shall be 100 mm.

2016 DUCT MARKER POSTS

Duct markers shall be installed by the Contractor at each end of the services ducts provided under clause 2015. The duct marker shall be located immediately beyond the outer edge of the shoulder or footpath and as close to the line of the duct as physical constraints permit. Where several ducts are laid side by side, only one duct marker post will be necessary. The duct marker posts shall be constructed as shown on the Drawings and shall be clearly and durably marked on the side facing away from the road. The marker post shall be inscribed “X ducts” where X is the number of ducts laid in the group marked by the marker post.

2017 CULVERT MARKER POSTS

Culvert markers shall be installed by the Contractor at each end of culverts constructed along the project road. The culvert marker shall be located immediately beyond the outer edge of the shoulder or footpath and as close to the line of the culvert as physical constraints permit. Where several culverts are laid side by side, only one culvert marker post will be necessary. The culvert marker posts shall be constructed as shown on the Drawings and shall be clearly and durably marked on the side facing away from the road. The marker post shall be inscribed "X culverts" where X is the number of culverts laid in the group marked by the marker post.

2019 PLOT BOUNDARY BEACONS

Where shown on the Drawings or instructed by the Engineer, the Contractor shall construct plot boundary beacons. The plot boundary beacons shall be 1.2m long reinforced concrete post with 150x150mm cross-section founded on 450x450x350 mass concrete as shown on the drawings.

2020 CHANNEL BLOCKS

The Contractor shall provide, lay and joint 125x100mm channel blocks to roads, footpaths and shoulders as shown on the Drawings or instructed by the Engineer.

2021 MEASUREMENT AND PAYMENT OF ITEMS 2012 TO 2020

Item: Reflective road studs

Unit:No.

Road studs shall be measured by the number instructed. The rate shall include for the cost of provision and transport of all materials, preparation of the road surface, application of adhesives and full compliance with the manufacturer's instructions.

Item: Road humps

Unit:m

Road humps shall be measured by the length installed. The rate shall include for provision, installation and compaction to the satisfaction of the Engineer and removal of surplus material.

Item: Service ducts

Unit:m

Service ducts shall be measured by the metre as the length of duct installed as per the Engineer's instructions. The rate shall include for providing all materials, excavation, installation of PVC ducts, backfilling to the formation level, compaction, all in accordance with clause 2015.

Item: Duct Marker Post

Unit: No

Duct marker posts shall be measured by the number instructed. The rate shall include for provision and installation of posts, all excavation and backfill, compaction to the satisfaction of the Engineer.

Item: Culvert marker post

Unit:No

Culvert marker posts shall be measured by the number instructed. The rate shall include for provision and installation of posts, all excavation and backfill, compaction to the satisfaction of the Engineer.

Item: Bollards:

Unit:No

Bollards shall be measured by the number instructed. The rate shall include for provision and installation of bollards, all excavation and backfill, compaction to the satisfaction of the Engineer.

Item: Plot boundary beacons

Unit: No

Plot boundary beacons shall be measured by the number instructed. The rate shall include provision, transport of materials, excavation, erection of beacons and backfill, compaction to the satisfaction of the Engineer.

Item: Channel blocks

Unit**:m**

SECTION 21A - MISCELLANEOUS BRIDGE WORKS-PILING

2101 WATERPROOFING TO STRUCTURES

Add the following to Clause 2101 of the Standard Specification:

For part of the structure in contact with earth, apply one coat of primer before applying two coats of waterproofing material.

The primer shall conform to AASHTO M121-79 (1993). Waterproof cement shall be of proven quality and from a reputed supplier to be approved by the Engineer.

2102 BRIDGE BEARINGS

Add the following

The bridge bearings shall be laminated elastomeric bearings to BS EN 1337-3

Structural bearings - Part 3: Elastomeric Bearings.

The contractor shall have the source of the bearings approved by Engineer and shall provide the engineer with a sample as shall be instructed for destructive testing. Upon importation of the bearings the engineer shall do random sampling for another sample for destructive testing to confirm the quality of the bearings to be used on the bridge.

The contractor shall make provision for the samples and their testing in his rates for other bearings since no separate payment shall be made for the test samples and their testing.

2107 WEEP-HOLES

Add the following to Clause 2107 of the Standard Specification:

100 mm diameter PVC pipe of approved quality shall be used for weep holes.

2108 MEASUREMENT AND PAYMENT

Add the following to Clause 2108 of the Standard Specification:

(c) Unit of measurement for movement joints and sealants shall be in running meter.
(e) Unit of measurement for surfacing to bridges shall be in square meter.

Followings are **ADDITIONAL SPECIFICATIONS**

2109 EXPANSION JOINTS

2109.1 DESCRIPTION

This work shall consist of fabrication and placing of expansion joints as indicated on the drawing and conforming to these specifications or as directed by the Engineer.

2109.2 GENERAL

The expansion joints shall be designed and duly approved by the Engineer. They shall cater for the expected movement and rotation of the structure at the joints and provide smooth riding surface. They shall also be easy for inspection, maintenance and replacement.

Expansion joints shall be robust, durable, watertight and replaceable. Site fabricated expansion joints shall be prohibited. Expansion joints shall be obtained by the Engineer either directly or through the Contractor from approved manufacturers and be of proven type.

For bridges the bridges with spans above 10 m, an alternative specification of sliding steel plate joint or filled joints with copper plates may also be adopted if approved by the Engineer, apart from elastomeric expansion joint of slab seal or strip seal type.

Vehicular traffic shall not be allowed over expansion joints after its construction for such period as may be determined by the Engineer.

Proprietary type deck joints offered by the Contractor in lieu of the type specified shall comply in all respects with the manufacturer's specifications and meet the required range of movements and rotations and be fit for the purpose of ensuring satisfactory long term performance in the bridge.

Where alternative type proprietary deck joints are proposed by the Contractor, the following information shall be provided:

- Name and location of the proposed manufacturer
- Dimensions and general details of the joint including material specifications, holding down bolt or anchorage details and installation procedures
- Evidence of satisfactory performance under similar environmental conditions of similar joints being produced by the manufacturer
- Any acceptance of alternative types will be at the sole discretion of the Engineer.
- Such deck joints shall be installed in accordance with the manufacturer's recommendations and to the general requirements of this Specification.
- No expansion joint shall be provided only for the width of the carriageway. It shall follow the profile including the kerb and the footway and facia, if provided. The type of expansion joint for the latter may be made different from that used for the carriageway expansion joint.

2109.3 REQUIREMENTS

i. Criterion

The requirement criterion will be separately applicable for the expansion joint proper and

the transition zone of attachment to the deck.

ii. Types of Performance

There are two types of performance requirements for the expansion joint proper namely from the necessity of the bridge and from the road users such as man, animal and vehicle.

iii. Performance Requirement with Respect to Bridges

The expansion joint shall:

Withstand the imposed load including the impact load from live load and other sources

Allow expansion and contraction movement due to temperature, creep, shrinkage, pre-stressing and structural deformations

Permit relative rotation in elevation and plan due to the causes as noted above,

- Be waterproof

  Bridge deck expansion joint seals play a critical role in preventing the degradation of the structural components of the bridge system. Without effective joint seals, water passes through the bridge deck and works harmfully to corrode steel components and cause deterioration of the concrete. Rainwater gathers various corroding additives from the atmosphere and also from the carriageway.
- Ensure sealing

  In case bridge deck joints are not sealed, apart from loss of waterproofing, grit and other forms of road debris may enter the joint. Debris, when impacted with the joint can seriously restrict the movement instead of facilitating the same. In the case of proprietary joints being accepted for adoption, the sealing shall be as directed by the Engineer.
- Ensure long life by being resistant to corrosion
- Be easy to install
- Be easy to maintain

  Replace ability of expansion joint shall be one of the basic criteria for selection of the type of expansion joint.
- Be resistant to the materials likely to collect/spill over the deck in its normal service.

iv. Performance Requirement with Respect to User

The expansion joint shall:

- Provide smooth continuity at the top of the deck for riding comfort
- Be of skid resistant surface
- Re- non-damaging to the rubber tyre
- Make minimum noise during vehicular crossing
- Ensure that animal paws and hooves should not get entangled where bridges are used

by animal drawn traffic

- Permit passing of bullock cart steel tyre for bridges where bullock carts ply, and
- Look good aesthetically.

v. Performance Requirement for Transition Zone

This is the zone of connection of joint assembly and the adjoining deck.

The expansion joint shall:

- Permit transfer of generated forces without distress without getting uprooted. The purpose will not be served if the bonding is with the wearing coat only. Anchorage must be provided with the deck structural element.
- Ensure that surface in the transition zone stays undisturbed during long term service.

2109.4 STEEL PLATE SLIDING EXPANSION JOINTS

In this type of buried joint, the wearing coat shall be made continuous over the joint. The other alternative shall be to keep a gap in the wearing coat which is filled up with a seal and filler, to be provided in extremely hot areas.

Materials for steel plates shall conform to Section 1900 of the Standard Specification. The exposed metallic components shall be galvanised or coated with approved anti-corrosive paint. The thickness shall be 20 mm or so for obtaining satisfactory performance.

Plates shall be placed to the line, grade and expansion gap shown on the drawings with any adjustment required for temperature. Particular care shall be taken with the top of the plates.

Plates shall be firmly held in place during concreting by methods approved by the Engineer.

Any temporary bolts or other fixings, which prevent relative movement of the adjacent parts of the joint, shall be removed as soon as the concrete has set sufficiently to hold the expansion plates in their correct positions. In any case, temporary bolts or other fittings shall be removed within 6 hours of placing concrete unless otherwise directed by the Engineer.

Care shall be taken to prevent damage to expansion joint plates or its coating. If any damage occurs, the plates and coatings shall be restored by the Contractor to the satisfaction of the Engineer. Plates shall be free of oil, rust, loose paint or other similar material before coating.

2109.5 FILLER JOINTS

The components of this type of joint shall be at least 2 mm thick corrugated late placed slightly below die wearing coat, 2D mm thick compressible board, to protect the edges. Twenty (20) mm thick pre-moulded joint filler shall fill the gap up to die top level of the wearing coat sealed with a joint scaling compound.

The material used for filling expansion joint shall be bitumen impregnated felt, elastomer or any other suitable material, as specified on the drawings. Impregnated felt shall conform to the requirements of IS: 1838, and shall be approved by the Engineer. The joint filler shall

consist of large pieces and assembly of small pieces to nuke up the required size shall be avoided.

Expansion joint materials shall be handled with care and stored under cover by the Contractor to prevent damage. Any damage occurring after delivery shall be made good to the satisfaction of the Engineer and at the expense of the Contractor.

Joint gaps shall be constructed as shown on the drawings. Surfaces of joint grooves shall be thoroughly cleaned with a wire brush to remove all loose materials, din and debris, then washed or jetted out.

Pre-moulded expansion joint filler shall not be placed in position until immediately prior to the placing of the abutting material. If the two adjacent surfaces of the joint can to be placed at different times, this type of joint filler shall not be placed until the second face is about to be placed.

Sealants shall be installed in accordance with the manufacturer's recommendations and all appropriate requirements for joint face priming.

Sealants shall be finished approximately 3 mm below the upper surfaces of the joint

Joint materials spilt or splashed onto finished surfaces of the bridge during joint filling operations shall be removed and the surfaces made good to the Engineer's approval.

No joint shall be sealed until inspected by the Engineer and approval is given to proceed with the work.

2109.6 ELASTOMERIC SLAB SEAL EXPANSION JOINT

i. Materials

Steel inserts shall conform to IS 226. Use of any other materials like fibre-glass or similar material shall not be permitted.

Elastomer for elastomeric slab unit (ESU) shall be compounded to give hardness IRHD 60 ± 5 subject to the following additional stipulations:

Chloroprene (CR) only shall be used in the manufacture of elastomeric expansion joints. No reclaimed/natural rubber or vulcanised wastes shall be used.

The chloroprene material used in the manufacture of elastomeric (expansion joints) shall be Neoprene WRT, Bayprene 110, Skyprene B5 or Denka S-40V. Chloroprene content of the compound shall not be lower than 60% by weight. The ash content shall not exceed 5 per cent (as per tests conducted in accordance with ASTM D-297.

EPDM and other similar candidate elastomers for expansion joints shall not be permitted.

Elastomeric plugs and spacer bars shall be marked with centre-to-centre distance of fixing holes.

Fixing bolts and nuts shall be made of stainless steel.

Anchor bars comprising hooked anchor stiffeners shall be welded with lower steel inserts and sinusoidal anchor bars shall be welded with horizontal leg of the edge steel inserts. The elaborate anchoring arrangements of steel inserts shall be permanently welded/tied with the steel reinforcement.

ii. Fabrication

Steel inserts shall be grit blasted and provided with epoxy paint.

Edges of reinforcing steel sections shall be rounded.

Expansion joints shall be fully moulded to the required size in one single vulcanising operation including the encasing layers as integral and homogeneous part.

Tolerances of fabrication shall be as follows:

- Plan dimension not less than ± 5 mm
- Total height not less than ± 3 mm

iii. Supply and Handling

The Contractor shall supply all steel-reinforced elastomeric expansion joints including bolts, nuts, sealant, plugs and all other accessories for the effective installation of the joints including angled jointing sections for kerbs.

Expansion joint material shall be handled with care and stored under cover by the Contractor to prevent damage. Any damage occurring after delivery shall be made good at the expense of the Contractor to the satisfaction of the Engineer.

iv. Installation

(a) Expansion joints

Expansion joints shall be installed as per the approved drawing. Steel inserts, Spacer bars, concreting of pockets, fixing of elastomer slab unit and presetting, shall be carried out as per the following:

Steel Inserts

Deck casting shall be carried out leaving pockets or recess for steel inserts and anchors of the expansion joint as per the drawings.

Steel inserts shall be lowered at the appropriate location inside the pocket.

The top of the hum shall be flush with the finished level of wearing course maintaining the camber.

Spacer bars, duly set appropriately to the month of installation, shall be fitted under strict supervision.

Anchor rods shall be tied/welded with the existing deck main reinforcement maintaining level and alignment.

Welding between anchor rods mid deck reinforcement is preferable. If welding is not possible, strong steel tie wires shall be used for fastening, under strict supervision.

Spacer Bar

Spacer ban shall be used to ensure proper positioning of bolts and also levelling of the steel inserts during fixing of the same with the deck reinforcement and casting second stage concreting in the pocket thereafter.

The second stage concreting operation shall preferably be started within 24 hours of fixing the steel inserts. In such cases, spacer bars should be removed just after concreting is finished. If there is a substantial time lag between fixing of inserts and concreting, then any one of the following methods shall be adopted, depending on the support condition.

For simply supported bridge resting on simple elastomeric bearings, (with no dowel pins), insert shall be placed in position with spacer bars at every alienate joints. Such joints shall be called restrained joints. In other words, inserts shall not be fixed simultaneously at two ends of one span. If the above condition is satisfied, inserts with spacer bars shall be kept in position for a substantially longer period at such restrained joints. Spacer bars shall be removed after concreting of such restrained joints and inserts placed in position with spacer bars at the other unrestrained joints thereafter.

For bridges resting on other than elastomeric bearings (including bearings with dowel pins at one end), after placing and aligning the inserts and securing the same, the spacer bars shall be removed. Concreting shall be carried out with great care so that inserts are not dislocated or distorted.

While removing the spacer bar after concreting, one must take care to see that the concrete is not damaged during withdrawal of spacer bar. If the spacer bar happens to be snugly and fined, it shall riot be pulled by any means; it shall be gas cut in two pieces and then removed.

Concreting of Pocket

Concreting of pocket shall be done with great care using proper mix conforming to grade similar to that of the deck casting besides ensuring efficient bonding between deck and steel insert. Also proper care shall be taken for ensuring efficient bonding with the already cast concrete.

Needle vibrators shall be used. Care shall be taken so that the position of steel insert is not disturbed during vibration.

Spacer bar shall be removed within an appropriate time before the joint is required to permit movement.

Fixing of Elastomeric Slab Unit (ESU)

Special jig shall be used to preset the ESU during installation.

ESU (mounted on the jig, if preset) shall be lowered to position.

The line and level on the ESU should be adjusted.

ESU shall be removed and mid coated with special adhesive.

ESU shall be placed in position again, ensuring waterproof joining at the required faces.

ESU shall be tightened with stainless steel nuts and lock washers in position. Tightened nuts shall be locked with lock washers.

Special sealant shall be poured inside the plug holes.

The elastomeric plugs shall be pressed in position after applying adhesive on the appropriate surface.

ESU shall be fined in position after completion of wearing course. While completing this part of the wearing course, adequate care shall be taken to ensure that a waterproof is joining with the already existing wearing course.

Pre-Setting

The main purpose of pre-setting of the steel inserts at the time of its installation is to ensure as closely as possible the condition that in the run at the mean average annual temperature, the ESU remains at its nominal state.

Major factors responsible for changing the longitudinal length of the bridge superstructure are indicated below.

Temperature variation from annual mean

satisfied, inserts with spacer bars shall be kept in position for a substantially longer period at such restrained joints. Spacer bars shall be removed after concreting of such restrained joints and inserts placed in position with spacer bars at the other unrestrained joints thereafter.

For bridges resting on other than elastomeric bearings (including bearings with dowel pins at one end), after placing and aligning the inserts and securing the same, the spacer bars shall be removed. Concreting shall be carried out with great care so that inserts are not dislocated or distorted.

While removing the spacer bar after concreting, one must take care to see that the concrete is not damaged during withdrawal of spacer bar. If the spacer bar happens to be snugly and fined, it shall riot be pulled by any means; it shall be gas cut in two pieces and then removed.

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ESU (mounted on the jig, if pre-set) shall be lowered to position.

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ESU shall be placed in position again, ensuring waterproof joining at the required faces.

ESU shall be tightened with stainless steel nuts and lock washers in position. Tightened nuts shall be locked with lock washers.

Special sealant shall be poured inside the plug holes.

The elastomeric plugs shall be pressed in position after applying adhesive on the appropriate surface.

ESU shall be fined in position after completion of wearing course. While completing this part of the wearing course, adequate care shall be taken to ensure that a waterproof is joining with the already existing wearing course.

Pre-Setting

The main purpose of pre-setting of the steel inserts at the time of its installation is to ensure as closely as possible the condition that in the run at the mean average annual temperature, the ESU remains at its nominal state.

Major factors responsible for changing the longitudinal length of the bridge superstructure are indicated below.

Temperature variation from annual mean

Changes due to shrinkage of concrete

Changes due to elastic shortening and creep of the pre-cast bridge superstructure

Deformation of superstructure and substructure, if any.

Resultant changes in expansion gap due to first factor can occur in both directions from any, pre- selected mean position whereas changes due to creep and shrinkage are unidirectional such that the expansion gap continuously increases with passage of time.

The steel insert unit of expansion joint can be fixed in any month of the year. As stated earlier, the expansion gap between the bridge superstructure may vary from time to time; hence the initial fixing distance between fixing points will obviously depend on the month of installation of steel insert. The centre to centre distance between stainless steel fixing of bolts as indicated in the drawing can be taken as only nominal. Pre-setting depending on this shall modify the same.

The difference between the mean temperature of the month of fixing of steel insert and the annual average temperature

The elapsed period between the casting and fixing of steel insert for calculating the remnant creep and shrinkage.

(b) Special requirements for installation

Prior to construction of bridge deck area adjacent to the joint the supplier shall provide detailed working drawings showing the location of all bolts, recesses and holes necessary for the installation of the joint.

Reinforcing bars in superstructure shall be amended as required to ensure that there will be no interference in the installation of the joint.

All hearing surfaces and recesses which are in contact with the joint assembly shall be checked with a straight edge to ensure flatness of profile.

No holes shall be drilled for fixing bolts within 7 days of concreting. Holes for the bolts shall be drilled to the size and depth shown on the drawings.

Sections of the jointing making the completed joint shall follow a straight line.

Prior to placing sections of jointing, contact surfaces shall be cleaned to remove all grease, tar, paint, oil, mud or any other foreign material that may affect adhesion of the sealant.

Sealant shall only be applied to dry contact surfaces. Sufficient sealant shall be applied to the contact surfaces to cause extrusion of sealant when the jointing is fixed in position.

Final sealing of the finished expansion joint shall be completed immediately after completion of installation. All exposed ends, joints between units and other areas of possible leakage shall be filled with sealant. All voids between the sides of the jointing and concrete or plates shall be filled with sealant.

Bolt cavities shall be cleaned and plugged with neoprene cavity plugs. Prior to placing the plugs sufficient sealant shall be placed in the cavities to cause extrusion of the sealant by the plugs.

All excess sealant shall be removed from the jointing and adjacent arm.

v. Acceptance Test

(a) Quality Control

The necessary quality control certification by the manufacturer in regard to properties of Elastomer and steel shall be furnished.

For severe environment, ozone resistance test shall be carried out for elastomer.

(b) Fabricated Expansion Joint

The fabricated expansion joint shall be subjected to the following acceptance test:

Routine test:

Each expansion joint shall be tested for at least 100 cycles for a test movement, which shall be *two per cent* more than the design expansion/contraction movement

In addition to routine test, one out of every 20-expansion joints shall be subjected to the test movement for 4000 cycles.

The lot shall be rejected if the elastomer material shows signs of fatigue or permanent set or distress in the test. The test piece shall not be used in the bridge.

The type of test for abrasion resistance shall be carried out for one joint out of every 20 № as per the BS and the standard deviation shall be within ± 20 %

It should be noted that the manufacturer shall preferably have in-house testing facility. Otherwise, the testing shall be carried out by him at his expense at any testing establishment selected by the Engineer. A manufacturer who cannot carry out the acceptance test shall not be entitled to supply elastomeric slab seal joint.

2109.7 STRIP SEAL EXPANSION JOINT

i. Components

Strip seal expansion joint shall comprise the following items:

(a) Edge bums

This special claw leg profiled member shall be of extruded rolled steel section combining good weldability with notch toughness.

(b) Strip seal

This shall be of chloroprene with high tear strength, insensitive to oil, gasoline, and ozone. It shall have high resistance to aging. This components, provided to ensure water tightness, shall have bulbous shape of the pan of the seat which is inserted into the groove provided in the edge beam. The seal should be vulcanised in single operation for minimum full length of joint.

(c) Rigid Anchorage

This shall be welded to the edge beam at staggered distances.

(d) Anchor loops

This shall be made of weldable steel connecting the rigid anchorage with deck reinforcement.

ii. Material

The steel shall conform to steel grade RST 37-2 of German Standard or equivalent.

(a) Strip Seal Element Specification

Sealing element is made of chloroprene and must be an extruded section. The working movement range of the sealing element shall be at least 80 mm with a maximum of 100 min at right angles to the joint and ±40 mm parallel to the joint.

PROPERTY	SPECIFIED VALUE Hardness
63 ± 5 Shore A Tensile Strength	Min 11 MPa
Elongation at fracture	Min 350 %
Tear Propagation Strength	
Longitudinal	Min 10 N/mm
Transverse	Min 10 N/mm Shock
Elasticity	Min 25 %
Abrasion	Min 225 mm³

PROPERTY	SPECIFIED VALUE
Residual Compressive Strain (22 h\70 C/360 per cent strain) (14 days/70 deg C)	Max 28 % Ageing in hot air
Change in hardness	Max+5 Shore A
Change in tensile strength	Max -20 %
Change in elongation at fracture	Max -20 %
Ageing in ozone (24 h/50pphm/25 deg C/20 per cent strain)	No Cracks
Swelling behaviour in Oil (116 h/25 per cent C) ASTM Oil №	
Volume Change	Max 5 %
Change in hardness	Max 10 Shore A
ASTM Oil № 3	
Volume Change	Max 25 %
Change in hardness	Max 20 Shore A
Cold Hardening Point	Min -35 °C

iii. Fabrication (Pre- installation)

Rolled steel profiles for edge beams shall be long enough to cater for a 2-lane carriageway. These shall be cut to size of actual requirements by means of a metre box saw. Alignment of the cut-to-size steel profiles shall then be made in accordance with the actual bridge cross-section on worktables. For this purpose, the contour of bridge cross-section shall be sketched onto these tables. After the steel profiles are aligned, they will be chucked to the tables by means of screw clamps and tacked by arc welding.

Anchor plates shall be cut to the required size by gas cutting. These shall be welded to the edge beams.

Anchor loops shall be bent to the required shape and welded to anchor plates.

The finally assembled joints shall then be clamped and transported to the work site.

iv. Handling and Storage

For transportation and storage, auxiliary brackets shall be provided to hold the joint assembly together.

The manufacturer shall supply either directly to the Engineer or to the Bridge Contractor all the materials of strip seal joints including sealants and all other accessories for the effective installation of the/jointing.

Expansion joint material shall be handled with care. It shall be stored under cover on suitable lumber padding by the Contractor to prevent damage. Any damage occurring after delivery shall be made good at the Contractor's expense to the satisfaction of the Engineer.

v. Installation

(a) Gap Width

The width of the gap to cater for movement due to thermal effect, pre-stress, shrinkage and creep, superstructure deformations (if any) and substructure deformations (if any) shall be determined and intimated to the manufacturer. Depending upon the temperature at which the joint is likely to be installed, the gap dimension shall be pre-set.

(b) Movement of Joint

Taking the width of gap for movement of the joint into account, the dimensions of the recess in the decking shall be established in accordance with the drawings or design data of the manufacturer. The surfaces of the recess shall be thoroughly cleaned and all dirt and debris removed. The exposed reinforcement shall be suitably adjusted to permit unobstructed lowering of the joint into the recess.

(c) Recess

The recess shall be shuttered in such a way that dimensions in the joint drawing are maintained. The formwork shall be tight.

(d) Joint Placing

Immediately prior to placing the joint, the pre-setting shall be inspected. Should the actual temperature of the structure be different from the temperature provided for pre-setting, correction of the pre-setting shall be done. After adjustment, the brackets shall be tightened again.

(e) Joint Lowering

The joint shall be lowered in a pre-determined position. Following placement of the joint in the prepared recess, the joint shall be levelled and finally aligned and the anchor loops on one side of the joint welded to the exposed reinforcement bars of the structure. Upon completion, the same procedure shall be followed for the other side of the joint. With the expansion joint finally held at both sides, the auxiliary brackets shall be released, allowing the joint to take up the movement of the structure.

(f) Concrete Quality

High quality concrete shall then be filled into the recess. The packing concrete must feature low shrinkage and have the same strength as that of the superstructure, but in any case, not less than concrete Class 35. Good compaction and careful curing of concrete is particularly important. After the concrete has cured, the movable installation brackets still in place shall be removed.

(g) Strip Seal

Rolled up neoprene strip seal shall be cut into the required length and inserted between the edge beams by using a crow bar pushing the bulb of the seal into the steel grooves of the edge beams. A landing to a bead shall be formed in the thickened end of the edges of the seal which would force the thickened end against the steel beam due to wedge effect when the strip seal is buttoned in place.

(h) Seal Protection

As soon as the concrete in the recess has become initially set, a sturdy ramp shall be placed over the joint to protect the exposed steel beams and neoprene seals from site traffic. Expansion joint shall not be exposed to traffic loading before the carriageway surfacing is placed.

(i) Carriageway Surfacing

The carriageway surfacing shall be finished flush with the top of the steel sections. The actual junction of the surfacing/wearing coat with the steel edge section shall be formed by a wedge shaped joint with a sealing compound. The horizontal leg of the edge beam shall be cleaned beforehand. It is particularly important to ensure thorough and careful compaction of the surfacing in order to prevent any premature depression forming in it.

vi. Acceptance Test

All steel elements shall be finished with corrosion protection system.

For neoprene seal, the acceptance test shall conform to the stipulated requirements. It shall also be stretch tested. If a manufacturer is to supply this type of joint he will have to produce a test certificate accordingly conducted in a recognized laboratory in Kenya or abroad.

In view of the importance of the built up edge beams, special investigation of fatigue strength of this section with anchorages to withstand 2 x 106 load change cycles without showing sips of damage, will be required. The supplier shall have to produce a test certificate in this regard conducted in a recognised laboratory in Kenya or abroad.

The manufacturer shall produce test certificates indicating that anchorage system had been tested in a recognized laboratory to determine optimum configuration of anchorage assembly under dynamic loading.

The manufacturer shall satisfy the Engineer that water tightness test for the type of joint has been carried out in a recognized laboratory to check the water tightness under a water pressure of 4 bars.

As strip seal type of joint is specialised in nature, generally of the proprietary type, the manufacturer shall be required to produce evidence of satisfactory performance of this type of joint.

vii. Tests and Standards of Acceptance

The materials shall be tested in accordance with these specifications and shall meet the prescribed criteria.

The work shall conform to these specifications and shall meet the prescribed standards of acceptance.

viii. Measurements for Payment

The expansion joint shall be measured in running metres. For filled joints, the rate per running metre shall include the cost of neoperete tube, sealant for the depth provided in this drawing.

ix. Rate

The contract unit rate shall include the cost of all material, labour, equipment and other incidental charges for fixing the joints complete in all respects as per these specifications in the case of the Contractor supplying the expansion joint. If the manufacturer supplies the expansion joint directly to the Engineer, the cost of installation, handling and fixing shall be borne by the Contractor.

2110 GEOTECH INVESTIGATIONS

SITE INVESTIGATIONS

a) General

The Contractor may be required to arrange to carry out geotechnical investigations at each abutment and pier location of bridge in accordance with ***BS 5930, formerly CP 2001*** at the proposed bridge locations and in liaison with the Engineer prior to commencing construction works. This is to verify the accuracy and reliability of the original site investigations upon which the substructure designs and construction details have been based.

The investigations are to include assessment of safe design parameters for the proposed piled and spread foundations by an independent approved geotechnical testing laboratory. For each bridge location, the Contractor shall supply three copies of the results of the investigations to the Engineer in an approved standard reporting format.

In the event the report indicates that changes in the original designs and construction details are necessary due to the prevalent site conditions, the Engineer will revise/update substructure designs and construction details to suit the site conditions indicated by the investigations. Revised structural drawings will be issued and other related details will then be issued during the construction period.

b) Scope of Site Investigations

The scope of the site investigations at each location may include trial pits, core drilling and some of the following tests on recovered soil samples depending on the prevalent sub-soil conditions:

- Performing Standard penetration test (SPT) at every 1.5 m depth
- Taking Undisturbed Sampes(UDS) at every 1.5 m depth
- Lab test of UDS in approved laboratory by KeHNA.
- Unconfined Compression Tests on rock core samples
- Moisture, density, shear box and plasticity index tests
- Ground water monitoring

c) Ground Bearing Pressure at Bridge Sites

The four bridges are in the project road are founded on friction piles. For these bridges, the soil properties at the bridges site shall be tested in order to verify the carrying capacity of the piles.

d) Measurement and Payment for Additional Site Investigations

Payment shall be made for each confirmatory hole drilled as instructed by the Engineer.

The work authorised by the Engineer shall be in accordance with the provisions of the Conditions of Contract.

2111 DRAINAGE SCRUPPERS

This work shall consist of furnishing and fixing in position of drainage scuppers and drainage pipes for bridges decks.

Drainage along longitudinal direction shall be ensured by sufficient number of drainage fixtures embedded in the deck slab. The scupper shall be of not less than 75 mm in diameter and shall be of corrosive resistant material such as asbestos cement with suitable clean-out fixtures. The spacing of drainage scuppers shall not exceed 10 m. The discharge from drainage scupers shall be kept away from the deck structure.

Drainage scuppers shall be measured in numbers.

2112 FILTER MEDIA

The material for the filter shall consist of 75 mm thick layer of broken stone. To prevent escape of the embankment material through the voids of the stone pitching / cement concrete blocks as well as to allow free movement of water without creating any uplift head on the pitching, one or more layers of graded materials, commonly known as a filter medium, shall be provided behind the abutment.

Filter media shall be measured in square meter.

2113 INITIAL PILE LOAD TEST

I. GENERAL

This specification deals with the testing of bored piles by the application of an axial load or force. It covers vertical piles tested in compression (i.e. subjected to loads or forces in a direction such as would cause the pile to penetrate further into the ground) and vertical piles tested in tension (i.e. subjected to forces in a direction such as would cause the piles to be extracted from the ground).

This specification also covers high strain dynamic testing of installed piles.

II. DEFINITIONS

Compression pile: a pile which is designed to resist an axial force such as would cause it to penetrate further into the ground.

Initial test pile (for failure load test): a pile installed before the commencement of the main piling works or specific part of the Works for the purpose of establishing the suitability of the chosen type of pile and for confirming its design, dimension and bearing capacity as well as value engineering.

Kentledge: the dead weight used in a loading test.

Reaction system: the arrangement of kentledge, piles, anchors or rafts that provides a resistance against which the pile is tested.

Maintained load test: a loading test in which each increment of load is held constant either for a defined period of time or until the rate of movement (settlement or uplift) falls to a specified value.

Failure load test: a load test applied to initial test pile. Maximum test load for this test should not normally be less than 250% of the estimated working load, but the possibility of failure load test carried well beyond 300% of the predicted working load should not be ruled out. This test serves as a design check and refinement for soil parameters used to determine the lengths of subsequent working piles.

Ultimate bearing capacity: the load at which the resistance of the soil becomes fully mobilized.

Allowable load: the load which may be safely applied to a pile after taking into account its ultimate bearing capacity, negative skin friction, pile spacing, overall bearing capacity of the ground below and allowable settlement.

Working load: the load which the pile is designed to carry without exceeding the allowable settlement requirement.

III. SAFETY PRECAUTIONS

a) **General**

When preparing for, conducting and dismantling a pile test, the Contractor shall carry out the requirements of the various Acts, orders, regulations and other statutory instruments that are applicable to the work for the provision and maintenance of safe working conditions, and shall in addition make such other provision as may be necessary to safeguard against any hazards that are involved in the testing or preparations for testing.

The Contractor shall be responsible for the design of the reaction system (e.g. kentledge or reaction piles/ground anchor, etc).

b) Personnel

All tests shall be carried out only under the direction of an experienced and competent supervisor conversant with the equipment and test procedure. All personnel operating the test equipment shall have been trained in its use.

c) Kentledge

Where kentledge is used, the Contractor shall construct the foundations for the kentledge and any cribwork, beams or other supporting structures in such a manner that there will not be any differential settlement, bending or deflection of an amount that constitutes a hazard to safety or impairs the efficiency of the operation. The kentledge shall be adequately bonded, tied or otherwise held together to prevent it from falling apart, or becoming unstable because of defection of the supports.

The weight of kentledge shall be at least 1.2 times than the maximum test load and if the weight is estimated from the density and volume of the constituent materials, an adequate factor of safety against error shall be allowed. The Contractor shall take all reasonable steps to ensure that sufficient excess load capacity is at all times available for the uninterrupted execution of a load test.

d) Testing Equipment

In all cases the Contractor shall ensure that when the hydraulic jack and load measuring device are mounted on the pile head, the whole system will be stable up to the maximum test load to be applied. Means shall be provided to enable dial gauges to be read from a position clear of the kentledge stack or test frame in conditions where failure in any part of the system due to overloading, buckling, loss of hydraulic pressure or any other cause might constitute a hazard to personnel.

The hydraulic jack, pump, hoses, pipes, couplings and other apparatus to be operated under

hydraulic pressure shall be capable of withstanding a test pressure of 1.5 times the maximum working pressure without possible leaking.

The maximum test load or test pressure expressed as a reading on the gauge in use shall be displayed and all operators shall be made aware of this limit.

If in the course of carrying out a test any unforeseen occurrence should take place, further loading shall not be applied until proper engineering assessment of the condition has been made and steps have been taken to rectify any fault. Reading of gauges should, however, be continued where possible and if it is safe to do so.

IV. MATERIALS AND LABOUR

The Contractor shall supply all labour, materials and other equipment necessary for the performance, recording and measurements of the test loads and settlement including the supply and placing in position of kentledge used in the tests. The Contractor shall subsequently dismantle and remove all the material and equipment used.

Throughout the duration and operation of the test loading the Contractor shall place competent men to operate, watch and record the test.

V. INITIAL TEST PILES

In order to determine the required length of piles at each location, the Contractor shall install and test Initial test piles in advance of the main piling operation for working piles. The locations, sizes, lengths, test loads and instrumentation required for the Initial test piles are as shown in the drawings.

Initial test piles shall be installed with the same plant and in a similar manner as that to be used in the construction of the contract working piles.

All Initial test piles shall be instrumented in accordance with that indicated in the drawings and specification. After testing, the Contractor shall be responsible to hack away the Initial test pile if it is obstructing the construction of the basement or other foundation works.

VI. MEASURING DEVICES

Load measuring devices shall be calibrated before and after each series of tests, whenever adjustments or replacements are made to the devices or at the intervals recommended by the manufacturer of the equipment. All measuring equipment and gauges shall be calibrated together. Certificates of calibration from an approved laboratory shall be supplied to the Engineer for acceptance.

The Contractor's proposed method of measuring the movement of pile heads and load shall be submitted to the Engineer for approval.

VII. READINGS

Take readings of time, load and settlement and record immediately before and after the application of each load increment or decrement, or as directed by the Engineer. A minimum of another two readings shall be recorded at intermediate intervals.

VIII. INSTALLATION OF A TEST PILE

a) Inclusive Works

The works for the load tests shall include the construction and subsequent demolition of all necessary pile caps built to the contractor's design which shall be subjected to the Engineer's approval.

b) Notice of Construction

The Contractor shall give the Engineer at least 48 hours notice of commencement of construction of any Initial test pile.

c) Method of Construction

Each Initial test pile shall be constructed in a manner similar to that to be used for the construction of the working piles, and by the use of similar equipment and materials. Any variation will only be permitted with prior agreement.

d) Concrete test cubes

At least four test cubes shall be made from the concrete used in the Initial test pile and from the concrete used for building up a working pile. If a concrete pile is extended or capped for the purpose of testing, a further four cubes shall be made from the corresponding batch of concrete. The cubes shall be made and tested in accordance with BS1881.

The pile test shall not start until the strength of the cubes taken from the pile exceeds twice the average direct stress in any pile section under the maximum required test load, and the strength of the cubes taken from the cap exceeds twice the average stress at any point in the cap under same load.

e) Cut-Off Level of Test Pile

The cut-off level for Initial test pile shall be as specified.

Where the cut-off level of working piles is below the ground level at the time of pile installation and where it is required to carry out a load test from that installation level, either allowance shall be made in determination of the design verification load for friction which may be developed between the cut-off level and the existing ground level, or the pile may be sleeved appropriately or otherwise protected to eliminate friction which develops over the extended length.

The Contractor shall be responsible for the selection of the piling platform level and also the platform level which the working piles are to be tested. The cost for the necessary sleeve or bond length or pile length above the cut-off level of working piles shall be born by the Contractor.

f) Pile Head for Compression Test

For a pile that is tested in compression, the pile head or cap shall be formed to give a plane surface which is normal to the axis of the pile, sufficiently large to accommodate the loading and settlement-measuring equipment and adequately reinforced or protected to prevent damage from the concentrated application of load from the loading equipment.

The pilecap shall be concentric with the test pile. The joint between the cap and the pile shall have strength equivalent to that of the pile.

Sufficient clear space shall be made under any part of the cap projecting beyond the section

of the pile so that, at maximum expected settlement, load is not transmitted to the ground except through the pile.

IX. REACTION SYSTEMS

a) Compression Tests

Compression tests shall be carried out using kentledge only. Unless instructed, approved or specified by the Engineer, ground anchors or otherwise specially constructed anchorage shall be not being used.

Where kentledge is to be used, it shall be supported on cribwork, disposed around the pile head so that its center of gravity is on the axis of the pile. The bearing pressure under supporting cribs shall be such as to ensure stability of the kentledge stack. Kentledge shall not be carried directly on the pile head, except when directed by the Engineer.

The kentledge may consist of concrete blocks, steel piles etc, but must be of uniform size so that weight of the kentledge can be easily calculated.

b) Spacing

Where kentledge is used for loading vertical piles in compression, the distance from the edge of the test pile to the nearest part of the crib supporting the kentledge stack in contact with the ground shall be not less than 1.3m

The center-to-centre spacing of vertical reaction piles, including working piles used as reaction piles, from a test pile shall be not less than three times the diameter of the test pile or the reaction piles or 2m whichever is the greatest.

Where a pile to be tested has an enlarged base, the same criterion shall be apply with regard to the pile shaft, with the additional requirement that no surface of a reaction pile shall be closer to the base of the test pile than one haft of the enlarged base diameter.

Where vertical reaction piles penetrate deeper than the test pile, the center-to-centre spacing of the reaction piles from the test pile shall be not less than five times the diameter of the test pile or the reaction piles whichever is the greatest unless the base capacity of the test pile is less than 20% of the total ultimate capacity.

Where ground anchorages are used to provide a test reaction for loading in compression, no section of fixed anchor length transferring load to the ground shall be closer to the test pile than three times the diameter of the test pile. Where the pile to be tested has an enlarged base the same criterion shall apply with regard to the pile shaft, with the additional requirement that no section of the fixed anchor transferring load to the ground shall be closer to the pile base than a distance equal to the base diameter.

c) Care Of Piles

The method employed in the installation of any reaction piles or rafts shall be such as to prevent damage to any test pile or working pile.

d) Working Piles as Reaction Piles

The Contractor shall not use working piles a reaction piles.

e) Loading Arrangement

The loading arrangement used shall be designed to transfer safely to the test pile the maximum load required in testing. Full details shall be submitted to the Engineer prior to any work related to the testing process being carried out on the Site.

X. EQUIPMENT FOR APPLYING LOAD

a) General

The equipment used for applying load shall consist of one or more hydraulic rams or jacks. The rams or jacks shall be arranged in conjunction with the reaction system to deliver an axial load to the test pile. The complete system shall be capable of transferring the maximum load required for the test.

b) Jack Capacity

The total capacity of the jacks shall exceed by 20% or more the required maximum test load, thereby avoiding heavy manual pumping effort when nearing maximum load and minimizing the risks of any leakage of oil through the seals.

The loading equipment shall be capable of adjustment throughout the test to obtain a smooth increase of load or to maintain each load constant at the required stages of a maintained load test.

The length of stroke of a ram shall be sufficient to cater for deflection of the reaction system under load plus a deflection of a pile head up to 15% of the pile shaft diameter unless otherwise specified.

XI. MEASUREMENT OF LOAD

a) Load Measurement Procedure

The load shall be measured by a load measuring device and by a calibrated pressure gauge included in the hydraulic system. Reading of both the load measuring device and the pressure gauge shall be recorded. In interpreting the test data, the values given by the load measuring device shall normally be used. The pressure gauge readings are required as a check for gross error. The pressure gauge shall have been recently calibrated.

The load measuring device may consist of a proving ring, load measuring column, pressure cell, vibrating wire load cell or other appropriate system. The load cells or proving ring shall be calibrated immediately prior to the test and a certificate shall be submitted to the Engineer.

A spherical seating shall be used in conjunction with any devices that are sensitive to eccentric loadings; care must be taken to avoid any risk of buckling. Load measuring devices and jacks shall be short in axial length in order to achieve the best possible stability. The Contractor shall pay attention to details in order to ensure that axial loading is maintained.

Any increments of load shall not be allowed to fall below 1% of the specified load.

The Engineer's agreement shall be obtained in writing prior to any modification of this procedure.

b) Calibration of Load Measuring Devices

The load measuring device shall be calibrated before and after each series of tests, whenever adjustments are made to the device or at intervals appropriate to the type of equipment. The pressure gauge and hydraulic jack shall be calibrated together.

Certificates of calibration performed by an approved testing laboratory shall be supplied to the Engineer prior to carrying out the load test.

c) Measurement of Settlement

Settlement shall be measured by use of a reference beam or wire supported independently of the test pile, reaction pile or piles supporting reaction loads. Settlements shall be measured to the nearest 0.1mm for reference beams or 0.5mm of reference wires. A precise optical level shall be used to check movements of the reference frame against an independent datum. The reference beam supports shall be located at least 3m from the test pile, reaction pile or piles supporting reaction loads. The reference beams or wires shall be protected from the effects of temperature changes. Construction equipment and persons not involved in the test shall be kept well clear to avoid disturbance of the measuring system. Pile driving or similar operations will not be permitted in the vicinity of the test unless the Engineer is satisfied that the measuring system will not be affected.

Deflections shall be precisely measured by four dial gauges equally spaced around the pile head to accuracy of 0.01mm to give useful information on pile bending as well as axial movement. These dial gauges shall be firmly attached to the reference beams, so that the plungers are parallel to the pile axis. The plunger points shall bear onto reference plates by means of machined plates or glass slides attached to the pile head. The reference plates shall be equidistant from the centre of the pile, diametrically opposed, and carefully aligned so that they are perpendicular to the pile axis in order that sideways movements do not produce any axial components.

Before stacking up of the kentledge or construction of the reaction piles / ground anchors, the preparation of the pile head shall be carried out and the reduced level of the pile head surveyed and recorded.

XII. TEST PROCEDURE

a) Failure Load Tests (Initial Test Pile)

Failure Load Tests shall be performed on Initial test piles designated by the Engineer at the commencement of the contract to verify the design parameters used and to determine the lengths of subsequent working piles. The Initial test piles shall be the only ones made in the first instance, and the load tests carried out prior to the installation of any other piles. Piling works shall not commence until after the failure load test results have been analyzed, and upon instruction by the Engineer.

The provisional number of Failure Load Test shall be as specified in the Bills of Quantities.

However, the Engineer reserves the right to alter the number of tests subject to the nature of subsoil conditions encountered and the pile system adopted vis-à-vis the method of installation, material and plant usage.

The test procedure shall be as follows, with the percentage for loading and unloading operations given in terms of the working load taken as 100%:

LOADING CYCLES FOR INITIAL TEST PILES

Load (Percentage Of Working Load)	Time Of Holding Load (minutes)
0	10
10	10
20	10
30	10
40	10
50	10
60	10
70	10
80	10
90	10
100	60 min or settlement rate less than 0.25 mm/hr (whichever is longer)
75	10
50	10
25	10
0	30
25	10
50	10
75	10
100	10
110	10
120	10
130	10
140	10
150	10
160	10
170	10
180	10
190	10
200	60 min or longer as instructed by the Engineer
150	10
100	10
50	10
0	30
50	10
100	10
150	10
200	10
210	10

220	10
230	10
240	10
250	10
260	10
270	10
280	10
300	60 min or longer as instructed by the Engineer
200	10
100	10
0	30

The test schedule for compression test is for guidance only. It is subject to variation by the Engineer to meet site conditions.

All loading and unloading operations shall take place during the day. Pressure gauge readings shall be recorded at each load increment or at each decrease in load. During waiting periods at various loading stages, all readings shall be recorded after the load has been applied and before the commencement of next loading stage. Take readings at 15 minute intervals at 100%, 200% and 300% of working load.

If large discrepancies occur between different measurement systems, the test shall be halted and the cause for the discrepancy corrected. The test shall be restarted from the beginning in this instance.

XIII. ABANDONMENT OF PILE TEST

Test shall have to be discontinued if any of the following occurs:

- Faulty jack or gauge,
- Instability of kentledge,
- Improper setting of datum, or
- Unstable Bench Marks or Scales,
- Measuring instruments used are found to have been tampered with by anyone,
- Pre-jacking or pre-loading before commencement of the test.

Should any test be abandoned due to any of the above causes, the Contractor shall carry out further tests to the Engineer instructions after rectification of the errors.

XIV. PRESENTATION OF RESULTS

a) Results to be Submitted

A written summary to the Engineer within 24 hours (or unless otherwise directed) of the test, which shall give:

(i) For each stage of loading, the period for which the load was held, the load and the maximum settlement or uplift recorded.

(ii) Load vs. Settlement curve.

The completed schedule of recorded data as described hereunder in this section shall be submitted to the Engineer within seven days of completion of the test.

XV. DETERMINATION OF PILE LOAD CARRYING CAPACITY FROM THE FAILURE LOAD TEST RESULT

The safe load, i.e. pile load carrying capacity on single pile form the initial load test should be least of the followings: -

a) Two-thirds of the final load at which the total displacement attains a value of 18 mm.
b) 50 percent of the 'final load' at which the total displacement equal 10 percent of the pile diameter.

XVI. INSTRUMENTATION FOR TEST PILES

a) Strain Gauges

Vibrating wire type strain gauges shall be installed in Initial test pile. The following vibrating wire strain gauges and equipment or equivalent to the approval of the Engineer shall be used:

i) Vibrating wire type weldable strain gauge. Steel wire of length of about 60mm (e.g. 62mm), and frequency range 0.8 to 2.4 kHz and associated connections, cables and read out device.
ii) 3M Scotchcast Insulating Resin 4.
iii) Miscellaneous small tools and materials for making concrete.

All strain gauges shall be mounted on major longitudinal steel bars of the steel cage of the Initial test pile. The strain gauges shall be installed in sets of four and equally spaced on the steel cage at levels directed by the Engineer. A total of 6 sets of strain gauges shall be installed.

The steel bars shall be polished using a hand held electrical grinder to obtain a flat surface for the strain gauges to be placed on. Polishing shall be completed by hand using silicon carbide paper. The surfaces of the polished bars shall be cleaned using acetone.

The weldable strain gauges shall then be bonded to the steel bars using a microbond welder. Next, the strain gauge sensors shall be placed on the strain gauges and tied firmly to the steel bars with wires. Short lengths of PVC protective pipe shall be placed over the strain gauge locations, and filled with insulating resin.

The electrical lead wires from the sensors shall be brought to the top of the pile through PVC pipes tied to the steel cage.

The gauges shall be checked before and after microwelding, after installation, after placement of the steel cage in the borehole, and after concreting.

SECTION 22-DAYWORKS

2202 MEASUREMENTS AND PAYMENT

(a) Plant

Where items of major plant listed in the schedule of Dayworks are specified by type (e.g. Concrete mixer etc.) the power rating of such items of plant provided by the Contractor shall not be lower than the power ratings of such plant manufactured within the last two years prior to the date of BID. Any item of major plant employed upon Dayworks that has a power rating lower than specified above shall be paid for at rates lower than those in the schedule of Dayworks. The reduction in the rate payable shall be in proportion to the reduction in power rating below that specified above.

SECTION 23 - CONCRETE PAVEMENT

2301 SCOPE

This section covers construction of concrete pavement to carriageways in steep sections. All concrete works shall be constructed in accordance with Section 17 of these specifications.

2302 CONSTRUCTION METHODOLOGY

Prior to commencement of work, the Contractor shall submit his proposed work method statement and equipment utilization for mixing, spreading, compacting and finishing of the concrete slab for prior approval by the Engineer.

The concrete pavement will be laid on a separation membrane consisting of impermeable plastic sheeting of 125 micron thick laid shall be flat on the underlaying surface without creases. Where an overlap of the plastic sheets is necessary, this shall be at least 300mm. There shall be no standing water on or under the plastic sheet membrane when the concrete is placed upon it.

The Contractor shall construct a reinforced jointed concrete slab pavement of nominal strength 25 N/mm^2 and 200mm compacted thickness to the main carriageway with two layers of A193 steel mesh fabric reinforcement as shown on the drawings. The concrete slab shall be constructed between steel forms with joints at the approximate spacing indicated on the drawings.

All concrete shall be spread by a hopper type spreader with bottom gates to control discharge of concrete and capable of striking off concrete to produce a uniform surface. The concrete shall be compacted and finished by hand guided vibrating beam or a transverse oscillating screed. Alternatively, the concrete may be placed directly in place using concrete truck mixer or other approved means and compacted with poker vibrators, after the Contractor has demonstrated to the Engineer that the method will achieve the required concrete uniformity.

Contraction joints shall be formed by a groove sawn in the surface of the hardened concrete and an approved filler cast into the bottom of the slab, all as shown on the drawings. The sawn groove shall be located vertically above the filler to within a tolerance of ± 12mm. Dowel bars shall be provided as shown in the drawings in the positions indicated.

Joint sealant shall be cold applied two-part polysulphide sealing compound complying with BS 4254:1983.

2303 TOLERANCES AND FINISHING

The concrete slab shall comply with tolerance requirements of clause 302 of the standard specification applicable for bituminous binder course. In particular, the centerline of the slab surface and all other parallel alignments shall be correct within ± 13mm from the centerline as shown on the drawings or calculated from the drawings.

The average thickness of the slab measured at five points in any length of 100m shall not be less than 100% nor more than 120% of the thickness specified or ordered by the Engineer. In addition, the thickness at any point shall not be less than 98% or more than 125% of the thickness specified or ordered by the Engineer.

Immediately after the final pass of the finishing machine or vibrating beam, the surface of the concrete shall be brushed in a direction at right angles to the center-line of the carriageway with a broom sufficiently stiff to produce a light brush-marked surface texture 1 mm deep to the satisfaction of the Engineer.

2304 CURING

Immediately after the concrete surface has been finished, curing shall be carried out for a period of at least 7 days by application of mechanically sprayed liquid curing compound as Sika® Antisol A at the rate of at least 0.22 litres/m^2 or similar approved synthetic resin based aluminized curing compound complying with ASTM C309-89, Class B and BS 7542-1992.

2305 GROOVING

Transverse grooving of width 5mm and depth 5mm at 45mm spacings shall be sawn on the concrete as soon as it has hardened sufficiently and shall be done with electronically controlled machines equipped with cutting heads composed of multiple 12-inch diameter diamond tipped cutting blades.

2306 MEASUREMENT AND PAYMENTS

(a) Item: Concrete Pavement

Unit: m3

The concrete slabs shall be measured and paid by the cubic metre of the finished pavement for each pavement type instructed.

The rate shall include for provision of all materials, including separation membrane, concrete, dowel bars, and mesh fabric reinforcement where applicable, joints, curing and finishing complying with these specifications and the construction drawings.

SECTION 24 - HIV/AIDS, GENDER ISSUES, SOCIAL ISSUES AND LOCAL PARTICIPATION

2401 SCOPE

This specification sets out the Contractor's obligations with regard to on-site HIV/AIDS awareness campaign and preventive measures which are to be instituted.

2402 INTERPRETATION AND DOCUMENTATION

The following documents shall inter-alia be read in conjunction with this specification:

- The Instructions to Bidders;
- The Conditions of Contract;
- The Drawings;

2403 GENERAL REQUIREMENTS

(a) HIV/AIDS Awareness Campaign

The Contractor shall institute an HIV/AIDS awareness campaign amongst his workers for the duration of the contract. As part of the campaign the Contractor will be required to display AIDS awareness posters in all buildings frequented by workers employed on the contract, where such buildings fall under the control of the Contractor. In addition, at least ten (10) of the Contractor's vehicles, regularly used on site shall display HIV/AIDS awareness posters. The posters shall be printed on gloss paper and shall be at least A1 size on buildings and A3 size, or other approved size on vehicles. The message on the posters shall be supplied by the Employer through the Engineer before the posters are printed.

Aids awareness shall also be included in the orientation process of all workers employed on the contract.

(b) AIDS Prevention Campaign

The Contractor shall institute an HIV/AIDS prevention campaign amongst his workers for the duration of the contract. As part of the campaign the Contractor will be required to make condoms available to workers. The condoms shall be from an approved manufacturer and comply with the current ISO Standards or WHO/UNAIDS Specifications and Guidelines for Condoms, 1998, or any more recent publication. The Contractor shall make available at least 4,000 condoms every month, through dispensing machines or other approved method of distribution. The Contractor shall at all times keep the site adequately supplied with condoms.

(c) HIV/AIDS Training

Introduction

HIV/AIDS is having a significant and increasing impact in Kenya. Interventions that stimulate the movement of people increase both the exposure to the HIV virus and the spread of the virus. Road construction has been identified as one such intervention.

KeNHA policy is to integrate HIV/AIDS awareness and prevention into all road construction and rehabilitation programmes. This is in accordance with the Third National Strategic Plan (2000-5) for HIV/AIDS prevention and control as approved by the Government of Kenya, International Bank for Reconstruction and Development (IBRD) and other organisations.

The project will involve both local labour and other contractor's labour. It is a contractual requirement for the Contractor to carry out HIV/AIDS awareness and prevention activities during the construction period as stipulated in this specification.

Objective

The objective of the HIV/AIDS training programme is to reduce the risk of exposure to and spread of the HIV virus in the area influenced by the construction. The target group will be local labourers and their supervisors employed by the works contractors. The wider community will benefit indirectly through their normal day-to-day interaction with the target group.

Scope of activities

Activities for HIV/AIDS awareness and prevention will be broad-based, targeting both individuals and groups. They may consist of:

(i) Information posters in public places, both on and offsite (eating houses, bars, guest houses, etc.) and on contractor's vehicles.

(ii) Availability of socially marketed condoms.

(iii) Peer educators (reference people) drawn from the local labour and educated in HIV/AIDS issues for discussions with colleagues (estimate 1 per 50 employees).

(iv) Small focus group discussions to disseminate information covering key issues.

(v) Theatre groups and video presentations.

(vi) Promotional events (such as football matches) to encourage openness and discussion of HIV/AIDS issues.

(vii) Promotional bill boards to raise awareness of the integration of construction and HIV/AIDS activities.

(viii) Inclusion of HIV/AIDS activities at site meetings with the District Aids Committee and other approved representatives.

(ix) Availability of promotional materials such as T-shirts, caps, bumper stickers, key rings, etc.

The scope of activities may be tailored as required to meet the perceived needs and priorities of the labourers, and should involve participatory approaches to ensure that they are appropriate and have a public health impact. The scale and frequency of activities may also be adjusted to suit requirements of the target group. Education will cover:

(a) preventive behaviours including partner reduction, condom use, awareness and appreciation of the importance of treatment of sexually transmitted infections (STls);

(b) skills including negotiating safer sex, correct condom use, purchase of condoms without embarrassment; and

(c) referral to local health centres and available services.

Tasks to be undertaken to support the above activities include:

(a) Establishing the status and focus of all current and planned HIV/AIDS activities in the area to ensure complementarity and determining potential involvement in project activities.

(b) Carrying out a brief review of regional activities combining road construction with HIV/AIDS campaigns to determine options, best practice key issues, constraints, etc.

(c) Reviewing of Information, Education and Communication (IEC) materials available and their relevance to road construction, making recommendations for future development of IEC materials.

(d) Providing education and training for site personnel, supervisors and peer educators for the scope of activities as above.

(e) Providing supervision for peer educators to ensure sustained quality of education. Incentives for their continual work may be small promotional items such as T -shirts, caps, etc.

(f) Providing mechanisms for the social marketing of condoms and distribution of materials.

(g) Monitoring activities regularly to assess effectiveness and impact. This should include an initial, interim and final assessment of basic knowledge, attitude and practices (KAP) taking account of existing data sources and recognising the limitations due to the short time-frame to show behaviour change. The KAP will be supported by qualitative information from focus group discussions.

Collaboration

HIV/AIDS activities are co-ordinated nationally by the National Aids Control Council (NACC). KeNHA, in consultation with NACC and the Ministry of Health (MOH), will co-ordinate with the provincial, district and local representatives. Representatives of local health authorities will be invited to attend training and communication activities.

Activities on the construction site will be linked as far as possible with on-going HIV/AIDS awareness and prevention in the area. This will ensure complementarity of approaches, reinforcing education and minimising duplication. In addition, these links will ensure that the target group will have access to continued information after the end of the construction period.

Contractor Responsibilities

The Contractor will employ and designate a qualified HIV/AIDS expert fulltime, to be approved by the Engineer, who will work closely with the Client, MOH and other implementing agencies to support the HIV/AIDS awareness and prevention activities. This will ensure maximum effectiveness and integration with construction activities. Specific, but not exclusive, issues to be addressed by the Contractor are:

(i) Scheduling appropriate timing and durations of the implementation of HIV/AIDS activities as part of work plan for labourers and supervisors. Designated rest times such as lunch breaks and pay days should be excluded.

(ii) Identification of suitable individuals from recruitment records for education with the implementing organization.

(iii) Provision of suitable sites for communication activities and for condom distribution.

(iv) Monitoring of the implementation of peer educator activities.

(v) Provision of support as necessary to the implementing organization.

Inputs

An organization experienced in the provision of HIV/AIDS awareness and prevention activities will be selected as a subcontractor to provide the above scope of activities on behalf of the main Contractor.

Reporting

The implementing organization will produce the following reports to be submitted to the Contractor, The Engineer, KeNHA and NACC:

- monthly progress briefs for inclusion in site meetings.
- quarterly reports detailing activities carried out, issues, follow up, etc.
- a review report of activities in the road construction sector,
- a review report of existing IEC materials with recommendations for development of materials specifically for the road sector.
- a final report detailing the methodology and activities carried out under this project including lessons learnt, impact, liaison with the Contractor and other parties, etc.

In addition, a report with the recommended approach for integration of HIV/AIDS awareness and prevention activities in the road construction sector will be produced. This will be a synthesis of project activities including contractual approaches, communication activities, availability of materials, liaison with existing organizations, etc. It will be developed with all parties involved in the construction activities to ensure the wide range of views and experiences is gained.

The final report and recommended approach will be presented to KURA, NACC and other interested organizations including private sector, funding agencies and NGO's.

Timing

Activities shall commence at the start of the construction period and continue through-out the 24 months to ensure a sustained impact. Reporting and dissemination activities shall continue for three months after the project is completed to ensure integration into current practice.

2404 MEASUREMENT AND PAYMENT

The payment items in this clause shall include full compensation for all work associated with the provision of HIV/AIDS related services as specified.

Item: Instituting an HIV/AIDS awareness and prevention campaign

Unit: months

The unit of measurement shall be the calendar month or part thereof, measured over the duration of the campaign. The tendered rate shall include full compensation for equipment, labour, materials including the procurement and distribution of condoms and full compensation for transport, meals, accommodation and any other reasonable allowances for the Participation of local health authorities, provincial director of health and NACC and other resources required for the provision of the service in compliance with clause 2403 (a) & (b) above.

Item: Instituting an HIV/AIDS Training – Engagement of specialist HIV/AIDS sub-contractor

Unit: Provisional Sum

Compensation for HIV/AIDS Specialists and resources for the implementation of Clause 2403(c). Any amount required under this item will be paid as per the programme approved by the Engineer and the Client (KeNHA) prior to expenditure.

SECTION 25 - HIV/AIDS, GENDER ISSUES, SOCIAL ISSUES AND LOCAL PARTICIPATION

2501 SCOPE

This specification sets out the Contractor's obligations with regard to on-site HIV/AIDS awareness campaign and preventive measures which are to be instituted.

2502 INTERPRETATION AND DOCUMENTATION

The following documents shall inter-alia be read in conjunction with this specification:

- The Instructions to Bidders;
- The Conditions of Contract;
- The Drawings;

2503 GENERAL REQUIREMENTS

(a) HIV/AIDS Awareness Campaign

The Contractor shall institute an HIV/AIDS awareness campaign amongst his workers for the duration of the contract. As part of the campaign the Contractor will be required to display AIDS awareness posters in all buildings frequented by workers employed on the contract, where such buildings fall under the control of the Contractor. In addition, at least ten (10) of the Contractor's vehicles, regularly used on site shall display HIV/AIDS awareness posters. The posters shall be printed on gloss paper and shall be at least A1 size on buildings and A3 size, or other approved size on vehicles. The message on the posters shall be supplied by the Employer through the Engineer before the posters are printed.

Aids awareness shall also be included in the orientation process of all workers employed on the contract.

(b) AIDS Prevention Campaign

The Contractor shall institute an HIV/AIDS prevention campaign amongst his workers for the duration of the contract. As part of the campaign the Contractor will be required to make condoms available to workers. The condoms shall be from an approved manufacturer and comply with the current ISO Standards or WHO/UNAIDS Specifications and Guidelines for Condoms, 1998, or any more recent publication. The Contractor shall make available at least 4,000 condoms every month, through dispensing machines or other approved method of distribution. The Contractor shall at all times keep the site adequately supplied with condoms.

(c) HIV/AIDS Training

Introduction

HIV/AIDS is having a significant and increasing impact in Kenya. Interventions that stimulate the movement of people increase both the exposure to the HIV virus and the spread of the virus. Road construction has been identified as one such intervention.

KeNHA policy is to integrate HIV/AIDS awareness and prevention into all road construction and rehabilitation programmes. This is in accordance with the Third National Strategic Plan (2000-5) for HIV/AIDS prevention and control as approved by the Government of Kenya, International Bank for Reconstruction and Development (IBRD) and other organisations.

The project will involve both local labour and other contractor's labour. It is a contractual requirement for the Contractor to carry out HIV/AIDS awareness and prevention activities during the construction period as stipulated in this specification.

Objective

The objective of the HIV/AIDS training programme is to reduce the risk of exposure to and spread of the HIV virus in the area influenced by the construction. The target group will be local labourers and their supervisors employed by the works contractors. The wider community will benefit indirectly through their normal day-to-day interaction with the target group.

Scope of activities

Activities for HIV/AIDS awareness and prevention will be broad-based, targeting both individuals and groups. They may consist of:

(i) Information posters in public places, both on and offsite (eating houses, bars, guest houses, etc.) and on contractor's vehicles.

(ii) Availability of socially marketed condoms.

(iii) Peer educators (reference people) drawn from the local labour and educated in HIV/AIDS issues for discussions with colleagues (estimate 1 per 50 employees).

(iv) Small focus group discussions to disseminate information covering key issues.

(v) Theatre groups and video presentations.

(vi) Promotional events (such as football matches) to encourage openness and discussion of HIV/AIDS issues.

(vii) Promotional bill boards to raise awareness of the integration of construction and HIV/AIDS activities.

(viii) Inclusion of HIV/AIDS activities at site meetings with the District Aids Committee and other approved representatives.

(ix) Availability of promotional materials such as T-shirts, caps, bumper stickers, key rings, etc.

The scope of activities may be tailored as required to meet the perceived needs and priorities of the labourers, and should involve participatory approaches to ensure that they are appropriate and have a public health impact. The scale and frequency of activities may also be adjusted to suit requirements of the target group. Education will cover:

(a) preventive behaviours including partner reduction, condom use, awareness and appreciation of the importance of treatment of sexually transmitted infections (STls);

(b) skills including negotiating safer sex, correct condom use, purchase of condoms without embarrassment; and

(c) referral to local health centres and available services.

Tasks to be undertaken to support the above activities include:

(a) Establishing the status and focus of all current and planned HIV/AIDS activities in the area to ensure complementarity and determining potential involvement in project activities.

(b) Carrying out a brief review of regional activities combining road construction with HIV/AIDS campaigns to determine options, best practice key issues, constraints, etc.

(c) Reviewing of Information, Education and Communication (IEC) materials available and their relevance to road construction, making recommendations for future development of IEC materials.

(d) Providing education and training for site personnel, supervisors and peer educators for the scope of activities as above.

(e) Providing supervision for peer educators to ensure sustained quality of education. Incentives for their continual work may be small promotional items such as T -shirts, caps, etc.

(f) Providing mechanisms for the social marketing of condoms and distribution of materials.

(g) Monitoring activities regularly to assess effectiveness and impact. This should include an initial, interim and final assessment of basic knowledge, attitude and practices (KAP) taking account of existing data sources and recognising the

limitations due to the short time-frame to show behaviour change. The KAP will be supported by qualitative information from focus group discussions.

Collaboration

HIV/AIDS activities are coordinated nationally by the National Aids Control Council (NACC). KeNHA, in consultation with NACC and the Ministry of Health (MOH), will co-ordinate with the provincial, district and local representatives. Representatives of local health authorities will be invited to attend training and communication activities.

Activities on the construction site will be linked as far as possible with on-going HIV/AIDS awareness and prevention in the area. This will ensure complementarity of approaches, reinforcing education and minimizing duplication. In addition, these links will ensure that the target group will have access to continued information after the end of the construction period.

Contractor Responsibilities

The Contractor will employ and designate a qualified HIV/AIDS expert fulltime, to be approved by the Engineer, who will work closely with the Client, MOH and other implementing agencies to support the HIV/AIDS awareness and prevention activities. This will ensure maximum effectiveness and integration with construction activities. Specific, but not exclusive, issues to be addressed by the Contractor are:

(i) Scheduling appropriate timing and durations of the implementation of HIV/AIDS activities as part of work plan for labourers and supervisors. Designated rest times such as lunch breaks and pay days should be excluded.

(ii) Identification of suitable individuals from recruitment records for education with the implementing organization.

(iii) Provision of suitable sites for communication activities and for condom distribution.

(iv) Monitoring of the implementation of peer educator activities.

(v) Provision of support as necessary to the implementing organization.

Inputs

An organization experienced in the provision of HIV/AIDS awareness and prevention activities will be selected as a subcontractor to provide the above scope of activities on behalf of the main Contractor.

Reporting

The implementing organization will produce the following reports to be submitted to the Contractor, The Engineer, KeNHA and NACC:

- monthly progress briefs for inclusion in site meetings.
- quarterly reports detailing activities carried out, issues, follow up, etc.
- a review report of activities in the road construction sector,
- a review report of existing IEC materials with recommendations for development of materials specifically for the road sector.
- a final report detailing the methodology and activities carried out under this project including lessons learnt, impact, liaison with the Contractor and other parties, etc.

In addition, a report with the recommended approach for integration of HIV/AIDS awareness and prevention activities in the road construction sector will be produced. This will be a synthesis of project activities including contractual approaches, communication activities, availability of materials, liaison with existing organisations, etc. It will be developed with all parties involved in the construction activities to ensure the wide range of views and experiences is gained.

The final report and recommended approach will be presented to KURA, NACC and other interested organisations including private sector, funding agencies and NGO's.

Timing

Activities shall commence at the start of the construction period and continue through-out the 24 months to ensure a sustained impact. Reporting and dissemination activities shall continue for three months after the project is completed to ensure integration into current practice.

2504 MEASUREMENT AND PAYMENT

The payment items in this clause shall include full compensation for all work associated with the provision of HIV/AIDS related services as specified.

Item: Instituting an HIV/AIDS awareness and prevention campaign

Unit: months

The unit of measurement shall be the calendar month or part thereof, measured over the duration of the campaign. The tendered rate shall include full compensation for equipment, labour, materials including the procurement and distribution of condoms and full compensation for transport, meals, accommodation and any other reasonable

allowances for the Participation of local health authorities, provincial director of health and NACC and other resources required for the provision of the service in compliance with clause 2503 (a) & (b) above.

Item: Instituting an HIV/AIDS Training – Engagement of specialist HIV/AIDS sub-contractor

Unit: Provisional Sum

Compensation for HIV/AIDS Specialists and resources for the implementation of Clause 2503(c). Any amount required under this item will be paid as per the programme approved by the Engineer and the Client (KeNHA) prior to expenditure.

SECTION 26 - ROAD SAFETY CAMPAIGN

2610. SCOPE

This specification sets out the Contractor's obligations with regard to on-site road safety campaign which is to be conducted during the construction period. The aim of this road safety campaign is to achieve safe road use in the project area.

Indeed, an improved roadway complete with paved surface will undoubtedly encourage more vehicular traffic and will allow vehicles to travel at higher average speeds. This will increase the possibility for accidents between vehicles, and with non-motorized traffic such as cyclists, pedestrians and both domestic and wild animals.

Although the improved road will be wider in certain areas, thus making it safer to travel at higher speeds, there is still likelihood of collisions between vehicles and with vehicles and bicycles, pedestrians, and livestock (and wildlife).

Due to poor road conditions over the years, people, animals, NMTs, and particularly children are unaware of the danger of a fast approaching vehicle and may cross the road in front of it. This impact is likely to be serious during daytime hours when traffic is heavier and when drivers are able to move faster. Thus the Contractor shall conduct a road safety campaign in order to increase the awareness of the dangers of the road among the communities living alongside the project road, the Contractor's and the Consultant's workers.

2611. GENERAL REQUIREMENTS

a) Road safety campaign

The Contractor shall institute a road safety campaign amongst his workers, and the communities living alongside the road, for the duration of the contract. As part of the campaign the Contractor will be required to display road safety posters in all buildings frequented by workers employed on the contract, where such buildings fall under the control of the Contractor, and in all schools and public buildings within the road project area. In addition, at least three (3) of the Contractor's vehicles, regularly used on site shall display road safety posters. The posters shall be printed on glossy paper and shall be at least A1 size on buildings and A3 size, or other approved size on vehicles. The message on the posters shall be supplied by the Employer through the Engineer before the posters are printed.

b) Road safety training

Objective

The objective of the road safety campaign is to reduce the risk of exposure to road accidents in the area of the road. The target groups will be the public alongside the road, especially the children in schools and community chiefs of the, but also local

labourers and their supervisors employed by the works contractors. The wider community will benefit indirectly through their normal day-to-day interaction with the target groups.

Scope of activities

Activities for road safety awareness will be broad-based targeting both individuals and groups. They may consist of:

i) Information posters in public places both on and offsite (eating houses, bars, guest houses, etc.) and on contractor's vehicles,

ii) Peer educators (reference people) drawn from the local labour, and from the local communities, and educated in road safety issues for discussions with colleagues or the local community members,

iii) Small focus group discussions and information covering key issues,

iv) Theatre groups and video presentations, v) Promotional events (such as football matches) to encourage openness and discussion of road safety issues,

v) Promotional bill boards to raise awareness of the integration of construction and road safety activities,

vi) Availability of promotional materials such as T-shirts, caps, bumper stickers, key rings, etc.

The scope of activities may be tailored as required to meet the perceived needs and priorities of the local communities and the workers, determined by participatory approaches to ensure they are appropriate, desired and have a public impact. The scale and frequency of activities may also be adjusted to suit requirements of the target groups. Education will cover:

- preventive behaviours including safe road crossing, walking on shoulders and not on the carriageway;
- referral to local information centres and services available.

Tasks to support the above activities will be to:

i) Establish the status and focus of all current and planned road safety campaign activities in the area to ensure complementarity and determine potential involvement in project activities.

ii) Carry out a brief review of regional activities combining road construction with road safety campaigns to determine options, best practice key issues, constraints, etc.

iii) Review of Information, Education and Communication (IEC) materials available and their relevance to road construction, making recommendations for future development of IEC materials.

iv) Provide education and training for site personnel, supervisors, local community members, and peer educators for the scope of activities as above.

v) Provide supervision for peer educators to ensure sustained quality of education. Incentives for their continual work may be small promotional items such as T - shirts, caps, etc.

vi) Monitor activities regularly to assess their effectiveness and impact. This should include an initial, interim and final assessment of basic knowledge, attitude and practices (KAP) taking account of existing data sources and recognizing the limitations due to the short time frame to show behaviour change. The KAP will be supported by qualitative information from focus group discussions.

Contractor's Responsibilities

The Contractor will designate a qualified road safety expert, to be approved by the Engineer, who will work closely with the Client and other implementing agencies to support the road safety campaign activities. This will ensure maximum effectiveness and integration with construction activities. Specific but not exclusive issues to be addressed by the Contractor are:

- Scheduling of appropriate timing and duration for the implementation of the road safety campaign as part of the work plan.
- Identification of suitable individuals for education from recruitment records with the implementing organization and from within the local communities.
- Provision of suitable sites for communication activities.
- Monitoring of the implementation of peer educator activities.
- Provision of support as necessary to the implementing organization and local communities.

Inputs

An organization experienced in the provision of road safety campaigns will be selected as a subcontractor to provide the above scope of activities on behalf of the main Contractor.

Reporting

The implementing organization will produce the following reports to be submitted to the Contractor, the Engineer, and the Employer:

- monthly progress briefs for inclusion in site meetings
- quarterly reports detailing activities carried out, issues, follow up, etc.
- a review report of activities in the road construction sector,
- a review report of existing IEC materials with recommendations for development of materials specifically for the road sector
- a final report detailing the methodology and activities carried out under this project including lessons learnt, impact, liaison with the Contractor and other parties, etc.

Timing

Activities shall commence at the start of the construction period and continue throughout the Contract duration to ensure a sustained impact. Reporting and dissemination activities shall continue for three months after the project is completed to ensure integration into current practice.

2612. MEASUREMENT AND PAYMENT

The payment for items in this clause shall include full compensation for all work associated with the provision of road safety campaign related services as specified.

Item: Instituting a Road Safety Awareness Campaign

Unit: months

The unit of measurement shall be the calendar month or part thereof, measured over the duration of the campaign. The tendered rate shall include full compensation for equipment, labour and material required for the provision of the service.

Item: Instituting an Accident Prevention Campaign

Unit: months

The unit of measurement shall be the calendar month or part thereof, measured over the duration of the campaign. The tendered rate shall include full compensation for equipment, labour and material required for the provision of the service.

Item: Road Safety Training

Unit: Provisional Sum

Compensation for road safety specialists for the implementation of the Training element of Clause 26 03 (b).

Any amount required under this item will be approved by the Engineer, prior to expenditure. Handling costs and profit in respect of this sub-item will be paid as a percentage (%) of the Provisional Sum expended

SECTION VIII: BILLS OF QUANTITIES

PREAMBLE TO BILL OF QUANTITIES

1. The Bills of Quantities shall be read in conjunction with the Instructions to Tenderers, General and Particular Conditions of Contract, Technical Specifications, and Drawings.

2. The quantities given in the Bills of Quantities are estimated and provisional, and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices tender in the priced Bills of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.

3. The rates and prices tendered in the priced Bills of Quantities shall, except in so far as it is otherwise provided under the Contract, include all Constructional Plant, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.

4. A rate or price shall be entered against each item in the priced Bills of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bills of Quantities.

5. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bills of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work.

6. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bills of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bills of Quantities.

7. Provisional Sums included and so designated in the Bills of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Sub-Clause 13.5 and Clause 13.6 of the General Conditions.

8. The method of measurement of completed work for payment shall be in accordance with *Standard Specification for Road and Bridge Construction* of the Ministry of Transport and Communications, 1986.

9. "Authorised" “Directed" or "Approved" shall mean the authority, direction or approval of the Engineer.
10. Unless otherwise stated, all measurements shall be net taken on the finished work carried out in accordance with the details shown on the drawings or instructed, with no allowance for extra cuts or fills, waste or additional thickness necessary to obtain the

minimum finished thickness or dimensions required in this contract. Any work performed in excess of the requirements of the plans and specifications will not be paid for, unless ordered in writing by the Engineer.

11. Units of Measurement and abbreviations used herein shall have the following meanings:

Unit	Abbreviation	Unit	Abbreviation
cubic meter	m^3 *or* cu m	millimeter	mm
hectare	ha	month	mth
hour	hr	number	No.
kilogram	kg	provisional sum	P.S.
kilometre	km	square meter	m^2 *or* sq m
lump sum	L.S.	square millimeter	mm^2 *or* sq mm
meter	m	vehicle	veh
metric ton (1,000 kg)	t	week	wk
months	mths		

SUMMARY OF BILLS OF QUANTITIES

BILL №	DESCRIPTION	AMOUNT (KES)
1	PRELIMINARY & SUPERVISORY/SUPPORT SERVICES	
4	SITE CLEARANCE & TOPSOIL STRIPPING	
5	EARTHWORKS	
7	EXCAVATION & FILLING FOR STRUCTURES	
8	CULVERTS & DRAINAGE WORKS	
9	PASSAGE OF TRAFFIC	
12	NATURAL GRAVEL MATERIAL SUBBASE	
13	GRADED CRUSHED STONE BASE	
14	CEMENT TREATED BASE	
15	BITUMINOUS SURFACE TREATMENT & SURFACE DRESSING	
17	CONCRETE WORKS	
16	BITUMINOUS MIX BASES, BINDER COURSES & WEARING COURSES	
20	ROAD FURNITURE	
21	MISCELLANEOUS BRIDGE WORKS	
22	DAYWORKS	
24	LANDSCAPING & ENVIRONMENTAL MITIGATION MEASURES	
25	HEALTH & ROAD SAFETY AWARENESS MEASURES & CAMPAIGNS	
A	**SUB TOTAL**	**-**
	Add 5 % of Sub-Total A of Bills as Provisional Sums for Physical Contingencies to be Expended in the whole or part as directed by the Engineer in accordance with Sub-clause 52(4) and Clause 58 of the Conditions of Contract (2)	
	Add 5% of Sub-Total A for Variation of Price in accordance to Clause 70 of the Conditions of Contract	
B	**SUB-TOTAL**	
	Add 16 % of Sub-Total (B) for V.A.T.	
	ADD: 0.03% (of Sub Total B) Public Procurement Capacity Building Levy	
C	**GRAND TOTAL CARRIED FORWARD TO FORM OF BID**	

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
	BILL № 1: PRELIMINARY & SUPERVISORY/SUPPORT SERVICES				
1.01	Provide or rent, furnish and maintain accommodation for Engineer's staff equivalent to: Ownership to revert to the Contractor upon completion of the Contract.				
	(a) Engineer's Senior Staff				
	(i) Type I	№	1.00		
	(ii) Type II	№	5.00		
	(b) Engineer's Junior Staff				
	(i) Type III	№	5.00		
	(ii) Type IV	№	5.00		
	(iii) Type V	№	5.00		
1.02	Provide or rent and maintain the Engineer's Representative's Main Office as shown in the Book of Drawings or as instructed by the Engineer for the exclusive use of the Engineer and his staff for the entire duration of the Contract**.** Ownership to revert to the Contractor upon completion of the Project.	Item	1.00		
1.03	Provide and maintain office equipment and associated furniture for the exlcusive use of the Engineer's Representative and his staff for the entire duration of the Contract as per the attached **Appendix to Bill Item № 1.03**. Ownership to revert to the Contractor upon completion of the Project.	Amt (Kshs.)	1.00		
1.04	Provide and maintain Survey Equipment for the exclusive use of the Engineer's representative and his staff for the entire duration of the Contract as per the attached **Appendix to Item № 1.04.** Ownership to revert to the Contractor upon completion of the Project.	Item	1.00		
1.05	Provide or rent and maintain the Engineer's Representative's Laboratory as shown in the Book of Drawings or as instructed by the Engineer for the exclusive use of the Engineer's Representative and his staff for the entire duration of the Contract. Ownership to revert to the Contractor upon completion of the Project.	Item	1.00		
1.06	Provide and maintain laboratory equipment, reagents and associated furniture for use by the Engineer's representative for the entire duration of the Contract as per the attached **Appendix to Bil Item № 1.06.** Ownership to revert to the Contractor upon completion of the Project.	Item	1.00		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
1.07	Provide with driver, fuel and maintain 2 new turbo charged diesel engine 5 door 4-wheel drive station wagon of minimum 2800 CC engine capacity or similar approved by the Engineer, fitted with air bags, mobile telephone handsfree set and a two way radio for the exclusive use of the Engineer inclusive of the first 4,000 Km per vehicle month. Vehicle to revert to the Contractor at the end of the Contract.	V-Mth	100.00		
1.08	Extra Over on Item 1.07 inclusive of fuels, maintenance, lubricants and servicing for mileage over 4,000 Km per vehicle month.	Km	120,000.00		
1.09	Provide with driver, fuel and maintain 6 new turbo charged diesel engine 4-wheel drive double cabin pickups of minimum 2800 CC engine capacity or similar approved by the Engineer, fitted with, hard top canopy, air bags, mobile telephone handsfree set and a two way radio for the exclusive use of the Engineer inclusive of the first 4,000 Km per vehicle month. Vehicle to revert to the Contractor at the end of the Contract.	V-Mth	260.00		
1.10	Extra Over on Item 1.09 inclusive of fuels, maintenance, lubricants and servicing for mileage over 4,000 Km per vehicle month.	Km	150,000.00		
1.11	Provide with driver, fuel and maintain, 2 new diesel engine single cabin pick-up with a closed hardtop canopy fitted with bench seats of minimum 2800 CC engine capacity or similar approved by the Engineer, fitted with air bags, mobile telephone handsfree set and a two way radio for the exclusive use of the Engineer inclusive of the first 4,000 Km per vehicle month. Vehicle to revert to the Contractor at the end of the Contract.	V-Mth	84.00		
1.12	Extra Over on Item 1.11 inclusive of fuels, maintenance, lubricants and servicing for mileage over 4,000 Km per vehicle month.	Km	40,000.00		
1.13	Allow a sum of KShs 10,000,000 for the Engineer's miscellaneous account to be spent in whole or part as instructed by the Engineer and to be reimbursed against receipts.	PC	10,000,000.00	1.00	
1.14	Extra Over on Item 1.13 for the Contractor's overheads and profit.	%	10,000,000.00		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
1.15	Allow for attendance upon the Engineer by the following staff in accordance with Clause 137 of Special Specifications				
	(a) 1 No. Resident Engineer's Site Allowance	M-Mth	48.00	180,000.00	8,640,000.00
	(b) 1 No. Deputy Resident Engineer/Highways Engineer	M-Mth	36.00	250,000.00	9,000,000.00
	(c) 1 No. Structural Engineer	M-Mth	20.00	200,000.00	4,000,000.00
	(d) 1 No. Materials Engineer	M-Mth	36.00	200,000.00	7,200,000.00
	(e) 1 No. Snr Environmentalist	M-Mth	20.00	200,000.00	4,000,000.00
	(f) 2 No. Graduate Engineer	M-Mth	72.00	200,000.00	14,400,000.00
	(g) 1 No. Snr Surveyor	M-Mth	36.00	150,000.00	5,400,000.00
	(h) 1 No. Snr Material Technologist	M-Mth	48.00	150,000.00	7,200,000.00
	(i) 2 No. Snr Inspector of works	M-Mth	36.00	150,000.00	5,400,000.00
	(j) 1 No. Draughtsman	M-Mth	20.00	65,000.00	1,300,000.00
	(k) 3 No. Inspector of Works	M-Mth	48.00	70,000.00	3,360,000.00
	(l) 2 No. Material Technologist	M-Mth	36.00	60,000.00	2,160,000.00
	(m) 2 No. Laboratory Technicians	M-Mth	36.00	70,000.00	2,520,000.00
	(n) 1 No. Survey Assistant	M-Mth	36.00	65,000.00	2,340,000.00
	(o) 1 No. Office Secretary	M-Mth	36.00	65,000.00	2,340,000.00
	(p) 2 No. Office Assistants	M-Mth	36.00	60,000.00	2,160,000.00
	(q) 3 No. Chainmen	M-Mth	36.00	60,000.00	2,160,000.00
	(r) 4 No. General Attendants	M-Mth	36.00	60,000.00	2,160,000.00
1.16	Extra Over on the sum Item 1.15 for the Contractor's overheads and profit.	%	85,740,000.00		
1.17	Allow a prime cost sum of Kshs 10,000,000 for the Engineer's staff overtime allowances in accordance with Clause 137 of the Special Specifications	PC	10,000,000.00	1.0	
1.18	Extra Over on Item 1.17 for the Contractor's overheads and profit.	%	10,000,000.00		
1.19	Allow a prime cost sum of KShs. 20,000,000 for training of Engineers, Technicians and other support staff as maybe instructed by the Engineer.	PC Sum	20,000,000.00	1.0	
1.20	Extra Over on Item 1.19 for the Contractor's overheads and profit.	%	20,000,000.00		
1.21	Allow a prime cost sum of Kshs 70,000,000 for relocation of public utilities and services.	PC Sum	70,000,000.00	1.0	
1.22	Extra Over on Item 1.21 for the Contractor's overheads and profit.	%	70,000,000.00		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
1.23	Allow a prime cost sum of KShs 5,000,000 for Environmental Impact Assesment Study and license.	PC Sum	5,000,000.00	1.00	
1.24	Extra Over on Item 1.23 for the Contractor's overheads and profit.	%	5,000,000.00		
1.25	Allow for prime cost sum of KShs. 6,000,000 for the Engineer and his staff for mobile phone airtime charges	PC Sum	6,000,000.00	1.00	
1.26	Extra Over on Item 1.25 for the Contractor's overheads and profit.	%	6,000,000.00		
1.27	Allow a prime cost sum of KShs 2,000,000 for taking and processing of Project Progress Photographs by a Professional Photographer as may be instructed by the Engineer.	PC Sum	2,000,000.00	1.00	
1.28	Extra Over on Item 1.27 for the Contractor's Overheads and Profit.	%	2,000,000.00		
1.33	Provide, erect and maintain Publicity Sign Boards as shown in the Book of Drawings at locations to be instructed by the Engineer.	No.	10.00		
Total of Bill № 1 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 4: SITE CLEARANCE & TOPSOIL STRIPPING					
4.01	Clear site on road reserve including removal of trees, hedges, bushes and other vegetation or deleterious organic material, grub up roots and backfilling of holes left with approved material in accordance with Clause 401 and 404 of the specifications.	Ha	51		
4.02	Strip topsoil 200mm deep for reuse or disposal or as may be instructed by the Engineer and in accordance with Clause 402 & 404 of the specifications.	m^3	120,340		
4.03	Allow a prime cost sum of KShs. 10,000,000 for the removal of structures including bridges on the road reserve in accordance with Clause 403 of the specifications. Measurement to be done on Dayworks basis.	PC Sum	2	10,000,000.00	
4.04	Extra Over on Item 4.03 for the Contractor's Overheads and Profit.	%	20,000,000.00		
Total of Bill № 4 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 5: EARTHWORKS					
	No separate payment shall be made for the overhaul of material and the cost of such haulage shall be included in the rates and/or prices inserted				
5.01	Cut to fill in soft material to 95% MDD (AASHTO T99) in layers of 150mm each in accordance with Clauses 502, 504, 505, 508, 511, 512, & 513 of the specifications	m^3	31,864		
5.02	As item 5.01 but in hard material compacted to refusal densities.	m^3	4,910		
5.03	Cut to spoil in soft material in accordance with Clauses 502, 504, 510, 511, & 513 of the specifications Includes excavations in swampy areas.	m^3	175,700		
5.04	As item 5.03 but in hard material compacted to refusal densities.	m^3	25,425		
5.05	Fill in soft material to 95% MDD (AASHTO T99) in layers of 150mm each in accordance with Cl. 502, 504, 505, 508, 511, 512, & 513 of the specifications	m^3	235,640		
5.06	As item 5.05 but in hard material compacted to refusal densities.	m^3	31,864		
5.07	Compaction of 150mm thick original ground under fills and in cuts below subgrade to 95% MDD.(AASHTO T99) in accordance with Clauses 502, 504, 508, & 512 of the specifications	m^3	72,135		
5.08	Extra over item 5.01 for compaction of top 300mm below formation level in cuts and fills (subgrade) to 100% MDD. (AASHTO T99)	m^3	142,970		
5.09	Top soiling over side slopes, cuts and fills in accordance with Clauses 514 of the specifications	m^2	190,700		
5.10	Provide and place rockfill on swampy areas as instructed by the Engineer in accordance with Clauses 507 of the specifications.	m^3	32,700		
5.11	Provide geotextile filter fabric to under, over or around rockfill as directed by the Engineer	m^2	8,000		
Total of Bill № 5 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 7: EXCAVATION & FILLING FOR STRUCTURES					
7.01	Excavate for structures in soft material, backfill with suitable material, spoil surplus/unsuitable material and keep the excavation free of water in compliance with Clause 702, 703, 704, 705, 706, 707 and 708 of the specifications	m^3	23,050		
7.02	As item 7.01 but in hard material	m^3	5,245		
7.03	Provide, place and compact to refusal rock fill below structure	m^3	900		
7.04	Provide, place and compact approved granular fill material on the structure as instructed by the Engineer	m^3	2,600		
7.05	Provide, hand pack and compact hardcore under approach slabs	m^3	400		
7.06	Provide and place macafferri or equivalent gabion boxes as shown in the Book of Drawings or as instructed by the Engineer	m^2	14,210		
7.07	Provide and place rock fill to gabion boxes	m^3	2,100		
7.08	Provide and place macafferri or equivalent gabion mattresses as shown in the Book of Drawings or as instructed by the Engineer	m^2	17,050		
7.09	Provide and place rock fill to gabion mattresses	m^3	3,020		
7.10	Provide 1:3 cement mortar grouting to gabion faces as instructed by the Engineer	m^3	600		
7.11	Provide and place cement grouted stonepitching as instructed by the Engineer in accordance with Clause 710 of the specifications	m^2	14,700		
7.12	Allow a prime cost sum of KShs. 5,000,000 for temporary works as instructed by the Engineer in compliance with Clauses 702, 704, 708, & 709 of the specifications	PC Sum	1	5,000,000.00	
7.13	Porous filter material to any depth as instructed by the Engineer	m^3	400		
7.14	Filter fabric behind porous filter material	m^2	3,000		
Total of Bill № 7 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 8: CULVERTS & DRAINAGE WORKS					
	Note: No separate payments shall be made for gravel for blinding or hauling to spoil unsuitable excavation materials and the cost of such shall be included in the rates and prices.				
8.01	Excavate in soft material for culverts, subsoil drains, minor drainage structures, catchwater drains, concrete pipe culverts headwalls, wingwalls, apron, toe walls, drop inlets, mitre drains and outfall channels to free flowing conditions and compact as specified or as instructed by the Engineer.	m^3	11,708		
8.02	As item 8.01 but in hard materials.	m^3	1,632		
8.03	Provide, place and compact to refusal rock fill below culverts or as instructed by the Engineer.	m^3	280		
8.04	Provide, place and compact approved granular fill material on culverts as instructed by the Engineer	m^3	2,149		
8.05	Provide, lay and joint precast concrete pipes culverts				
	a) 600 mm ID diameter	m	2,520		
	b) 900mm ID diameter	m	1,218		
	c) 1200mm ID diameter	m	350		
8.06	Provide and place class 15/20 concrete as bedding, haunching and surround to minor drainage structures	m^3	3,710		
8.07	Provide and place class 25/20 concrete to head walls, wingwalls, aprons, toe walls, inlets and outlets to pipe culverts inclusive of reinforcement and formwork	m^3	2,020		
8.08	Excavate in soft material, provide and joint invert block drains with two course side slabs or equivalent approved including bedding and backfilling with selected material as instructed by the Engineer.	m	7,900		
8.10	Provide and place cement grouted stone pitching as instructed by the Engineer in accordance with Clause 710 of the specifications	m^2	39,600		
8.11	Construct concrete class 20(20) scour checks including formworks and as instructed by the Engineer.	№	340		
8.12	Provide and place A142 fabric mesh reinforcement or equivalent for item 8.07	m2	59,703		
Total of Bill № 8 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 9: PASSAGE OF TRAFFIC					
9.01	Allow a for passage of traffic through the works in compliance with Clauses 906, 907, 908, 909 & 911 of the specifications.	LS	3.6		
9.02	Construct, maintain and water for the entire duration of the Contract or as instructed by the Engineer 7.0 m wide diversion roads having a 150mm thick natural gravel materials base layer of CBR greater than 20% including road signs, barriers and flashing light arrow panels in accordance with Clauses 904, 905, 907 & 910 of the specifications.	Km	32.0		
Total of Bill № 9 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 12: NATURAL GRAVEL MATERIAL SUBBASE					
	No overhaul will be paid for seperately under this item and the cost of hauling will be deemed to have been included in the rates. The rates inserted shall include all items as listed in method-A of measurement in the standard specifications				
12.01	Provide, place, water, process and compact to 95% MDD (AASHTO T180) natural gravel material as Subbase to main carriageway, shoulders, bus bays, accesses and junctions as per specifications or as instructed by the Engineer	m^3	95,000		
12.02	Provide, place, water, process and compact to 95% MDD (AASHTO T180) natural gravel material as Base to main carriageway, shoulders, bus bays, accesses and junctions as per specifications or as instructed by the Engineer	m^3	41,000		
12.03	Natural gravel, crushed stone gravel or mixtures of natural gravel and crushed stone, scarified pavement material or milled bituminous pavement material of minimum 4 day soaked CBR of 30% (G30 material), as Subbase to main carriageway, shoulders, bus bays, accesses and junctions as per specifications or as instructed by the Engineer	m3	23,300		
Total of Bill № 12 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 13: GRADED CRUSHED STONE BASE					
	No overhaul will be paid for separately under this item and the cost of hauling will be deemed to have been included in the rates. The rates inserted shall include all items as listed in method-A of measurement in the standard specifications				
13.01	Provide, place, spread and compact Graded Crushed Stone as Base to main carriageway, shoulders, bus bays, accesses and junctions or as instructed by the Engineer	m^3	32,800		
Total of Bill № 13 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 14: CEMENT TREATMENT					
14.01	Provide and transport to site CEM I, 42.5N Ordinary Portland cement	tonnes	3,500		
14.02	Process the designed quantity of cement to improve the Natural Gravel Material Subbase layer to the carriageway, shoulders, bus bays, accesses and junctions as specified or as instructed by the Engineer to achieve the desired unconfined compressive strength.	m^3	62,800		
14.03	Allow for curing and protection of the treated Subbase material as specified	m^2	331,000		
14.04	Process the designed quantity of cement to improve the GCS Base layer to the carriageway, shoulders, bus bays, accesses and junctions as specified or as instructed by the Engineer to achieve the desired unconfined compressive strength.	m^3	73,800		
14.05	Allow for curing and protection of the treated Base material as specified	m^2	490,100		
Total of Bill № 14 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 15: BITUMINOUS SURFACE TREATMENT & SURFACE DRESSING					
15.01	Prepare surface of carriageway, junctions, accesses etc, provide and spray MC-3000 as prime coat on carriageway, shoulders, bus bays, junctions and accessess at a rate of 1.0 - 1.2 lt/m² or as instructed by the Engineer	Litres	548,400		
15.02	Prepare seal surface, provide and spray 80/100 penetration grade cutback bitumen as binder for single seal on carriageway, shoulders, bus bays, junctions and accesses at a spray rate of 1.1 - 1.3 lts/m² or as instructed by the Engineer	Litres	594,100		
15.03	Provide, spread and roll 10/14 mm precoated chippings as single seal on carriageway, shoulders, busbays, junctions and accesses at a spread rate of 75 - 90 m²/m³ or as instructed by the Engineer	m^3	4,500		
15.04	Provide, spread and roll 14/20 mm precoated chippings as single seal on carriageway, shoulders, busbays, junctions and accesses at a spread rate of 75 - 90 m²/m³ or as instructed by the Engineer	m^3	1,500		
15.05	Provide, spread and roll 6/10 mm precoated chippings as single seal on carriageway, shoulders, busbays, junctions and accesses at a spread rate of 75 - 90 m²/m³ or as instructed by the Engineer	m^3	1,500		
15.06	Prepare surface of carriageway, junctions, accesses etc. provide and spray K1 - 60 bitumen emulsion as tack coat for carriageway, shoulders, bus bays, junctions and accesses at a rate of 0.4 - 1.0 lt/m2 or as instructed by the Engineer	Litres	456,900		
Total of Bill № 15 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 16: BITUMINOUS MIX BASES, BINDER COURSES & WEARING COURSES					
16.01	Prepare surface, provide, place and compact 50 Superpave Asphaltic Concrete Type 1 using 0/20 aggregates and a nominal bitumen content of 6.0 % by weight of total mix on carriageway, bus bays and junctions and as instructed by the Engineer	m^3	16,200		
Total of Bill № 16 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KSHS.)	AMOUNT (KSHS)
BILL № 17: CONCRETE WORKS					
17.01	Blinding Concrete				
	Providing, hauling all materials, preparation, handling, mixing, placing to class UF1 finishing and curing.				
	a) Concrete Class 15/20	m^3	750		
17.02	Structural Concrete				
	Providing, hauling all materials, preparation, handling, mixing, placing to class UF3 finishing and curing.				
	a) Concrete Class 30/20	m^3	1,100		
17.03	Formwork for formed surface finishes				
	Supply, erect and dismantle formwork for concrete of the following classes. The rates shall cover inclined formwork of all slopes, radii, and angles.				
	a) Class F3 finish	m^2	6,000		
17.04	Reinforcement				
	Providing, cutting, shaping and placing high yield, high bond strength bars.				
	a) Diameter equal or less than 16 mm	Tonne	100		
	b) Diameter greater than 16 mm	Tonne	150		
	c) A252.3 BRC mesh to BS4483	m^2	180		
17.05	Providing, cutting, shaping and placing mild steel bars				
	a) Diameter equal or less than 16 mm	Tonne	50		
	Supply and place Cast-in-Place concrete piles including excavating, boring, sleeving, dewatering, supplying and placing reinforcement, vibrating and curing concrete all as described;				
	a) Diameter 900mm concrete piles	m	900		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
17.05	Allow a provisional cost sum of KShs. 80,000,000 for construction of box culvert or bridges as per the design. Payments shall be made in accordance with rates provided in all other bills	PC Sum	0		
Total of Bill № 17 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 20: ROAD FURNITURE					
20.01	Provide and erect the following permanent road signs made up with high intensity grade retro-reflective type sheeting(ASTM 9) complete as per the drawings and in accordance with the Special Specification Clause 2004 where instructed by the Engineer:				
	a) Warning signs size 750mm	№	90		
	b) Warning signs size 1000mm	№	30		
	c) Priority, prohibitory and mandatory signs size 750mm	№	45		
	d) Standard informatory signs size 300mm x 400mm	№	70		
	e) Non-Standard informatory signs of area				
	(i) Less than 1.0 m²	№	15		
	(ii) Equal or more than 1.0m² but less than 2.0m²	№	25		
	(iii) Equal or more than 2.0m² but less than 5.0m²	№	25		
	(iv) Equal or more than 5.0 m²	№	17		
20.02	Provide and lay hot applied thermoplastic road marking compound in approved colour and shade (ASTM 9) for road marking on bituminous surface, using fully automatic extrusion machine and using pre-melter for melting thermoplastic material including cleaning the surface of all dirt, dust, and other foreign matter, complete with demarcation at site/pre-marking, finishing and managing the traffic movements. Marking to be done as per the specifications, detailed drawings and as instructed by the Engineer.				
	(a) For Lane Marking (broken lines) with white paint, 100 mm wide	m^2	10,720		
	(b) For Lane Edge Lines (continuous line) with yellow paint, 150 mm wide	m^2	6,260		
	(c) For Bus Bays (broken line) with white paint, 200 mm wide	m^2	1,600		
	(d) For Give Way (broken line) with white paint, 400 mm wide	m^2	380		
	(e) For Pedestrian Crossing (continuous lines) with white paint, 500 mm wide	m^2	2,480		
	(f) For Directional Arrows with white paint	m^2	450		
	(g) For Chevrons with yellow paint	m^2	450		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
20.03	Provide and fix aluminium casted reflective studs (Cat's eyes) of size 100 mm x 100 mm at the base with zinc coated nails of size 12 mm dia. of 120 mm long having both side (dual direction) high impact ABC 3 № of eyes of 16 mm dia on both side containing 7 beads each, a total of 42 beads in retro reflective material as instructed by the Engineer	№.	5,190		
20.04	Provide and erect Verge Master MK 111 plastic edge marker posts as instructed by the Engineer	№.	1,070		
20.05	a) Provide and erect single sided double head flexi-beam guardrails complete with steel posts, spacers, nuts, bolts and and 'swarflex' ART 3240 guardrail reflectors as instructed by the Engineer.	m	900		
20.06	Provide and erect road reserve boundary posts @ 100m	№.	84		
20.07	Provide and erect Kilometre marker posts as instructed by the Engineer	№.	42		
20.08	Provide and fix on the footpaths at market centres interlocking concrete paved unishaped blocks (monolithic single layer precast concrete blocks) of any specified colour/size & shape, with approved pattern of 50 mm thickness having average crushing strength of 50 N/mm² on average thickness of 50 mm uniformly graded river sand cushioning properly compacted with a mechanical compactor to required level, grade and camber as instructed by Engineer	m²	6,800		
20.09	Excavate for, provide, lay and joint 255mm x 125mm wide half battered precast concrete kerbs laid on 100mm thick concrete class 15(20) bed and haunch as specified on the drawings				
	(a) Straight and radii greater than 12m	m	15,120		
	(b) Curved radius 1 - 5m (Provisonal)	m	700		
	(c) Curved radius 1 - 5m (Provisonal)	m	500		
20.10	Excavate for, provide, lay and joint 125mm x 100mm wide half battered precast concrete flush kerbs laid on 100mm thick concrete class 15(20) bed and haunch as specified on the drawings	m	14,750		
20.11	Excavate for, provide, lay and joint 450mm x 250mm precast concrete quadrants jointed in a 1:3 cement mortar and laid on 100mm thick concrete class 15(20) bed and haunch	m	280		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
20.12	Excavate in any material for, fabricate and erect 100mm diameter bollards as specified on the drawings. The bollards to be constructed with class A steel black pipes filled with class 15 concrete and topped with 1:3 cement-sand mortar. The pipes to have 2No., 30 x 30 x 3mm thick x 300mm long steel angle irons welded at the base and to painted with alternative black and white round strips of 100mm thickness. (Provisional)	№.	160		
20.13	Construct asphalt concrete rumble strips on the road carriageway and shoulders as per the provided drawing of standard bump and as instructed by the Engineer.	m	15,854		
20.14	As in Item 20.11 but speed control bumps on the road carriageway and shoulders as instructed by the Engineer.	m	930		
20.15	Provide and lay service ducts for utilties as instructed by the Engineer	№	52		
Total of Bill № 20 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 22: DAYWORKS					
	Plant/Equipment				
	Note:				
	Where items of Major Plant listed in the Schedule of Dayworks are specified by type (e.g Cat D7, Cat. 120H) the power rating of such plant is that manufactured within the two years prior to the date of tender.				
	Any plant employed upon Dayworks which have power rating lower than that stated above, shall be paid for at rates lower than those in the Schedule of Dayworks. The reduction in the payable rate shall be in proportion to the power rating below that specified above.				
	The rates inserted herein are to include all operational and maintenance costs, fuel, oil, grease drivers/operators wages, supervision overheads and profits. Only time actually employed upon the work will be measured and the rates shall include for idle time				
22.01	Crawler dozers with dozers and hydraulic attachment				
	(a) 100 - 135 kw rated flywheel power	hr	10		
	(b) 136 - 185 kw rated flywheel power	hr	10		
22.02	Self -loading wheeled motor scraper of				
	(a) upto 15 m^3	hr	10		
	(b) upto 25 m^3 struck capacity	hr	10		
22.03	Motor Graders				
	(a) 80 - 110 kw rated flywheel power	hr	10		
	(b) 111 -150 kw rated flywheel power	hr	120		
22.04	Rollers: pneumatic tyred, self-propelled of 1 - 2 tonne per wheel.	hr	10		
22.05	Vibratory compactor, smooth drum, with a flywheel of about 77 kw capable of generating a centrifugal force of up to 112KN at 30 HZ	hr	100		
22.06	Self propelled vibratory roller of 650 - 1000 kg unballasted weight	hr	40		
22.07	Self-propelled sheep's foot roller or heavy grid roller	hr	10		
22.08	Small dumpers, 750-1000kg rated payload	hr	10		
22.09	Compressor rated by normal delivery of free air per min. at about 7 kg/cm^2, capable of 70m^3 of air per minute	hr	10		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
22.10	Hydraulic excavator with a rated bucket capacity of upto 1.7m^3	hr	190		
22.11	Wheel loader 4WD, articulated:				
	(a) 1.5 - 2.0 m^3 SAE rated bucket capacity	hr	50		
	(b) 2.1 - 3.4m^3 SAE rated bucket capacity	hr	220		
22.12	As item 22.11 but crawler loader				
	(a) 1.5 - 2.0 m^3 SAE rated bucket capacity	hr	50		
	(b) 2.1 - 3.4m^3 SAE rated bucket capacity	hr	50		
22.13	Welding machine	hr	50		
22.14	Pump (inclusive of all houses) and 50 - 80m delivery	hr	430		
22.15	Concrete mixer of 0.2 - 0.3m^3 (wet capacity)	hr	50		
22.16	Poker vibrator for concrete, diesel	hr	50		
22.17	Ordinary flat -bed lorry, 8-15 tonne gross vehicle weight	hr	50		
22.18	Tipper (dump) truck				
	(a) 10 - 15 tonne gross weight	hr	160		
	(b) 16 - 25 tonne gross weight	hr	400		
22.19	Pick-up 1 tonne gross weight of upto I tonne carrying capacity	hr	300		
22.20	Water tanker/bowser self propelled, 5000 - 10,000 I capacity	hr	150		
22.21	Pressure bitumen distributor, 4500 - 9000 Its capacity	hr	50		
22.22	Mechanical broom	hr	50		
22.23	Mechanical Bitumen handspray unit	hr	50		
22.24	Self-propelled chip spreader or equivalent approved	hr	50		
22.25	30 tonne crane	hr	50		
	Labour				
	All items of labour must be priced (see clause 2202 (b) in the specifications) Only the actual time engaged upon the work will be paid for				
	Note: The rate inserted herein shall include all costs of labour, as well as overtime, travelling, time and cost of accommodation, social security, contributions, use and maintenance of small tools of trade, supervision,insurance, overheads and profits				
22.26	a) Foreman	hr	400		
	b) Carpenter	hr	30		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
	c) Stone mason	hr	150		
	d) Site Surveyor	hr	60		
	e) Plant Operator	hr	60		
	f) Blaster (or certified explosives handler)	hr	60		
	g) Unskilled Labour	hr	60		
	h) Watchman (all round surveillance)	hr	60		
	Materials				
	All items of materials must be priced, and in accordance with clause 2202(c) requirements of the specifications				
22.27	CEM I, 42.5N Ordinary Portland cement	Tonne	10		
22.28	CEM II/B-P 32.5N Portland Pozzolana cement	Tonne	10		
22.29	Hydrated Lime	Tonne	10		
22.30	Aggregates for Concrete				
	(a) Sand	Tonne	10		
	(b) Coarse (nominal size 10-20)	Tonne	60		
22.31	Shuttering Timber				
	(a) Class F1 finish	m^2	10		
	(b) Class F3 finish	m^2	10		
22.32	Mild steel				
	(a) Up to and including 16mm diameter	Tonne	10		
	(b) Over 16mm diameter size	Tonne	10		
22.33	As item 22.33 but High yield steel				
	(a) Up to and including 16mm diameter	Tonne	10		
	(b) Over 16mm diameter size	Tonne	10		
22.34	Class 2 nominal size chippings				
	(a) 14/20 mm	m^3	50		
	(b) 6/10 mm	m^3	55		
22.35	Bitumen				
	(a) 80/100 penetration grade bitumen	Litres	50		
	(b) Bitumen cutback MC 30	Litres	50		
	(c) Bitumen cutback MC 3000	Litres	50		
	(d) 60/70 penetration bitumen	Litres	50		
22.36	Maccafferi or simialr approved gabion mesh of size 2mx1mx1m	m^2	50		
22.38	Pentolite stick explosives or equivalent	kg	50		
22.39	Explosive fuse	m	50		
22.40	Detonating relay	№	50		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
22.41	Welding rods of any gauge	№	50		
22.42	Red oxide undercoat paint for metallic surface.	Litres	50		
22.43	Oil paint for metallic surfaces	Litres	50		
22.44	Pipe hand rails	m	50		
22.45	Guardrails	m	50		
22.46	Bolt fasteners of any size	№	50		
Total of Bill № 22 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 24: LANDSCAPING & ENVIRONMENTAL MITIGATION MEASURES					
24.01	Supply, stack and spread approved earth and manure at site including royalty and carriage up to 15 m as instructed by the Engineer.	m^3	2,500		
24.02	Compensatory road side plantation of approved species of indigenous trees including MS tree guard, watering, manure, maintenance during the construction and defect liability periods or as instructed by the Engineer.	№	180		
24.03	Provide, plant and water approved species of flowering/avenue trees of at least 1m height above the ground level in excavated pits of size 1.2m x 1.2m x 1.2m, filling with approved mixture of soil and manure and after planting, removal of unsuitable excavated earth to approved location or as instructed by the Engineer.	№	180		
24.04	Provide, plant and water approved sprigs of indigenous type of grass as instructed by the Engineer	m^2	2,500		
24.05	Hydro seeding				
	(a) Provide an approved seed mixture for hydro seeding	Kg	100		
	(b) Hydro seeding	Ha	1		
24.06	Landscaping of embankment slopes, cut faces, side drains of outfall channels, shoulders, spoil and borrow areas. Rate to include light compaction of the landscaped areas to the satisfaction of the Engineer.	Ha	1		
24.07	Excavate, desilt and clean rivers and existing outfall channels on either side of the road carriageway.	m	425		
24.08	Monitor Air quality for SPM, PM10, SO_2, NO_X, CO & HC in each season i.e. dry and rainy with a frequency of 24 hr/day for two consecutive working days per week for two weeks during construction period at three locations as instructed by the Engineer.	№ of samples	50		
24.09	Monitor Noise levels once in every season for two non-consecutive days per week for 2 weeks with an interval of 10 minutes for 24 hr at three locations as instructed by the Engineer.	№ of samples	50		
Bill Sub-total carried forward to the next page					

Bill Sub-total Brought Forward from the previous page					
24.10	Test water quality at two locations along the project for pH, BOD, TSS, TDS, DO, turbidity and O&G once in each season i.e. dry and rainy or as instructed by the Engineer.	№ of samples	10		
24.11	Test soil quality for heavy metals and oil & grease at the start and end of construction activity at the relevant section as instructed by the Engineer.	№ of samples	10		
Total of Bill № 24 carried forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE (KES)	AMOUNT (KES)
BILL № 25: HEALTH & ROAD SAFETY AWARENESS MEASURES & CAMPAIGNS					
	Note:				
	The Contractor is to prepare and submit monthly reports on the health and road safety awareness campaigns and related activities conducted in the project area. The reports are to be tabled at the site meetings				
	General				
25.01	Allow for a Provisonal Prime Cost Sum for the participation of experts and campaigns on Health & Road Safety Awareness (e.g. appointed representatives of local health authorities, County Director of Health, Traffic Police, Ministry of Transport & Infrastructure, the Employer etc.) to conduct seminars, train and communicate with workers, staff and local area residents on issues related to Health & Road Safety Awareness. Allowance to include transport, meals, accommodation and any other reasonable allowances and associated equipment expenses.	PC Sum	5,000,000		
25.02	Extra Over on Item 25.01 for the Contractor's Overheads and Profit.	%	500,000		
	STI's & HIV/AIDS Awareness & Campaigns				
25.03	Allow for the engagement of a Health Specialist Sub-contractor to conduct sessions for sensitisation of the Contractor's workers, Engineer's staff and local area residents on the dangers of STIs' & HIV/AIDS as per the programme(s) to be approved by the Engineer.	Man Month	36		
25.04	Provide for setting up fully operational Voluntary Counselling and Testing (VCT) clinics within the project area. Include for running of the clinics together with the necessary trained personnel during the Contract Period.	№	10		
25.05	Implement STIs' & HIV/AIDS awareness campaigns amongst the Contractor's workers, Engineer's staff and local area residents for the duration of the Contract as per the programme(s) to be approved by the Engineer	Month	36		
25.06	Allow for the availability and distribution of condoms to the Contractor's workers, Engineer's staff and local area residents for the duration of the Contract.	Month	36		
Total of Bill № 25 carried forward to Summary Page					

APPENDICES TO THE BOQ

Item:	Appendix to Bill No. 1.03: Furniture and Stationary for the office of the Resident Engineer				
	DESCRIPTION	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
	OFFICE FURNITURE				
A102/1	Construct and maintain the RE's main office for the entire contract period in accordance with the specification. Measurements and payments to be done in accordance with clause 141(d) of the standard specification.	PC SUM	1	3,000,000.00	3,000,000.00
A102/1A	E.O items for A102/1 for overheads and profit	%	3,000,000.00		
A102/2	Meeting table (3.0mx 1.2m) with 6 chairs	No.	2		
A102/3	Executive Desk 2.2m x 0.9m with chair and 3 lock up drawers	No.	3		
A102/4	Chairs with arm rests	No.	8		
A102/5	Standard Table (1.5mx 0.9m) with 2 drawers and 2 chairs.	No.	4		
A102/6	Typist's table with one chest of drawers and a chair	No.	2		
A102/7	Plan tables and stools	No.	2		
A102/8	Personal computers core i9 with minimum 1 TB hard disc drive,16GB RAM ,3.5 inch disc drive,52X DVD /CD-RW drive ,2serial and I parallel ports 21"SVGA Digital colour monitor and the latest windows operating system	No.	5		
A102/9	Laptop computers core i9, minimum 500 GB hard disc drive,8GB RAM, 3.5 inch disc drive,52X DVD /CD-ROM drive , TFT colour screen	No.	4		
A102/10	2No.HP portable Officejet colour printer compatible with the above laptops	No.	2		
A102/11	1HP laserjet or equivalent A3-size printer compatible with the above personal computer.	No.	1		
A102/12	The contractor shall supply A4 paper and consumables, for the Engineer's printers in a quantity sufficient to complete the contract.	Reams	500		
A102/13	The contractor shall supply A3 size paper and consumables, for the Engineer's printers in a quantity sufficient to complete the contract.	Reams	50		
A102/14	1no HP Deskjet 1220 cxi inkjet or equivalent colour printers or equivalent including consumables sufficient for the duration of the contract.	No.	1		
A102/15	7no.s UPS (uninterupted power supply) unit I KVA with surge	No.	7		

Item:	Appendix to Bill No. 1.03: Furniture and Stationary for the office of the Resident Engineer				
	DESCRIPTION	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
	protector capable to support and backup each PC				
A102/16	1NO HP scanjet 7450C scanner or equivalent with upto 2400-dpi resolution 50sheet automatic feeder, fast SCSI and USB connectivity to PC	No.	1		
A102/17	1NO.canon power shot G2 or equivalent digital cameras 20 mega pixels zoom 3xoptical ,2xdigital ,1 installed memory card, minimum 32GB	No.	1		
A102/18	1NO.HP designjet 120 or equivalent ploter 36" media size with sufficient consumables to complete the contract.	No.	1		
A102/19	Complete set of latest editions of soft ware complete with manuals and CDs of a type compatible with the personal computer disc drives, windows 7 operating system, MS office professional suit, microsoft project and the Latest version AUTOCAD/CIVIL 3D	No.	2		
A102/20	1no. Safe for cash and valuables min. size approx.0.8mx0.5mx.4m to be concreted in place (either wall or floor mounted) complete with lock and keys.	No.	1		
A102/21	1 Drawing table stools	No.	1		
A102/22	1 set plan drawers(6 drawers)	No.	1		
A102/23	1 two drawer Steel lockable filing cabinet	No.	1		
A102/24	Set of transparent plastic curve quides, metric.	No.	1		
A102/25	8no.Electronic Calculator in number and type HP48GX or equivalent.	No.	8		
A102/26	Fire extinguisher	No.	3		
A102/27	First aid kit	No.	2		
A102/28	Snake bite kit	No.	2		
A102/29	Stapling machines	No.	6		
A102/30	Paper punches	No.	6		
A102/31	A3 size Colour photocopy machine with accessories and supplies sufficient to complete the project	No.	1		
A102/32	1no.spiral binding machine with consumables sufficient to complete the contract.	No.	1		
A102/33	Water filters	No.	6		

Item:	Appendix to Bill No. 1.03: Furniture and Stationary for the office of the Resident Engineer				
	DESCRIPTION	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A102/34	Thermos jug 4.5 litres capacity	No.	6		
A102/35	25 cups,25 glasses and 5 coffee sets	Set	1		
TOTAL CARRIED TO Bill 1.03					

APPENDIX TO BILL ITEM 1.04: PROVIDE ANO MAINTAIN SURVEY EQUIPMENT					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE**	**AMOUNT**
A*104/1.01*	Engineer's Electronic Level Wild, - Wild NA 2 or equivalent automatic precise with a compensator and more than 50x magnification	No	2		
A*104/1.02*	AO size drawing board on adjustable metallic stand with parallel sliding cursor	No	1		
A104/1.03	Survey umbrella with tiltable upper section of the road	No	3		
A104/1.04	Levelling staff 5m with levelling bubble (Wild GNLE or similar approved)	No	6		
A*104/ I.05*	5m ranging rod metallic	No	6		
A104/1.06	1m stainless steel straight-edge	No	2		
A1O4/1.07	5m stainless aluminum straight-edge	No	1		
A104/1.08	50m steel whiteface tape	No	2		
A*104/ 1.10*	2kg Hammer	No	5		
A1O4/1.11	Circular and arrow templates	No	1		
A104/1.12	Two way Radio Communication	No	4		
A1O4/1.15	Pangas (16") straight type	No	4		
A104/1.14	Levelling stave telescopic type 4m length with levelling bubble with 12 levelling plates	No	4		
AI 04/1.15	Total Station - Leica TPS12O0 + series with Automatic target recognition, EGL guide light, remote control, motorised, PowerSearch (PS) and GUS74 laser guide or equivalent complete with 52GB memory card facility plus downloading software Leica geo office system, three measuring poles with double prisms each per total station. 5No. total stations shall be delivered to the General Manager (Design and Construction) at the start of the project.	No	1		
A104/1.16	5m tape measure	No	4		
A104/1.17	Graph paper A3 size 5Osheets booklet	No	100		
A104/1.18	Drawing office stools	No	4		
A104/1.19	*3Om* linen tape measure	No	2		
A*104/ I.20*	Roll of tracing paper	No	10		

APPENDIX TO BILL ITEM 1.04: PROVIDE ANO MAINTAIN SURVEY EQUIPMENT					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE**	**AMOUNT**
A104/1.21	GPS System - Leica GSO9 GNSS system, with at least three rovers and a controller. the controller to have color display, touch screen& stylus, *CY* card slot and alphanumeric keyboard, GLONASS, RTCM/CMR, RTK unlimited, network RTK, 5Hz positioning, and raw data loging. the system to incorporate Reference line, DTM stake out, Roadrunners and Volume calculation. the system to include all accessories i.e batteries with professional charger, Min 8GB memory card, CompactFlash PC card adaptor, data transfer cables, modems and antennas, poles and accessories, tripod and software. the equipment to be delivered to the General Manager (Design & Construction) at the start of the project.	set	1		
	Total carried to Bill Item 1.04				

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
	1. FURNITURE				
A103/1.01	Desk 2.2x0.9 m with chair and lockup drawers	No.	3		
A103/1.02	Desk chair (standard)	No.	8		
A103/1.03	Stationery cupboard, 1.2 m³, lockable	No	1		
A103/1.04	Steel filing cabinet, 4 drawers, lockable	No	1		
A103/1.05	Steel filing cabinet, 2 drawers, lockable	No	1		
A103/1.06	Bookshelf, 3 shelves 1.2 m long (to hold box files)	No	1		
A103/1.07	Table - 6 m²	No	3		
	2. EQUIPMENT				
	(The following equipment shall be purpose made for use in the Engineer's office and laboratories and shall comply with the relevant British (BS) or American (AASHTO) Standard)				
	A. General Equipment				
A103/2.02	Intelcore i7 Desktop computer	No.	1		
A103/2.03	Uninturruptable Power Supply 1VA	No.	3		
A103/2.04	A4 Laserprinter	No.	1		
A103/2.05	Stapling machine	No.	1		
A103/2.06	Ordinary 2 hole paper punch	No.	1		
A103/2.07	Desk mounted pencil sharpeners	No.			
A103/2.08	Drinking water dispenser, hot/cold	No.	1		
A103/2.09	Microsoft Office (Current Version)	No.	1		
A103/2.10	Two Plate electric heater	No			
A103/2.11	Fire extinguisher, 10 litre capacity, CO2 type	No	2		
A103/2.12	Complete first aid kit	No	1		
A103/2.13	Electric fan	No			
A103/2.14	Scientific calculators	No	2		
A103/2.15	Refrigerator min. capacity 0.2m3	No	1		
	Page 1 C/Forward to Sub Bill Summary				
A103/2.16	Compaction mould complete with base plate and extension collar, 101.6 mm dia x116.43 mm high	No	4		
A103/2.17	2.49kg. Compaction hammer, drop regulated to 304.8mm	No	2		
A103/2.18	4.535kg compaction hammer drop regulated to 457.2mm	No	2		
A103/2.19	Electric vibrating Kango Hammer fitted with steel tamper(BS 1377) with support frame	No	1		
A103/2.20	Straight edge 300 mm long with handles	No	1		
A103/2.21	Steel Tamper (BS1377) compatible with Kango hammer	No	2		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/2.22	Compaction mould 152.4 mm. dia x 116.43 mm complete with base plate and extension collar, 101.6 mm	No	2		
A103/2.23	Galvanized metal tray 1m x 0.5m x 75 mm deep	No	6		
A103/2.24	75mm brush	No	5		
A103/2.25	Semi-automatic balance, 25kg Capacity accurate to 1g, including weights	No	2		
A103/2.26	20mm BS Sieve, 300mm diameter	No	2		
A103/2.27	Stop Clock	No	1		
A103/2.28	Thermostatically controlled electric oven 105-1100C, capacity 0.225 m^3	No	1		
A103/2.29	As above but gas heated	No	1		
A103/2.30	Moisture content tins, 75 mm dia, Cadmium or aluminium plated	No	30		
A103/2.31	Cone penetrometer with gauge and automatically controlled test cup	No	1		
	Density (Sand replacement method BS 1377)				
A103/3.01	Metal containers 450mm diameter	No	2		
A103/3.02	Stainless steel tray 305mm diameter	No	2		
A103/3.03	Metal tray with 150 mm diameter hole in the centre, 300mmx300 mm square or equivalent area, 40mm deep	No	2		
A103/3.04	Metal tray with 200mm diameter hole in the centre, 500mm x 500 mm square , 50 mm deep	No	2		
A103/3.05	Steel pegs for fixing tray in position	No	30		
A103/3.06	Sand pouring cylinder, 150 mm diameter	No	2		
A103/3.07	Sand pouring cylinder, 215 mm diameter	No	1		
A103/3.08	Cold steel chisel 20mm x 300mmm	No	5		
A103/3.09	Cold steel chisel 10mm x 250mmm	No	3		
A103/3.10	2 No 1.5kg, 2No 3.5kg mason hammers and 2 No 1Kg rubber mallet	Set	3		
A103/3.11	Scoop for removing excavated material from hole, 250 mm long handle	No	5		
A103/3.12	100mm brush, soft	No	10		
A103/3.13	50mm brush, soft	No	6		
A103/3.14	Primus gas stove	No	2		
A103/3.15	Calibrating can 150 mm diameter x 150 mm deep, 250 mm dia rim	No	2		
A103/3.16	Ditto but 200 mm diameter x 250 mm deep	No	2		
	CBR (AASHTO T193)				
A103/5.1	CBR load frame (electric and hand operated)	No	1		
A103/5.2	Stabilising bar for the above	No	1		
A103/5.3	CBR penetration piston including bracket	No	2		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/5.4	Penetration gauge range 0 - 25mm travel x 0.01 mm divisions	No	2		
A103/5.5	Proving ring for the above of 50 Kn capacity	No	1		
A103/5.6	Proving ring for above, 28 kN capacity	No	1		
A103/5.7	Proving ring for above, 10 kN capacity	No	1		
A103/5.8	perforated base plate and extension collar 50.8mm high that can be fitted to either end of the mould.	No	20		
A103/5.9	Perforated swell plate 150 mm dia with an adjustable centre post of rust proof metal provided with a lock-nut	No	20		
A103/5.10	Swell measurement tripod complete with guage calibrated in 0.01 mm divisions	No	20		
A103/5.11	5 lb split surcharge weight	No	5		
A103/5.12	10 lb annular surcharge weights	No	5		
A103/5.13	2.8 kg Solid base plate for CBR mould	No	1		
A103/5.14	Central extruder, complete with 20kN hydraulic jack and accessories	No	1		
A103/5.15	Disc lifting handle	No	1		
A103/5.16	Static compaction displacer discs 1 Nox 61.4 mm, 1 No x 50.8 mm and 2 Nox 38.8 mm thick	set	2		
A103/5.17	Automatic CBR Proctor Compaction press, 50 tonnes capacity with an adjustable distance between platens of 530mm-250mm, rammer weights and automatic count selector	No	1		
A103/5.18	Set of guards for above press.	No	2		
A103/5.19	Soaking tank for CBR mould sufficient for 50 moulds	No	1		
	Relative Density of Aggregates (BS 812)				
A103/6.01	200 mm dia. Wire mesh basket with apertures not greater than 6.5 mm large enough to contain 2.5 kg of aggregate	No	2		
A103/6.02	A stout watertight container in which the basket can be freely suspended	No	2		
A103/6.03	Soft absorbent cloth (tea towel)	No	10		
A103/6.04	Shallow tray of area not less than 0.065 m^2	No	2		
A103/6.05	An airtight container of similar capacity to the basket	No	2		
A103/6.06	Pycnometer of 1 litre capacity	No	2		
A103/6.07	Semi automatic 5 kg balance accurate to 0.1g to be of size and type to permit the basket containing the sample to be	No	1		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
	suspended in water (to be supplied with weights)				
A103/6.08	Hair drier (electric)	No	1		
	Flakiness (BS 812)				
A103/7.01	Flakiness gauge (BS 812) passing 10.0 mm retain 6.3 mm	No	1		
A103/7.02	Flakiness gauge (BS 812) passing 14.0 mm retain 10.0 mm	No	1		
A103/7.03	Flakiness gauge (BS 812) passing 20.0 mm retain 14.0 mm	No	1		
A103/7.04	Flakiness gauge (BS 812) passing 28.0 mm retain 20.0 mm	No	1		
A103/7.05	Flakiness gauge (BS 812) passing 37.5 mm retain 28.0 mm	No	1		
A103/7.06	Flakiness gauge (BS 812) passing 50.0 mm retain 37.5 mm	No	1		
A103/7.07	Flakiness gauge (BS 812) passing 63.0 mm retain 50.0 mm	No	1		
	Sieve Analysis (BS 1377)				
A103/8.01	BS Sieve 300mm diameter in sizes 75 mm	Set	1		
A103/8.02	BS Sieve 300mm diameter in sizes 63 mm	Set	1		
A103/8.03	BS Sieve 300mm diameter in sizes 50 mm	No	1		
A103/8.04	BS Sieve 300mm diameter in sizes 37.5 mm	set	1		
A103/8.05	BS Sieve 300mm diameter in sizes 28 mm	No	1		
A103/8.06	BS Sieve 300mm diameter in sizes 20 mm	No	1		
A103/8.07	BS Sieve 300mm diameter in sizes 14 mm	Set	1		
A103/8.08	BS Sieve 300mm diameter in sizes 10 mm	Set	1		
A103/8.09	BS Sieve 300mm diameter in sizes 6.3 mm	No	1		
A103/8.10	BS Sieve 300mm diameter in sizes 5 mm	set	1		
A103/8.11	BS Sieve 300mm diameter lid	No	1		
A103/8.12	BS Sieve 300mm diameter receiver	No	1		
A103/8.13	BS Sieve 200 mm diameter 2.00 mm	Set	1		
A103/8.14	BS Sieve 200 mm diameter 1.00 mm	Set	1		
A103/8.15	BS Sieve 200 mm diameter 600 mic	No	1		
A103/8.16	BS Sieve 200 mm diameter 500 mic	set	1		
A103/8.17	BS Sieve 200 mm diameter 425 mic	No	1		
A103/8.18	BS Sieve 200 mm diameter 300 mic	No	1		
A103/8.19	BS Sieve 200 mm diameter 75 mic	Set	1		
A103/8.20	BS Sieve 200mm diameter receiver	Set	1		
A103/8.21	BS Sieve 200mm diameter lid	No	1		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/8.22	Sieve shaker	set	1		
A103/8.23	BS Sieve 200mm diameter receiver	No	1		
A103/8.24	ASTM Sieve 200 mm diameter 1.18 mm stainless steel mesh	No	1		
A103/8.25	ASTM Sieve 200 mm diameter 600 mic stainless steel mesh	Set	1		
A103/8.26	ASTM Sieve 200 mm diameter 300 mic stainless steel mesh	Set	1		
A103/8.27	ASTM Sieve 200 mm diameter 150 mic stainless steel mesh	No	1		
A103/8.28	ASTM Sieve 200 mm diameter 75 mic stainless steel mesh	set	1		
A103/8.29	ASTM lid 200 mm diameter	No	1		
A103/8.30	ASTM receiver 200 mm diameter	No	1		
A103/8.31	ASTM Sieve 200 mm diameter 9.50 mm stainless steel mesh	Set	1		
A103/8.32	ASTM Sieve 200 mm diameter 12.5 mm stainless steel mesh	Set	1		
A103/8.33	ASTM Sieve 200 mm diameter 19.0 mm stainless steel mesh	No	1		
A103/8.34	ASTM Sieve 200 mm diameter 4.75 mm stainless steel mesh	set	1		
A103/8.35	ASTM Sieve 200 mm diameter 2.0 mm stainless steel mesh	No	1		
A103/8.36	ASTM lid 300 mm diameter	No	1		
A103/8.37	ASTM receiver 300 mm diameter	Set	1		
A103/8.38	ASTM Sieve 300 mm diameter 25.0 mm stainless steel mesh	Set	1		
A103/8.39	ASTM Sieve 300 mm diameter 37.5 mm stainless steel mesh	No	1		
A103/8.40	ASTM Sieve 300 mm diameter 50.0 mm stainless steel mesh	set	1		
A103/8.41	ASTM Sieve 300 mm diameter 63.0 mm stainless steel mesh	No	1		
A103/8.42	1.2 m x 1.2 m x 50 mm deep galvanized metal tray	No	4		
A103/8.43	Set of riffle box with 50 mm (BS 1377)	Set	1		
A103/8.44	Set of riffle box with 25 mm (BS 1377)	Set	1		
A103/8.45	Set of riffle box with 7 mm (BS 1377)	No	1		
	9. Miscellaneous Equipment				
A103/9.01	Wheel barrow	No	2		
A103/9.02	Dustpan and brush	No	2		
A103/9.03	Hand Shovel	No	3		
A103/9.04	Pick axe with handle	No	2		
A103/9.05	Metal scoop, large (150mm wide), cast aluminium handle	No	2		
A103/9.06	Metal scoop, medium (100mm wide), cast aluminium handle	No	2		
A103/9.07	Garden trowel	No	2		
A103/9.08	Steel tray 0.3m x 0.3m x 0.01m deep	No	4		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/9.09	3.5 kg hammer	No	1		
A103/9.10	7kg hammer	No	1		
A103/9.11	Rubber mallet (1kg)	No	1		
A103/9.12	Cold chisel	No	6		
A103/9.14	3 metre straight-edge including calibrated wedges	No	1		
A103/9.15	500mm x 500mm x 10mm plate glass (BS 1377)	No	2		
A103/9.16	Steel rod 75mm long x 3.2mm diameter	No	2		
A103/9.17	Palette knife 200mm long blade	No	2		
A103/9.18	Palette knife 100mm long blade	No	2		
A103/9.19	BS sieve 450mm diameter, 37.5mm	No	1		
A103/9.20	BS sieve 450mm diameter, 20mm	No	1		
A103/9.21	BS sieve 450mm diameter, 5mm	No	1		
A103/9.22	BS sieve 450mm diameter, 0.425mm	No	1		
A103/9.23	BS sieve 450mm diameter, 0.3mm	No	1		
A103/9.24	BS sieve 450mm diameter, 0.075mm	No	1		
A103/9.25	Set of lid and receiver for metal scoop and steel trays	No	1		
A103/9.26	BS Sieve brush double ended brass and nylon bristle	No	4		
A103/9.27	Measuring cylinder set, 25 ml, 100 ml, 500 ml, 1000 ml, 2000 ml	set	2		
A103/9.28	Glass jar capacity 5 litres with lid	No	4		
A103/9.29	200mm x 200mm x 20mm cadmium plated or aluminium tin	No	6		
A103/9.34	Polythene or glass 20 litres storage vessel with tap at bottom	No	2		
A103/9.35	Set of stiff broom and soft broom with handles	No	5		
A103/9.36	Vernier callipers, 150mm, accurate to 0.1 mm	No	1		
A103/9.37	Vernier calipers, 250mm, accurate to 0.002 mm	No	1		
A103/9.38	Pestle and mortar	No	1		
A103/9.39	Linear shrinkage mould (BS 1377)	No	4		
A103/9.40	Liquid Limit Device	No	1		
A103/9.42	Lockable tool box containing: 1 pr"Molegrips", 2 x 150mm screwdriver, 2 x 200 mm screwdriver, 2 x 300 mm screwdriver,(1 standard and 1 Phillips head of each) adjustable spanners 200 mm and 300 mm, 1 pair round nosed pliers, 1 pair general purpose pliers,	No	1		
A103/9.43	Plastic or metal bucket including lid,10 litres capacity	No	4		
A103/9.44	Polythene wash bottle (500 ml)	No	4		
A103/9.45	A4 size clipboard	No	6		
A103/9.46	Thermometer, range -10°C to150°C, glass (BS 593)	No	4		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/9.47	Laboratory thermometer, range + 0°C to + 250°C (BS 593)	No	1		
A103/9.48	Maximum and minimum thermometer (BS692)	No	0		
A103/9.49	Rain gauge	No	2		
A103/9.50	Portable dial thermometer + 50°C to +250°C accurate to ± 3%	No	1		
A103/9.52	Pocket thermometer + 50°C to +250°C accurate to ± 3% with 0.1 m stem	No	1		
A103/9.53	5 litre capacity steel storage containers with leak and dust proof lids for storage of bitumen samples	No	10		
A103/9.54	Hotplate 200mm diameter with Simmerstat heat control unit.	No	2		
A103/9.55	450mm diameter x 150mm deep metal mason's basin	No	5		
A103/9.56	MOT straight edge with accessories	No	1		
A103/9.57	Metric wedge	No	1		
A103/9.58	Transit case	No	1		
	11. Concrete: Slump and Cube Manufacture (BS 1881)				
A103/11.01	Slump cone funnel	No	2		
A103/11.02	Tamping rod (for slump)	No	2		
A103/11.03	Base plate	No	2		
A103/11.04	Steel rule	No	2		
A103/11.05	Concrete cube mould, 150mm cube	No	21		
A103/11.06	Soaking tank for cubes (capacity 50 No.)	No	1		
A103/11.07	Cube tamping rods and spanners for item	No	3		
	12. Concrete: Cube Compression Testing				
A103/12.01	Compact 1500 compression machine, to BS 1610 Grade A with 300mm gauge, rectangular platens, capacity 1560 kN with load pacer together with 100 kN flexural frame with accessories	No	1		
A103/12.02	Safety guard for above	Set	1		
A103/12.03	20mm distance piece	No	1		
A103/12.04	50mm distance piece	No	1		
A103/12.05	80mm distance piece	No	1		
A103/12.06	100mm distance piece	No	1		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/13.01	Sand equivalent to AASHTO T176 including graduated plastic cylinder, rubber stopper, irrigation tube, weighted foot assembly,siphon assembly, 85ml tin box (57mm dia.), 100 mm dia wide mouth funnel, stop clock,mechanical shaker and 10 litre jar	Set	1		
A103/13.02	Beaker 250ml	No	2		
A103/13.03	Aggregate Crushing Value Apparatus, 130 mm nominal diameter , including plunger and base plate	No	1		
A103/13.04	Tamping rod 8 mm diameter x 300 mm long and metal measure 115 mm dia x 180 mm deep for above (BS 812)	Set	1		
A103/13.05	Los Angeles Abrasion to ASTM standards	No	1		
A103/13.06	Set of 12 abrasive charges	No	1		
A103/13.09	Reagent grade Silica gel, 500g container	No	40		
A103/13.10	Aggregate Crushing Value apparatus,150mm nominal diameter,including plunger and base plate	No	1		
	13. Aggregate and Chippings				
A103/13.11	Tamping rod 8 mm diameter x 300 mm long and metal measure 115 mm dia x 180 mm deep for above (BS 812)	set	1		
A103/13.12	Transverse distribution of spray test for bitumen distributor (tray test to BS 1707) equipment	set	1		
A103/13.13	Steel tray 20 mm deep x 0.1 m² (for measuring Rate of spread of coated chippings spray)	No	2		
A103/13.14	Purpose-made detachable handle 1.5m long to pick above trays	No	1		
	14. Bitumen Spray Test (BS 1707) and Penetration Test				
A103/14.1	Transverse distribution of spray test bitumen distributor (depot tray test to BS 1707) or equivalent.	Set	1		
A103/14.2	Steel tray 306 x 306 x 38mm (for measuring bitumen spray rates) with purpose made detachable handle 1.5m long.	No.	4		
	15. Marshall Test(ASTM D 1559)				
A103/15.01	Petrol driven 100mm diameter core cutter with all accessories and one spare kit	No	1		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/15.02	Marshall compaction mould complete with collar mould + base plate + extension collar	No	5		
A103/15.03	Percentage Refusal Density (PRD) split mould and base plate	No	5		
A103/15.04	Specimen extractor	No	2		
A103/15.05	Compaction hammer	No	1		
A103/15.06	Compaction pedestal + specimen mould holder	No	2		
A103/15.07	Breaking head complete with gauge disc conforming to BS 598	No	1		
A103/15.08	Electrical 30KN Marshall compression testing machine	No	1		
A103/15.10	Proving ring 28KN capacity graduated in 0.0025mm	No	1		
A103/15.11	Flow meter BS 598 dial gauge graduated 0.01 mm with 25 mm travel	No	1		
A103/15.13	Water bath minimum 150mm deep, thermostatically controlled to maintain water temperature at 60oC + 1oC with perforated false bottom or equipped with shelf to support specimen 50mm above the bottom of bath etc.	No	1		
	16. Bitumen Extraction Test				
	A) Extractor Bottle Method BS 598 Part 2				
A103/16.06	Foot pump for pressurising air water assemblies up to a maximum of 700KN/m2 and fitted with flexible hose approximately 1.2m long and connector	N0.	2		
A103/16.07	Steel bottle 600ml capacity with 49mm rubber stopper	N0.	2		
A103/16.08	Steel bottle 2500ml capacity with 71mm rubber stopper	N0.	2		
A103/16.09	Steel bottle 7000ml capacity with 71mm rubber stopper	N0.	2		
A103/16.10	Flask funnel for fitting to the 700ml steel bottle with rim of funnel retaining sieve 200mm nominal diameter	N0.	2		
A103/16.11	Bottle roller compact bench mounted unit designed to rotate 2 bottles simultaneously about longitudinal axis	N0.	1		
A103/16.12	Pressure filter complete with cutting tool for making hole in the filter paper	N0.	1		
A103/16.13	Filter funnel to take 200mm nominal diameter sieves	N0.	2		

APPENDIX TO BILL ITEM 1.06					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE (KSHS)**	**AMOUNT (KSHS)**
A103/16.14	3000 g capacity Asphalt centrifuge extractorcomplying with BS 598	N0.	1		
A103/16.15	Replacement bowl for 3000 g capacity Asphalt centrifuge extractor	N0.	1		
A103/16.16	Filter discs (pack of 100)	N0.	6		
A103/16.17	Binder recovery	N0.	1		
A103/16.18	Volumetric flask 250ml, 500ml, 1000ml and 2000ml capacity	set	1		
A103/16.19	Recovery still for Dichloromethane	N0.	1		
	17. Consumables				
A103/17.01	Paraffin wax	Kg	30		
A103/17.02	Gas	Kg	250		
A103/17.03	Gunny sack	No	250		
A103/17.04	Plastic bag 900x450x1000 gauge	No	150		
A103/17.05	Plastic bag 450x300x1000 gauge	No	150		
A103/17.06	Filter paper 150mm diameter Whatman No. 5 (Boxes of 100)	No	20		
A103/17.07	Filter paper 400mm diameter Whatman No. 5 (Boxes of 100)	No	10		
A103/17.08	Filter paper 100mm diameter Whatman No. 5 (Boxes of 100)	No	10		
A103/17.09	Filter paper 400mm diameter Whatman No. 54 (Boxes of 100)	No	5		
A103/17.10	Filter paper 270mm diameter with 33 diameter hole at centre Whatman No. 5 (Boxes of 100)	No	5		
A103/17.11	Trichloroethylene	kg	100		
A103/17.12	Dichloromethane	kg	100		
A103/17.13	Cotton waste	kg	50		
A103/17.14	Gas cylinders 13kg compatible with supplied stoves	No	3		
A103/17.15	Sodium sulphate 3kg pack	No	10		
	Total Carried forward to Bill 1.06				

SECTION IX: DRAWINGS

Set of design drawings is annexed separately (Book of Drawings)

1. Standard drawings will be used where applicable
2. Materials Factual Report
3. Engineering Report

PART 3 - CONDITIONS OF CONTRACT

SECTION IX: GENERAL CONDITIONS

SECTION IX CONDITIONS OF CONTRACT PART I: GENERAL CONDITIONS OF CONTRACT

The Conditions Of Contract Part 1 – General Conditions shall be those forming Part 1 of the Conditions of Contract for works of Civil engineering construction Fourth Edition 1987, reprinted in 1992 with further amendments, prepared by the Federation Internationale des Ingenieurs Conseils (FIDIC)

Copies of the FIDIC Conditions of Contract can be obtained from:

FIDIC Secretariat
P.O.Box 86
1000 Lausanne 12
Switzerland
Fax: 41 21 653 5432
Telephone: 41 21 653 5003

SECTION X: PARTICULAR CONDITIONS OF CONTRACT

SECTION X: CONDITIONS OF CONTRACT PART II: (CONDITIONS OF PARTICULAR APPLICATION)

The following Conditions of Particular Application shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The Particular Condition is preceded by the corresponding clause number of the General Conditions to which it relates.

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CONDITIONS OF CONTRACT PART II (CONDITIONS OF PARTICULAR APPLICATION)

SUBCLAUSE 1.1 – DEFINITIONS

Amend this sub-clause as follows:

(b) (i) The "Employer" is the Kenya National Highways Authority, represented by the Director General - Kenya National Highways Authority.

(ii) The "Engineer" is the Director (Development) - Kenya National Highways Authority.

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(b) (i) Insert in line 2 after the Bills Of Quantities", the following, "the rates entered by the Contractor (whether or not such rate be employed in computation of the Contract Price),"

Amend subparagraph (b) (v) of Sub-Clause 1.1 by adding the following words at the end:
The word "BID" is synonymous with "bid" and the word "Appendix to BID" with "Appendix to Bid" and the word "BID documents" with "bidding documents".

Add the following at the end of this sub-clause:
(h) (i) "Materials" means materials and other things intended to form or forming part of the Permanent Works.

SUBCLAUSE 2.1 - ENGINEER'S DUTIES AND AUTHORITY.

With reference to Sub-Clause 2.1 (b), the following shall also apply: The Engineer shall obtain the specific approval of the Employer before taking any of the following actions specified in Part 1:
(a) Consenting to the subletting of any part of the works under Clause 4;
(b) Certifying additional cost determined under Clause 12;
(c) Determining an extension of time under Clause 44;
(d) Issuing a variation under Clause 51;
(e) Fixing rates or prices under Clause 52
(f) The works specified under this Contract shall be executed, supervised and evaluated in accordance to the Contract Supervision and Evaluation Manual developed by the Ministry of Roads – Version 2012

SUBCLAUSE 5.1 - LANGUAGE AND LAW

The Contract document shall be drawn up in the ENGLISH LANGUAGE. Communication between the Contractor and the Engineer's Representative shall be in this given language.

(a) The Laws applicable to this Contract shall be the Laws of the Republic of Kenya.

SUBCLAUSE 5.2 – PRIORITY OF CONTRACT DOCUMENTS

Delete the documents listed 1-6 and substitute:
(1) The Contract Agreement (if completed)
(2) The Letter of Acceptance;
(3) The Bid and Appendix to Bid;
(4) The Conditions of Contract Part II;
(5) The Conditions of Contract Part I;

(6) The Special Specifications;
(7) The Standard Specification for Road and Bridge Construction, 1986;
(8) The Drawings;
(9) The priced Bills of Quantities
(10) Other documents as listed in the Appendix to form of Bid

SUBCLAUSE 10.1 - PERFORMANCE SECURITY

Replace the text of Sub-clause 10.1 with the following:
"The Contractor shall provide security for his proper performance of the Contract within 21 days after receipt of the Letter of Acceptance. The Performance Security shall be in the form of a bank guarantee as stipulated by the Employer in the Appendix to Bid. The Performance Security shall be issued by a bank incorporated in Kenya. The Contractor shall notify the Engineer when providing the Performance Security to the Employer.
"Without limitation to the provisions of the preceding paragraph, whenever the Engineer determines an addition to the Contract Price as a result of a change in cost, the Contractor, at the Engineers written request, shall promptly increase the value of the Performance Security by an equal percentage.

SUBCLAUSE 10.2 - VALIDITY OF PERFORMANCE SECURITY

The Performance Security shall be valid until a date 28 days after the date of issue of the Defects Liability Certificate. The security shall be returned to the Contractor within 14 days of expiration.

SUBCLAUSE 10. 3 - CLAIMS UNDER PERFORMANCE SECURITY

Prior to making a claim under the performance security the Employer shall, in
Performance every case, notify the Contractor stating the nature of the default in respect of
Security which the claim is to be made.

SUBCLAUSE 10. 4 - COST OF PERFORMANCE SECURITY

The cost of complying with the requirements of this clause shall be borne by the Contractor.

SUBCLAUSE 11. 1 - INSPECTION OF SITE

In line 17 after "affect his BID" add
"and the Contractor shall be deemed to have based his BID on all the aforementioned"
Delete the last paragraph completely and replace with the following:
"The Employer in no way guarantees completeness nor accuracy of the soil, materials, subsurface and hydrological information made available to the Contractor at the time of BIDING or at any other time during the period of the Contract, and the Contractor shall be responsible for ascertaining for himself all information as aforesaid for the execution of works and his BID shall be deemed to have been priced accordingly.

SUBCLAUSE 11.2 - ACCESS TO DATA

Data made available by the Employer in accordance with Clause 11.1 shall be deemed to include data listed elsewhere in the Contract as open for inspection at the address stipulated in the Appendix to Bid.

SUBCLAUSE 14.1 PROGRAM TO BE SUBMITTED

The time within which the program shall be submitted shall be as specified in the Appendix to the Form of Bid.
This detailed program shall be based upon the program submitted by the Contractor as part of his BID, where this was required, and shall in no material manner deviate from the said program.

The program shall be in the form of a Critical Path Method Network (CPM Network) showing the order of procedure and a description of the construction methods and arrangements by which the Contractor proposes to carry out the works .It should also be supplemented by a time –bar chart of the same program. The program shall be coordinated with climatic, groundwater and other conditions to provide for completion of the works in the order and by the time specified. The program shall be revised at three-month intervals and should include a chart of the principle quantities of work forecast for execution monthly.
The Contractor shall submit to the Engineer not later than the day or date mentioned in the Appendix to the Form of Bid, a general description of his proposed arrangements and methods for the execution of the Works, including temporary offices, buildings, access roads, construction plant and its intended production output, working shift arrangements, labour strength, skilled and unskilled, supervision arrangements, power supply arrangements, supply of materials including a materials utilization program, stone crushing, aggregate production and storage, cement handling, concrete mixing and handling, methods of excavation, dealing with water, testing methods and facilities.
During the execution of the works, the Contractor shall submit to the Engineer full and detailed particulars of any proposed amendments to the arrangements and methods submitted in accordance with the foregoing.
If details of the Contractors proposals for Temporary Works are required by the Engineer for his own information the Contractor shall submit such details within fourteen days of being requested to do so.
The various operations pertaining to the works shall be carried out in such a progressive sequence as will achieve a continuous and consecutive output of fully completed road works inclusive of all bridge works and culverts within the time limits specified in the Contract. Generally, the Contractor shall start at one end of the road and progress continuously towards the other without leaving any isolated section or sections of uncompleted road provided always that the site of the works has been acquired in its entirety and the encumbrances and services thereon removed.
The Contractor shall allow in his programme for the following public holidays per calendar year during which the Contractor shall not be permitted to work.

- New Years Day (1st January)
- Good Friday
- Easter Monday
- Labour day (1st May)
- Madaraka Day (1st June)
- Idd Ul Fitr
- Mashujaa Day (20th October)
- Jamhuri day (12th December)
- Christmas Day (25th December)
- Boxing day (26th December)

The Contractor shall also allow per calendar year for a further 2 unspecified public holidays which may be announced by the Government of Kenya with no prior notification upon which he shall not be permitted to work.

SUBCLAUSE 14.3- CASH FLOW ESTIMATE

The time within which the detailed cash flow estimate shall be submitted shall be as specified in the Appendix to the Form of Bid.

SUBCLAUSE 15.1- CONTRACTOR'S SUPERINTENDENCE

Add the following at the end of the first paragraph of sub-clause 15.1:
"The Contractor shall, within seven (7) days of receipt of the Engineer's order to commence the works inform the Engineer in writing the name of the Contractor's Representative and the anticipated date of his arrival on site."

Add the following Sub-clause 15.2

SUBCLAUSE 15.2- LANGUAGE ABILITY AND QUALIFICATIONS OF CONTRACTOR'S AUTHORISED AGENT

The Contractor's Agent or Representative on the site shall be a Registered Engineer as registered by the Engineer's Registration Board Of Kenya in accordance with the Laws Of Kenya Cap 530 or have equivalent status approved by the Engineer and shall be able to read and write English fluently.
The Contractor's Agent or Representative shall have at least 10 year's experience as an Engineer.

SUBCLAUSE 16.2- ENGINEER AT LIBERTY TO OBJECT

At the end of this Clause add
"by a competent substitute approved by the Engineer and at the Contractors own expense."
Add the following Sub-Clauses 16.3 and 16.4:

SUBCLAUSE 16.3- QUALIFICATION AND LANGUAGE ABILITY OF SUPERINTENDING STAFF

The Contractor's superintending staff shall meet the following minimum qualifications:
Should have a working knowledge of English or Kiswahili. Should any of the superintending staff not be able to meet this condition, the Contractor shall propose to the Engineer arrangements for provision of a sufficient number of interpreters of approved qualifications. The Engineer, at his discretion, may amend, approve or reject such arrangements or reject deployment of superintending staff not meeting the language requirements. The Engineer may at any time during the duration of the Contract amend any approved arrangements made for interpreters, which shall be implemented at the Contractors expense.
The key staff listed below must have academic qualifications from government-recognized institutions or equivalent institutions of the levels set out in Section 5, Part 6.

- Site Agent
- Site Surveyor
- Foremen

(b) Qualifications as above shall be subject to verification and approval on site by the Engineer or his representative on site before commencement of the said works.

SUBCLAUSE 16.4 – EMPLOYMENT OF LOCAL PERSONNEL

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience who are Kenya citizens.

SUBCLAUSE 19.1- SAFETY, SECURITY AND PROTECTION OF THE ENVIRONMENT

Add Sub-Clause-paragraph (d) of Sub-Clause 19 as follows:
Notwithstanding the Contractor's obligation under Sub-Clause-paragraph (a), (b) and 9(c) of Sub-Clause 19.1 of the Conditions Of Contract, the Contractor shall observe the following measures with a view to reducing or elimination adverse environmental effects by the site works:

(i) All quarries and borrow pits shall be filled and landscaped to their original state after extraction of construction material
(ii) Soil erosion due to surface runoff or water from culverts or other drainage structures should be avoided by putting in place proper erosion control measures that shall include, but are not limited to grassing and planting if trees
(iii) Long traffic diversion roads shall be avoided so as to minimize the effect of dust on the surrounding environment. In any case all diversions shall be kept damp and dust free
(iv) Spillage of oils, fuels and lubricants shall be avoided and if spilt, shall be collected and disposed off in such a way as not to adversely affect the environment
(v) Rock blasting near settlement areas shall be properly coordinated with the relevant officers of the Government so as to minimize noise pollution and community interference.

Add Paragraph (e) of Sub-Clause 19.1 as follows:

e). Notwithstanding the Contractor's obligation under Sub-Clause-paragraph (a), (b) and (c) of Sub-Clause 19.1 of the Conditions of Contract, the Contractor shall observe the following measures with a view to enhance Road Safety to the Road Users and Site Workers:

1. Prepare and submit a comprehensive Road Safety Implementation Plan within 14 days after receipt of Order to commence for the Engineer's Approval. The plan shall include but not limited to the following:
    - · Night driving
    - · Safety of workers
    - · Diversions
    - · Traffic management Plan
    - · Towing of stalled vehicle
2. The Contractor should identify, evaluate and monitor potential traffic and road safety risks to workers and road users throughout the Contract life cycle and develop measures and plans to address them.
3. The Contractor shall install and maintain standard approved traffic warning signs, directional signs, secure the working areas and deploy flagmen at active construction sites.
4. The Contractor shall assess each phase of the works, monitor incidents and accidents indicating the mitigation measures undertaken and prepare monthly reports to be submitted to the Resident Engineer.

5. The Contractor shall factor the cost of implementation of the Road Safety Plan in the rates for the Works.

Failure by the Contractor to observe the above safety features shall be deemed to be a violation of the Contractor's Obligations and shall be grounds for Suspension and/or Termination.

SUBCLAUSE 20.4 - EMPLOYERS RISKS

(c) Delete Sub-Clause (h) and substitute with;

(d) (h) any operation of the forces of nature (insofar as it occurs on site) which an experienced contractor:

(i) could not have reasonably foreseen, or

(ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures:

(A) prevent loss or damage to physical property from occurring by taking appropriate measures or

(B) insure against such loss or damage

SUBCLAUSE 21.1 - INSURANCE OF WORKS AND CONTRACTOR 'S EQUIPMENT

Add the following words at the end of Sub-paragraph (a) and immediately before the last word of Sub-paragraph (b) of Sub-Clause 21.1:
"It being understood that such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred"
Delete the first sentence of this Clause and replace with the following:
"prior to commencement of the Works the Contractor shall, without limiting his or the Employer's obligations and responsibilities under Clause 20, insure to the satisfaction of the Employer:"

SUBCLAUSE 21.2 – SCOPE OF COVER

Amend sub-paragraph (a) of Sub-Clause 21.2 as follows:
Delete words "from the start of work at the site" and substitute the words "from the first working day after the Commencement Date"
Add the following as Sub-Clause (c) under Sub-Clause-Clause 21.2
(c) It shall be the responsibility of the Contractor to notify the insurance company of any change in the nature and extent of the Works and to ensure the adequacy of the insurance coverage at all times during the period of the Contract.

SUBCLAUSE 21.4 - EXCLUSIONS

Amend Sub-Clause 21.4 to read as follows:
"There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by the risks listed under Sub-Clause 20.4 sub-paragraph (a) (i) to(iv) of the Conditions of Particular Application."

SUBCLAUSE 23.2 – MINIMUM AMOUNT OF INSURANCE

Add the following at the end of this Clause:

".. with no limits to the number of occurrences".

SUBCLAUSE 25.1 – EVIDENCE AND TERMS

Amend Sub-Claus OF INSURANCE 25.1 as follows:
Insert the words "as soon as practicable after the respective insurances have been taken out but in any case" before the words "prior to the start of work at the site"
Add the following Sub-Clauses 25.6, 25.7

SUBCLAUSE 25.5 – INSURANCE NOTICES

Each policy of insurance effected by the Contractor for purposes of the Contract shall include a provision to the effect that the Insurer shall have a duty to give notice in writing to the Contractor and Employer of the date when a premium becomes payable. This shall not be more than thirty (30) days before that date and the policy shall remain in force until thirty (30) days after the giving of such notice.

SUBCLAUSE 25.6 – NOTIFICATION TO INSURERS

It shall be the responsibility of the Contractor to notify insurers under any of the insurance referred to in the preceding clauses 21, 23 and 24 on any matter or event, which by the terms of such insurance are required to be so notified. The Contractor shall indemnify and keep indemnified the Employer against all losses, claims, demands, proceedings, costs, charges and expenses whatsoever arising out of or in consequence of any default by the Contractor in complying with the requirements of this Sub-Clause whether as a result of avoidance of such insurance or otherwise.

SUBCLAUSE 28.2 – ROYALTIES

Add at the end of this Sub-Clause the following sentence:
"The Contractor shall also be liable for all payments or compensation if any that are levied in connection with the dumping of part or all of any such material."

SUBCLAUSE 29.1 – INTERFERENCE WITH TRAFFIC

Supplement Sub-Clause 29.1 by adding the following sentence at the end:
"The Contractor will be permitted to use existing public roads for access to the site. The Contractor shall pay vehicle license tax and road maintenance duty in accordance with relevant regulations and shall obtain any necessary permits or licenses from relevant authorities for transporting his equipment."
Add the following sub clause 29.2:

SUBCLAUSE 29.2 – REINSTATEMENT AND COMPENSATION FOR DAMAGES TO PERSONS AND PROPERTY

The Contractor shall reinstate all properties whether public or private which are damaged in consequence of the construction and, maintenance of the works to a condition as specified and at least equal to that prevailing before his first entry on them.
If in the opinion of the Engineer the Contractor shall have failed to take reasonable and prompt action to discharge his obligations in the matter of reinstatement, the Engineer will inform the Contractor in writing of his opinion, in which circumstances the Employer reserves the right to employ others to do the necessary work of reinstatement and to deduct the cost thereof from any money due or which shall become due to the Contractor.
The Contractor shall refer to the Employer without delay all claims which may be considered to fall within the provisions of Clause 22.1.
Add the following Sub-Clause 34.2 to 34.8

SUBCLAUSE 34.2 – CONDITIONS OF EMPLOYMENT OF LABOUR

The Contractor shall be responsible for making all arrangements for and shall bear all costs relating to recruitment, obtaining of all necessary visas, permits or other official permission for movements of staff and labour.

SUBCLAUSE 34.3 – FAIR WAGES

The Contractor shall, in respect of all persons employed anywhere by him in the execution of the Contract, and further in respect of all persons employed by him otherwise than in the execution of the Contract in every factory, Workshop or place occupied or used by him for the execution of the Contract, observe and fulfil the following conditions:
(a) The Contractor shall pay rates of wages, observe hours of labour and provide conditions of labour, housing, amenities and facilities not less favourable than those required by the latest Regulation of Wages (Building and Construction Industry) Order as of the time of bid submission, and subsequent amendments thereto, or in any wage scales, hours of work or conditions agreed by the Ministry of Labour or other Government Department in consultation with the appropriate wage fixing authority and generally recognized by other employees in the district whose general circumstances in the trade or industry in which the Contractor is engaged are similar.
(b) In the absence of any rates of wages, hours or conditions of labour so established the Contractor shall pay rates of wages and observe hours and conditions of labour which are not less favourable than the general level of wages, hours and conditions observed by other Employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.
(c) Where the absence of established rates of wages, hours and conditions of labour or the dissimilarity of the general circumstances in the trade of industry in which the Contractor is engaged prevent the Contractor from observing rates of wages, hours and conditions of labour ascertained under sub-paragraph (a) and (b) above the Contractor in fixing the rates of wages, hours and conditions of labour of his employees shall be guided by the advice of the Labour Department.
(d) The Contractor shall recognize the freedom of his employees to be members of trade unions.
(e) The Contractor shall maintain records in English of the time worked by, and the wages paid to, his employees. The Contractor shall furnish to the Engineer or Employer, if called upon to do so, such particulars of the rates, wages and conditions of labour as the Employer or Engineer may direct.
(f) The Contractor shall at all times during the continuance of the contract display, for the information of his employees in every factory, workshop or place occupied or used by him for the execution of the Contract, a copy of this clause together with a notice setting out the general rates of wages, hours and conditions of labour of his employees.
(g) The Contractor shall be responsible for the observance of this clause by sub-Contractors employed in the execution of the works.

SUBCLAUSE 34.4 – BREACH OF FAIR WAGES CLAUSE

Any Contractor or Sub-Contractor who is found to be in breach of Fair Wages Clause shall cease to be approved as a Contractor or Sub-Contractor for such period as the Permanent Secretary for the Ministry of Transport and Infrastructure may determine.

Should a claim be made to the Employer alleging the Contractor's default in payment of Fair Wages of any workman employed on the Contract and if proof thereof satisfactory to the Employer is furnished by the Labour Authority, the Employer may, failing payment by the Contractor, pay the claims out of any monies due or which may become due to the Contractor under the Contract.

SUBCLAUSE 34.5 – RECRUITMENT OF UNSKILLED LABOUR

Any additional unskilled labour which is required by the Contractor for the works and which is not in his employ at the time of the acceptance of the BID shall be recruited by the Contractor from the Labour Exchange or Exchange or Exchanges nearest to the site or sites of the work.

SUBCLAUSE 34.6 – COMPENSATION FOR INJURY

The Contractor shall in accordance with the Workmen's Compensation Act of the Laws of Kenya and any other regulations in force from time to time pay compensation for loss or damage suffered in consequence of any accident or injury or disease resulting from his work to any workman or other person in the employment of the Contractor or any Subcontractor.

SUBCLAUSE 34.7 – LABOUR STANDARDS

(a) the Contractor shall comply with the existing local labour laws, regulations and labour standards
(b) the Contractor shall formulate and enforce an adequate safety program with respect to all work under his contract, whether performed by the Contractor or subcontractor. The Contractor has assurance from the Employer of cooperation where the implementation of these safety measures requires joint cooperation.
(c) Upon written request of the Employer the Contractor shall remove or replace any of his employees employed under this Contract.
Add the following Sub-Clause 35.2 and 35.3.

SUBCLAUSE 35.2 – RECORDS OF SAFETY AND HEALTH

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

SUBCLAUSE 35.3 – REPORTING OF ACCIDENTS

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means. The Contractor shall also notify the relevant authority whenever the Laws of Kenya require such a report.

SUBCLAUSE 41.1 – COMMENCEMENT OF WORKS

Amend Sub-Clause 41.1 as follows:
Delete the words "as soon as is reasonably possible" in the first sentence and replace with "within the period stated in the Appendix to Bid".
SUBClause 43.1 – TIME FOR COMPLETION

Amend Sub-Clause 43.1 as follows:
Delete the words "within the time" to "such extended time" and substitute "by the date or dates stated or implied in Clause 14 of these Conditions of Particular Application.

SUBCLAUSE 44.1 – EXTENSION OF TIME FOR COMPLETION

Add at the end of Sub-Clause 44.1 the following:
"Neither rains falling within the rainy seasons as occurs in Kenya nor floods caused by such rains shall be deemed exceptional weather conditions such as may fairly entitle the Contractor to an extension of time for the completion of the work."

SUBCLAUSE 45.1 – RESTRICTION ON WORKING HOURS

Add at the end of Sub-Clause 45.1 the following:
"If the Contractor requests permission to work by night as well as by day, then if the Engineer shall grant such permission the Contractor shall not be entitled to any additional payments for so doing. All such work at night shall be carried out without unreasonable noise or other disturbance and the Contractor shall indemnify the Employer from and against any liability for damages on account of noise or other disturbance created while or in carrying out night work and from and against all claims, demands, proceedings, costs, charges and expenses whatsoever in regard or in relation to such liability.
"In addition the Contractor will be required to provide, for any work carried out at night or recognized days of rest, adequate lighting and other facilities so that the work is carried out safely and properly.
"In the event of the Engineer granting permission to the Contractor to work double or rotary shifts or on Sundays, the Contractor shall be required to meet any additional costs to the Employer in the administration and supervision of the Contract arising from the granting of this permission."

SUBCLAUSE 47.2 – REDUCTION OF LIQUIDATED DAMAGES

Add the following paragraphs at the end of this Sub-Clause:
"There shall be no reduction in the amount of liquidated damages in the event that a part or a section of the Works within the Contract is certified as completed before the whole of the Works comprising that Contract.
The Employer shall pay no bonus for early completion of the Works to the Contractor.
The sum stated in the Appendix to Bid as liquidated damages shall be increased by a sum equivalent to any additional amount payable by the Employer to the Contractor under clause 70.1 in respect of an increase in costs in such a period that would not have been incurred by the Contractor if the works had been completed by the due date for completion prescribed by Clause 43."

SUBCLAUSE 52.1 – VALUATION AND VARIATIONS

Add new Clause 52.2(c)

No change in the unit rates or prices quoted shall be considered for items included in the schedule of Dayworks rates, or Provisional Sums and items.

SUBCLAUSE 52.3 – VARIATIONS EXCEEDING 15 PER CENT

Amend Sub-Clause 52.3 as follows:
Adjust "15 per cent" to "50 per cent".

SUBCLAUSE 52.4 – DAYWORKS

Add the following at the end of Sub-Clause 52.4:
The work so ordered shall immediately become part of the works under the contract. The Contractor shall, as soon as practicable after receiving the Dayworks order from the Engineer undertake the necessary steps for due execution such work. Prior to commencement of any work to be done on a Dayworks basis, the Contractor shall give an advance notice to the Engineer stating the exact time of such commencement.

SUBCLAUSE 54.1 – CONTRACTOR'S EQUIPMENT, TEMPORARY WORKS AND MATERIALS

: Exclusive use for the works

Amend Sub-Clause 54.1 as follows:
Line 5: add "written" between "the" and "consent".
Delete Sub-Clauses 54.2 and 54.5.

SUBCLAUSE 55.2 – OMMISIONS OF QUANTITIES

Items of Works described in the Bills of Quantities for which no rate or price has been entered in the Contract shall be considered as included in other rates and prices in the Contract and will not be paid for separately by the Employer.
Add the following Sub-Clause 58.4:

SUBCLAUSE 58.4 – PROVISIONAL ITEMS

Provisional items shall be read as Provisional Sums and shall be operated as such in accordance with Sub-Clauses 58.1 to 58.3.
Clause 60 of the General Conditions is deleted and substituted with the following:-

SUBCLAUSE 60.1 – MONTHLY STATEMENT

The Contractor shall submit a statement to the Engineer at the end of each month, in a tabulated form approved by the Engineer, showing the amounts to which the Contractor considers himself to be entitled. The statement shall include the following items, as applicable;

- the value of the Permanent Work executed up to the end of previous month
- such an amount (not exceeding 90 percent of the value) as the Engineer may consider proper on account of materials for permanent work delivered by the Contractor in the site
- such amount as the Engineer may consider fair and reasonable for any Temporary Works for which separate amounts are provided in the Bill of Quantities
- adjustments under Clause 70

- any amount to be withheld under retention provisions of Sub-clause 60.3
- any other sum to which the Contractor may be entitled under the Contract

If the Engineer disagrees with or cannot verify any part of the statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes and corrections in the statement as may be directed by the Engineer. In cases where there is difference in opinion as to the value of any item, the Engineer's view shall prevail.

SUBCLAUSE 60.2 INTERIM PAYMENT CERTIFICATE

The Contractor shall forward to the Engineer an Interim Payment Certificate based on the statement as corrected above and, should it be necessary in the Engineers opinion, shall promptly make any further amendments and corrections to the Interim Payment Certificate.
The Engineer shall not unreasonably withhold certifying an Interim Payment Certificate and in case of likely delay in establishing the value of an item, such item may be set aside and the remainder certified for payment.
Within 45 days after receipt of the Interim Payment Certificate and subject to the Contractor having made such further amendments and corrections as the Engineer may require, the Engineer will forward to the Employer the certified Interim Payment Certificate.
Provided that the Engineer shall not be bound to certify any payment under this Clause if the net amount thereof, after all retentions and deductions, would be less than the minimum amount of Interim Payment Certificate's stated in the Appendix to Form of Bid. However in such a case, the uncertified amount will be added to the next interim payment, and the cumulative unpaid certified amount will be compared to the minimum amount of interim payment.

SUBCLAUSE 60.3 – PAYMENT OF RETENTION MONEY

A retention amounting to the percentage stipulated in the Appendix to Bid shall be made by the Engineer in the first and following Interim Payment Certificates until the amount retained shall reach the "Limit of Retention Money" named in the Appendix to Form of BID.

Upon the issue of the Taking-Over Certificate, with respect to the whole of the works one half of the retention money shall become due and shall be paid to the Contractor when the Engineer shall certify in writing that the last section of the whole works has been substantially completed.
Upon expiration of the Defects Liability Period for the works, the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor.

Provided that in the event of different Defects Liability Periods being applicable to different Sections of the Permanent Works pursuant to Clause 48, the expression "expiration of the Defects Liability Period " shall, for the purpose of this sub-clause, be deemed to mean the expiration of the latest of such periods.

Provided also that if at such time, there remain to be executed by the Contractor any work instructed, pursuant to Clause 49 and 50, in respect of the works, the Engineer shall be entitled to withhold certification until completion of any such work or so much of the balance of the Retention money as shall in the opinion of the Engineer, represents the cost of the remaining work to be executed.

SUBCLAUSE 60.4– CORRECTION OF CERTIFICATES

The Engineer may in any Interim Payment Certificate make any correction or modification to any previous Interim Payment Certificate signed by him and shall have authority, if any work is not being carried out to his satisfaction to omit or reduce the value of such work in any Interim Payment Certificate.

SUBCLAUSE 60.5– STATEMENT AT COMPLETION

Not later than 84 days after the issue of the Taking-Over Certificate in respect of the whole of the works, the Contractor shall submit to the Engineer a statement at completion showing in detail, in a form approved by the Engineer;
The final value of all work done in accordance with the Contract up to the date stated in such Taking-Over Certificate.
Any further sums which the Contractor considers to be due; and

An estimate of amounts that the Contractor considers will become due to him under the Contract.

Estimate amounts shall be shown separately in the Statement at Completion. The Contractor shall amend and correct the Statement as directed by the Engineer and submit a Certificate at Completion to be processed as in Sub-Clause 60.2.

SUBCLAUSE 60.6 – FINAL STATEMENT

Not later than 56 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration a draft final statement with supporting documents showing in detail, in the form approved by the Engineer;
The final value of all work done in accordance with the Contract;
Any further sums which the Contractor considers to be due to him.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonable require and shall make such changes in the draft as may be required.

SUBCLAUSE 60.7– DISCHARGE

Upon submission of the Final Statement, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment under the Final Payment Certificate issued pursuant to Sub-Clause 60.8 has been made and the Performance Security referred to in Sub-Clause 10.1 has been returned to the Contractor.

SUBCLAUSE 60.8 – FINAL PAYMENT CERTIFICATE

Upon acceptance of the Final Statement as given in Sub-Clause 60.6, the Engineer shall prepare a Final Payment Certificate which shall be delivered to the Contractor's authorized agent or representative for his signature. The Final Payment Certificate shall state:

The final value of all work done in accordance with the Contract;

After giving credit to the Employer for all amounts previously paid by the Employer, the balance, if any, due from the Employer to the Contractor or the Contractor to the Employer.

Final Certificate shall be issued for any sum due to the Contractor even if such is less than the sum named in the Appendix to the Form of BID.

SUBCLAUSE 60.9– CESSATION OF EMPLOYERS LIABILITY

unless the Contractor notifies the Engineer of his objection to the Final Certificate within fourteen days of delivery thereof he shall be deemed to have agreed that he accepts the total Contract Price as set out in the Final Certificate as full settlement for all Work Done under the Contract including any variations and omissions thereof but excluding any variations and claims previously made in writing.

SUBCLAUSE 60.10 – TIME FOR PAYMENT

The amount due to the Contractor under any Interim Payment Certificate or Final Payment Certificate issued pursuant to this Clause or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor as follows:

(i) In the case of Interim Payment Certificate, within the time stated in the Appendix to Form Of Bid, after the Engineer has signed the Interim Payment Certificate.

(i) In the case of the Final Payment Certificate pursuant to Subclause 60.8, within the time stated in the Appendix to Form Of Bid, after the Engineer has signed the Final Payment Certificate.

(ii) In the event of the failure of the Employer to make payment within the times stated, the Employer shall make payment to the Contractor of simple interest at a rate equal to two percentage points above the averaged Base Lending Rate of three leading banks namely Kenya Commercial Bank, Standard Chartered Bank and Barclays Bank for the time being or as shall be the case from the time to time obtained from the Central Bank of Kenya. The provisions of this subclause are without prejudice to the Contractor's entitlements under Clause 69 or otherwise.

SUBCLAUSE 60.11 – CURRENCY OF PAYMENT

The Contract Price shall be designated in Kenyan Currency.
All work performed by the Contractor under the Contract shall be valued in Kenya Shillings using the rates and prices entered in the Bills of Quantities together with such other increases to the Contract Price, except for variation of price payments in accordance with Clause 70.1.

SUBCLAUSE 60.12 – ADVANCE PAYMENT

"The Employer **MAY** make an interest free advance payment to the contractor for the cost of mobilization in respect of the Works, in a lump sum of **any amount not exceeding ten (10) percent** of the Contract Price named in the Letter of Acceptance and Award. Non-Payment or delayed payment of the Advance shall not be a cause for any claim whatsoever. The Contractor is expected to have adequate financial resources to mobilise and execute the works with due diligence without the advance payment being made. Payment of such advance amount will be due under a separate certification by the Engineer after:

(i) Provision by the Contractor of the Performance Security in accordance with Clause 10 of the Conditions of Contract, and

(ii) Provision by the Contractor of a Bank Guarantee which shall remain effective until the advance payment has been completely repaid by the Contractor out of current earnings under the Contract and certified accordingly by the Engineer.

A form of Bank guarantee acceptable to the Employer is included in the Tender Documents. The advance payment shall be used by the Contractor exclusively for mobilization expenditures, in connection with the works. The advance payment shall not be subject to retention money.

The advance payment shall be repaid with percentage reductions from the monthly interim payments certified by the Engineer. The reimbursement of the lump sum advance payment shall be made by deductions from the interim payments and where applicable from the balance owing to the contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original contract sum. It shall have been completed by the time 80% of the contract sum is reached.

The amount to be repaid by way of successive deductions shall be calculated by the means of the formula:

$$RI = \frac{A(x-X)}{80-20}$$

Where:

RI = the amount to be reimbursed.

A = the amount of the advance which has been granted.

x = the amount of proposed cumulative payments as a percentage of the original amount of the contract. This figure will exceed 20% but not 80%.

X = the amount of the previous cumulative payments as a percentage of the original amount of the Contract. This figure will be below 80% but not less than 20%.

With each reimbursement the guarantee will be reduced accordingly.

SUBCLAUSE 60.13 MATERIALS FOR PERMANENT WORKS

With respect to materials brought by the Contractor to the site for incorporation into the permanent works, the Contractor shall,
-Receive a credit in the month in which these materials are brought to site,
-Be charged a debit in the month in which these materials are incorporated in the permanent works.

Both such credit and debit to be determined by the Engineer in accordance with the following provisions.

No credit shall be given unless the following conditions shall have been met to the Engineers satisfaction

The materials are in accordance with the specifications for the works;

The materials have been delivered to site and are properly stored and protected against loss, damage or deterioration;

The Contractors record of the requirements, orders receipts and use of materials are kept in a form approved by the Engineer, and such records are available for inspection by the Engineer;

The Contractor has submitted a statement of his cost of acquiring and delivering the materials and plant to the Site, together with such documents as may be required for the purpose of evidencing such cost;

The materials are to be used within a reasonable time.

The amount to be credited to the Contractor shall not be more than 75% of the Contractor's reasonable cost of the materials delivered to site, as determined by the Engineer after review of the documents listed in subparagraphs (a) (iv) above;

The amount to be debited to the Contractor for any materials incorporated into the works shall be equivalent to the credit previously granted to the Contractor for such materials pursuant to Clause (b) above as determined by the Engineer.

SUBCLAUSE 67.1 – DEFAULT OF CONTRACTOR

Add

f) is unable to take full responsibility for the adequacy, stability and safety of all Site operations and methods of construction as stipulated in subclause 8.2 of the conditions of contract.

g) Fails to comply with Subclause 10.1 and 10.2 of the Conditions of Contract

h) Fails to comply with Subclause 14.2 and Subclause 14.3 of the Conditions of Contract and Appendix to Form of Bid.

i) Fails to observe the safety as stipulated in Subclause 19.1 and amendments therein.

j) Fails to Conform to Service levels as detailed in the Appendix to Form of Bid and as required in subclause 13.1.

k) Incurs the maximum amount of Liquidated damages as stated in the Appendix to Form of Bid or the liquidated damages amount, exceeds the performance security then the contract would be automatically Terminated.

l) Has not completed the works despite the lapse of the Contract Period as stated in the Appendix to form of Bid

SUBCLAUSE 67.1 – ENGINEER'S DECISION

Delete the entire subclause 67.1 and add the following;

"If a dispute of any kind whatsoever arises between the Employer and the Contractor in any connection with, or arising out of, the Contract or the execution of the works, whether during the execution of the works or after their completion and whether before or after repudiation or other termination of the Contract including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state it is made pursuant to this clause. No later than 28 (twenty-eight) day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state it is made pursuant to this clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the works with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an Amicable Settlement, Adjudicator's or Arbitrator's award.

If either the Employer or the Contractor be dissatisfied with the any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the 28th (twenty eighth) after the day on which he received the reference, then either the Employer or the Contractor may, on or before the 28th (twenty eighth) day after the day the day on which he received notice of such decision, or on or before the 28th (twenty eighth) day after the day the day on which the said period of 28 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence Adjudication, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence Adjudication, as hereinafter provided, as to such dispute; no adjudication in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence adjudication as to such dispute has been given by either the Employer or the Contractor on or before the twenty eighth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor. "

SUBCLAUSE 67.2 – AMICABLE SETTLEMENT

Delete the entire subclause 67.2 and add the following;

"Where notice to of intention to commence adjudication as to a dispute has been in accordance with subclause 67.1, the parties shall attempt to settle such dispute in amicably before the commencement of Adjudication; provided that, unless the parties otherwise agree, Adjudication may be commenced on or after the 14th (fourteenth) day after the day on which notice of intention to commence adjudication of such dispute was given, even if an attempt at amicable settlement thereto has been made."

SUBCLAUSE 67.3 – ADJUDICATION

Delete the entire subclause 67.3 and add the following;

"The Adjudicator shall be appointed by the Chartered Institute of Arbitrators (Kenya) unless the appointment is agreed by the parties within 7 (seven) days of the notice to adjudication.

The adjudication process shall be conducted according to the Laws of Kenya and the Rules of the Chartered Institute of Arbitrators (Kenya)."

SUBCLAUSE 67.3 – ARBITRATION

Delete the entire subclause 67.3 and add the following;

"Any dispute in respect of which:

The decision, if any, of the Adjudicator has not become final and binding pursuant to subclause 67.1, and

Amicable settlement has not been reached within the period stated in subclause 67.2,

shall be finally settled, under the Laws of Kenya and the Arbitration Rules of the Chartered Institute of Arbitrators (Kenya Branch) by one or more arbitrators appointed by the Chartered Institute of Arbitrators (Kenya Branch).

Neither party shall be limited in the in the proceedings before such arbitrator/s to the evidence or arguments put before the Adjudicator for the purpose of obtaining his said decision pursuant to subclause 67.1.

Arbitration may be commenced prior to or after completion of the works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the works.

SUBCLAUSE 68.2 – NOTICES TO EMPLOYER AND ENGINEER

Delete in Sub-Clause 68.2 the words "nominated for that purpose in Part II of these conditions".

a. The Employer's address is:
   The Director General,
   Kenya National Highways Authority (KeNHA),
   Barabara Plaza, Off Airport South Road, Opp. KCAA,
   P.O. Box 49712 - 00100
   NAIROBI

b. The Engineer's address is:
   Director (Development),
   Kenya National Highways Authority (KeNHA),
   Barabara Plaza, Off Airport South Road, Opp. KCAA,
   P.O. Box 49712 - 00100
   NAIROBI

SUBCLAUSE 68.4 – All letters and notices from the Contractor to the Employer and/Engineer must be signed by the Managing Director or the person given written power of Attorney.

CLAUSE 69 – DEFAULT OF EMPLOYER

Delete Sub-Clause 69.1 (c)
In Sub-Clause 69.4 add at the end of first paragraph the following "the period of such suspension shall be as agreed upon by both parties and in any case not more than six (6) months".
In Subclause 69.4 of General Conditions of Contract Part I, insert at the end -----"The amounts of such costs which shall be added to the Contrct Price shall exclude any cost due to idle time for equipment, plant and labour."

CLAUSE 70 : CHANGES IN COST AND LEGISLATION
SUB-CLAUSE 70.1 – INCREASE OR DECREASE OF COST
Delete Sub-Clause 70.1 of part 1 in its entirety and substitute the following:

"The Contract Price shall be deemed to have been calculated in the manner set below and shall be subject to the adjustment in the event specified hereunder:

The rates contained in the priced Bills of Quantities are based upon the rates of wages and other emoluments and expenses applicable at the site at the date of Bid pricing (as defined in Sub-Clause 70.4 hereinafter);

(a) If the said rates of wages and other emoluments and expenses shall be increased or decreased by Act, Statute, Decree, Regulation and the like after the said Date of Bid Pricing then the net amount of increase or decrease the emoluments and expenses shall, as the case may be, be paid to or allowed by the Contractor;

(b) The rates contained in the priced Bills of Quantities are based upon the rates of the Contractor's compulsory contributions payable at the date of Bid under or by virtue of any Act, Statute, Regulations and the like applicable at the site;

(c) If any of the said rates of contribution shall be increased or decreased by any Act, Statute, Decree, Regulation and the like after the said Date of Bid Pricing, or if any new statutory contribution becomes payable after that date then the net amount of increase or decrease of the emoluments and expenses shall, as the case may be, be paid to or allowed by the Contractor. The difference between what the Contractor actually pays in respect of work people engaged upon or in connection with the works and what he would have paid in respect of such person had any of the said rates not been increased or decreased or had a new contribution not become payable as aforesaid, shall as the case may be, be paid to or allowed by the Contractor. Provided always that the Engineer and the Contractor may agree a sum which shall be deemed to be the net amount of the aforesaid difference, and such sum shall be deemed for the purpose of this contract to be that which is to be paid to or allowed by the Contractor by virtue of this sub-paragraph;

$$P_n = A + B\frac{E_n}{E_0} + C\frac{L_n}{L_0} + D\frac{M_n}{M_0} + E\frac{T_n}{T_0}$$

Pn -Price adjustment factor

A -Fixed constant specified in the appendix to Bid

B -Weighting for Equipment

C -Weighting for Labor

D -Weighting for Materials

E -Weighting for Transport and Fuels

E_o - Base cost index for Equipment

L_o - Base cost index for Labor

M_o- Base cost index for Materials

T_o - Base cost for Transport and Fuels

E_n - Current cost index for Equipment

L_n - Current cost index for Labor

M_n - Current cost index for Materials

T_n - Current cost index for Transport and Fuels

(d) The rates contained in the priced Bills of Quantities are based upon the market prices of the materials and goods specified in the Schedule of Basic Materials attached hereto and current at the Date of Bid Pricing (hereinafter referred to as "the basic prices" and the Contractor shall state in the said schedule the basic prices of such materials and goods. Such prices shall be supported by bona fide quotations from suppliers;

(e) If the market price of any materials or goods specified as aforesaid shall be increased or decreased after the said Date of Bid Pricing, then the net amount of difference between the basic price and the market price payable by the Contractor and current when any such goods and materials are bought shall, as the case may be, be paid to or allowed by the Contractor. Orders for materials and goods listed as aforesaid shall have been placed within a reasonable time after the date at which sufficient information is available for the placing of such orders, and the placing of orders at that time shall be a condition precedent to any payments being made to the Contractor in respect of increased market prices."

SUB-CLAUSE 70.2: SUBSEQUENT LEGISLATION

Add the following to subclause 70.2:

"Notwithstanding the foregoing, such additional or reduced cost shall not be separately paid for or credited as aforesaid if the same shall already have been taken into account in accordance with the other provisions of Clause 70.

Add the following sub clause:-

SUB-CLAUSE 70.3: SUB-CONTRACT

(a) If the Contractor shall decide subject to Clause 4 thereof to sub-let any portion of the work he shall incorporate in the sub-contract provisions to the like effect as those contained in sub-clause (1) of this Clause;

(a) If the price payable under a sub-contract as aforesaid is increased above or decreased below the price in such sub-contract by reason of the operation of the incorporated provisions of sub- clause (1) of this clause then the net amount of such increase or decrease shall as the case may be, be paid to or allowed by the Contractor under this contract.

SUB-CLAUSE 70.4: NOMINATED SUB-CONTRACTORS

This clause shall not apply in respect of work executed by any nominated sub-Contractor (fluctuation in relation to nominated sub-Contractors shall be dealt with under provisions in relation thereto which may be included in the appropriate sub-contract or contract of sale).

SUB-CLAUSE 70.5: DATE OF BID PRICING

The expression "the date of Bid pricing" as used in this Clause means the date 30 days prior to the final date for submission of Bids as determined by the Employer in the Bid documents.

SUB-CLAUSE 70.6: PRIME COST

For imported materials, the supplier's/ manufacturer's Prime costs shall be C.I.F. cost at point of entry by the same means of transport as determined by the Contractor's Basic Rate.
For locally produced materials, the supplier's or manufacturer's prime costs shall be at their nearest depot or the nearest railway station relevant to the works.

For materials which are subject to Government Price Control, payments for price variations will be determined from the difference between the control price in force at a date 30 days prior to the final date for submission of Bids and the price in force on the date of purchase.

SUB-CLAUSE 70.7: MATERIALS TO WHICH VARIATION CLAUSE APPLIES

The materials to which this Variation Clause applies are:

- Petroleum Products & All bituminous products
- Cement
- Lime
- Flex beam guardrail
- Gabion mesh
- Reinforcing steel
- All specified fuels and lubricants

SUB-CLAUSE 70.8: CHANGE OF SUPPLIER

The Contractor shall not change the supplier or manufacturer during the Contract without the approval of the Engineer.

SUB-CLAUSE 70.9: CONTRACTORS HEAD OFFICE EXPENSES

No payments will be made for price variation related to expenses incurred by the Contractor in his Head Office in Kenya, or overseas.

SUB-CLAUSE 70.10: CURRENCY OF PAYMENTS UNDER CLAUSE 70

All payments made pursuant to Clause 70 shall be in Kenya Shillings.

SUB-CLAUSE 70.11 – COST OF PREPARING VARIATION OF PRICE CLAIMS

No payments will be made for the cost of preparing V.O.P. claims.

CLAUSE 72 – RATES OF EXCHANGE COST

Delete clause 72 in its entirety and substitute the following:

The currency of Bid and payment is Kenya Shillings and rates of exchange requirements are not applicable.

CLAUSE 73 – BRIBERY AND COLLUSION

Add new Clause 73.1:

"The Contractor shall not:

(a) Offer or give or agree to give to any person in the service of the Government of Kenya any gift or consideration or any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract to which the Government of Kenya is a party or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for the Government of Kenya.
(b) Enter into this or any other contract with the Government of Kenya in connection with which commission has been paid or agreed to be paid by or on his behalf or to his knowledge, unless before the contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment thereof have been disclosed in writing to the Employer.
Any breach of this condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) or the commission of any offence by the Contractor or by anyone employed by him or acting on his behalf in relation to this

or any other contract to which the Government of Kenya is a party shall entitle the Employer to determine the Contract (See Condition 63 hereof) and/ or to recover from the Contractor the amount or value of any such gift, consideration or commission.
Any dispute or difference of opinion arising in respect of either the interpretation, effect or application of this condition or of the amount recoverable hereunder by the Employer from the Contractor shall be decided by the Employer, whose decision shall be final and conclusive.

CLAUSE 74 – CONTRACT CONFIDENTIAL

Add new Clause 74.1:

The Contractor shall treat the details of this Contract as Private and Confidential and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere (save in so far as may be necessary for the purpose thereof) without the previous consent in writing of the Government. If any dispute arises as to the necessity of any publication or disclosures for the purposes of this Contract the same shall be referred to the decision of the Engineer mentioned in the said Conditions of Contract whose award shall be final.

SECTION XI - CONTRACT FORMS

TABLE OF FORMS

FORM No. 1 - NOTIFICATION OF INTENTION TO AWARD

FORM No. 2 - NOTIFICATION OF AWARD - LETTER OF ACCEPTANCE

FORM No. 3 - CONTRACT AGREEMENT

FORM No. 4 - PERFORMANCE SECURITY [Option 1 - Unconditional Demand Bank Guarantee]

FORM No. 5 - ADVANCE PAYMENT SECURITY

FORM No. 6 - RETENTION MONEY SECURITY

FORM NO. I - NOTIFICATION OF INTENTION TO AWARD

[*This Notification of Intention to Award shall be sent to each Tenderer that submitted a Tender.*] [*Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form*]

FORMAT

For the attention of Tenderer's Authorized Representative

Name: …….. *[insert Authorized Representative's name]* Address: *[insert Authorized Representative's Address]* Telephones: *[insert Authorized Representative's telephone/fax numbers]* Email Address: *[insert Authorized Representative's email address]*

*[**IMPORTANT:** insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]*

Date of Transmission:

This Notification is sent by: [*email*] on [*date*] (local time)
Procuring Entity: *[insert the name of the Procuring entity]*

Contract title: *[insert the name of the contract]*

Country: Kenya, County_____(*if the Procuring Entity is from a County*)

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

a) Request a debriefing in relation the evaluation of your Tender, and/or

b) Submit a Procurement-related Complaint in relation to the decision to award the contract.

1. **The successful Tenderer**

Name: [*insert name of successful Tenderer*] Address: [*insert address of the successful Tenderer*] Contract price: [*insert contract price of the successful Tender*]

2. **Other Tenderers**: *insert names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.]*

	Name of Tenderer	Tender price	Evaluated Tender price	Comments (if any)
1				
2				
3				

4				
5				
6				
7				
Etc.				

1. How to request a debriefing

DEADLINE: The deadline to request a debriefing expires at midnight on [*insert date*] (local time).

You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (3) Business Days of receipt of this Notification of Intention to Award. Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:

Attention: [*insert full name of person, if applicable*] **Title/position**: *[insert title/position*] **Procuring Entity**: [*insert name of Procuring Entity*] **Email address**: [*insert email address*]

If your request for a debriefing is received within the 3 Business Days deadline, we will provide the debriefing within five (5) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (5) Business Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end. The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of the Contract Award Notice.

2. How to make a complaint

Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [*insert date*] (local time).

Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement- related Complaint as follows:

Attention: [*insert full name of person, if applicable*]

Title/position: [*insert title/position*]

Procuring Entity: [*insert name of Procuring Entity*]

Email address: [*insert email address*]

At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

In summary, there are four essential requirements:

a) You must be an 'interested party'. In this case, that means a Tenderer who

submitted a Tender in this tendering process, and is the recipient of a Notification of Intention to Award.

b) The complaint can only challenge the decision to award the contract.

c) You must submit the complaint within the period stated above.

d) You must include, in your complaint, all of the information necessary to support your case.

e) The application must be accompanied by the fees set out in the Procurement Regulations, which shall not be refundable (information available from the Public Procurement Authority at www.ppoa.go.ke.

3. Standstill Period

a) **DEADLINE:** The Standstill Period is due to end at midnight on [*insert date*] (local time).

i) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.

ii) The Standstill Period may be extended as stated in Section 4 above.

If you have any questions regarding this Notification please do not hesitate to contact us.

On behalf of the Procuring Entity:

Name_____ Title and Position_____

Signature_____ Date___

b **FORM NO. 2 - NOTIFICATION OF AWARD**

Letter of Acceptance

[letter head paper of

the Procuring Entity]

[date]

FORMAT

To: *[name and address of the Contractor]*

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the **SCC**]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 30 days in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section X, Contract Forms, of the tender document.

We attach a copy of the Contact for your

Authorized Signature: Name and Title of Signatory: Name of Agency:

Attachment: Contract Agreement

c **FORM NO. 3 – CONTRACT AGREEMENT**

THIS AGREEMENT made the _____ day of _____, _____, between

_____ of _____

(hereinafter "the Procuring Entity"), of the one part, and_____of _____(herein after "the Contractor"), of the other part:

WHEREAS the Procuring Entity desires that the Works known as _____

should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of any defects therein, The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

   a) The Letter of Acceptance
   b) The Letter of Tender
   c) The addenda Nos_____(if any)
   d) The Particular Conditions
   e) The General Conditions;
   f) The Specification
   g) The Drawings*;* and
   h) The completed Schedules and any other documents forming part of the contract.

3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Kenya on the day, month and year specified above.

Signed by_____

_____(for the Procuring Entity)

Signed by_____

_____(for the Contractor)

d **FORM NO. 4 - PERFORMANCE SECURITY**
– (Unconditional Demand Bank Guarantee)

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of* Procuring Entity*]* **Date:** *[Insert date of issue]*

PERFORMANCE GUARANTEE No.:

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that (herein after called "the Applicant") has entered into Contract No. *dated* with the Beneficiary, for the execution of (herein after called "the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

3. At the request of the Applicant, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of ( ),[1] such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

4. This guarantee shall expire, no later than the …..... Day of …..... 2…[2], and any demand for payment under it must be received by us at this office indicated above on or before that date.

5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year],* in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[1] *The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency(cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.*

[2]*Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Procuring Entity might consider adding the following text to the form, at the end of the pen ultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*

e **FORM NO. 6 - ADVANCE PAYMENT SECURITY**

[Demand Bank Guarantee] *[Guarantor letterhead or SWIFT identifier code] [Guarantor letterhead or SWIFT identifier code]*

Beneficiary:_____*[Insert name and Address of* Procuring Entity*]* **Date:**____*[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: [*Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____(herein after called "the Applicant") has entered into Contract No._____*dated* with the Beneficiary, for the execution of _____ (herein after called" the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum_____( ) is to be made against an advance payment guarantee.

3. At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of_ _____( )[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:
   a) Has used the advance payment for purposes other than the costs of mobilization in respect of th e Works; or
   b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Applicant on its account number_____at_____

5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the day of _____,2_____,[2] whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year],* in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

[1] *The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Procuring Entity.*

[2] *Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Procuring Entity might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*

f **FORM NO. 7 - RETENTION MONEY SECURITY**

[Demand Bank Guarantee]

[Guarantor letterhead]

Beneficiary: _____*[Insert name and Address of* Procuring Entity*]* **Date:** _____*[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.:_____
[Insert guarantee reference number]

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that_____*[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (herein after called" the Contractor") has entered into Contract No. _*[insert reference number of the contract]* dated_____with the Beneficiary, for the execution of _____*[insert name of contract and brief description of* Works*]* (herein after called" the Contract").

2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of *[*insert the second half of the Retention Money] is to be made against a Retention Money guarantee.

3. At the request of the Contractor, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]*_____(*[insert amount in words*_____*])*[1] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.

4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number_____at_____*[insert name and address of Applicant's bank]*.

5. This guarantee shall expire no later than the……. Day of……..…, 2…[2], and any demand for payment under it must be received by us at the office indicated above on or before that date.

6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months] [one year],* in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

_____

[Name of Authorized Official, signature(s) and seals/stamps]

Note: All italicized text (including foot notes) is for use in preparing this form and shall be deleted from the final product.

g **FORM NO. 8 BENEFICIAL OWNERSHIP DISCLOSURE FORM**

INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the Tenderer by meeting one or more of the following conditions:

Directly or indirectly holding 25% or more of the shares.
Directly or in directly holding 25% or more of the voting rights.
Directly or indirectly having the right to appoint a majority of the board of directors or

Tender Reference No.:_____[*insert identification no*] Name of the Assignment:_____*[insert name of the assignment]* to:_____*[insert complete name of Procuring Entity]*

In response to your notification of award dated_____*[insert date of notification of award]* to furnish additional information on beneficial ownership:*[select one option as applicable and delete the options that are not applicable]*

I) We here by provide the following beneficial ownership information.

i. Details of beneficial ownership

Identity of Beneficial Owner	**Directly or indirectly holding 25% or more of the shares (Yes / No)**	**Directly or indirectly holding 25 % or more of the Voting Rights (Yes / No)**	**Directly or indirectly having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer (Yes / No)**
[include full name (last, middle, first), nationality, country of residence]			

OR

ii) We declare that there is no Beneficial Owner meeting one or more of the following conditions: directly or indirectly holding 25% or more of the shares. Directly or indirectly holding 25% or more of the voting rights. Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer.

OR

We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Tenderer shall provide explanation on why it is unable to identify any Beneficial Owner]

Directly or indirectly holding 25% or more of the shares. Directly or indirectly holding25% or more of the voting rights.

Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer]"

Name of the Tenderer: .....[insert complete name of the Tenderer]*_____

*Name of the person duly authorized to sign the Tender on behalf of the Tenderer: ** [insert complete name of person duly authorized to sign the Tender]*

Title of the person signing the Tender: ..... [insert complete title of the person signing the Tender]

Signature of the person named above: ..... [insert signature of person whose name and capacity are shown above]

Date signed ..... [insert date of signing] day of..... [Insert month], [insert year]

LETTER OF NOTIFICATION OF AWARD

Address of Procuring Entity

_____

_____

To:

_____

_____

_____

_____

RE: Tender No. _____

Tender Name _____

This is to notify that the contract/s stated below under the above mentioned tender have been awarded to you.

_____

_____

1. Please acknowledge receipt of this letter of notification signifying your acceptance.

2. The contract/contracts shall be signed by the parties within **60** days of the date of this letter but not earlier than **14** days from the date of the letter.

3. You may contact the officer(s) whose particulars appear below on the subject matter of this letter of notification of award.

(FULL PARTICULARS) _____

_____

SIGNED FOR ACCOUNTING OFFICER

FORM RB 1

REPUBLIC OF KENYA

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO.....OF.....20.....

BETWEEN

.....APPLICANT

AND

.....RESPONDENT (Procuring Entity)

Request for review of the decision of the..... (Name of the Procuring Entity) of ..... dated the...day of .....20.....in the matter of Tender No.....of .....20...

REQUEST FOR REVIEW

I/We.....,the above named Applicant(s), of address: Physical address ..... Fax No.....Tel. No.....Email ....., hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds, namely:-

1.
2.
etc.

By this memorandum, the Applicant requests the Board for an order/orders that: -

1.
2.
etc

SIGNED .....(Applicant)

Dated on.....day of ...../...20...

FOR OFFICIAL USE ONLY

Lodged with the Secretary Public Procurement Administrative Review Board..... day of ..... 20.....

SIGNED
Board Secretary

Appendix I Supervision Checklist

Project Name:	

	Date	Signatures
The Engineer's Representative (Project Engineer)		
Resident Engineer		

1. This check list is for Resident Engineer to check contractor's work execution process.

2. Fill in date of checking as (day/month), mark as indicated in Filling Example, and state remarks.

3. Put this check list in the Monthly Progress Report.

Item		Check Point		Before	During execution								After	Remarks
				Date /	Date /	Date /	Date /	Date /	Date /	Date /	Date /	Date /	Date /	Reason for unsatisfactory performance (Site diary No.) Corrective order by authority (Date) Excellent point to be specified
1	Execution system in general	1-1	Works Execution Programme (including its revised version if any) is submitted before the date specified in contract document	☐	☐	☐	☐	☐	☐	☐	☐	☐		
		1-2	Works Execution Programme properly reflects the given specifications and site conditions	☐	☐	☐	☐	☐	☐	☐	☐	☐		

		1-3	Execution procedures are in accordance with Works Execution Programme		☐	☐	☐	☐	☐	☐	☐	☐		
2	Equipment holding	2-1	All equipment used are properly mobilized in accordance with Works Execution Programme		☐	☐	☐	☐	☐	☐	☐	☐		
		2-2	All equipment used is well maintained during the execution of works		☐	☐	☐	☐	☐	☐	☐	☐		
3	Contractor's in-house staff	3-1	Qualified technical staff of contractor are properly assigned as specified in Works Execution Programme		☐	☐	☐	☐	☐	☐	☐	☐		
		3-2	Contractor's in-house key staff understand work process and schedule properly		☐	☐	☐	☐	☐	☐	☐	☐		
		3-3	Contractor's in-house staff give technical guidance and direction to workers and operators		☐	☐	☐	☐	☐	☐	☐	☐		

			properly and timely											
		3-4	Communications with authority in writing is properly and timely		☐	☐	☐	☐	☐	☐	☐	☐		
4	Personnel employment	4-1	Workers and operators are deployed in accordance with Works Execution Programme		☐	☐	☐	☐	☐	☐	☐	☐		
		4-2	Wage payment is properly made on time		☐	☐	☐	☐	☐	☐	☐	☐		
5	Site base facilities	5-1	Office and stockyard are prepared in accordance with Works Execution Programme		☐	☐	☐	☐	☐	☐	☐	☐		
		5-2	Site is well maintained during the work execution and cleared on completion		☐	☐	☐	☐	☐	☐	☐	☐		
		5-3	Material stored on site is properly managed during the work execution		☐	☐	☐	☐	☐	☐	☐	☐		
6	Quality and quantity management	6-1	Material testing, structural examination, and		☐	☐	☐	☐	☐	☐	☐	☐		

			measurements are properly and routinely conducted based on specifications and Works Execution Programme											
		6-2	Results of material testing, structural examination and measurements are within the specifications.		☐	☐	☐	☐	☐	☐	☐	☐		
		6-3	Results of material testing, structural examination, and measurements are properly compiled as reports for confirmation		☐	☐	☐	☐	☐	☐	☐	☐		
7	Work scheduling	7-1	Understanding of critical path and its reflection on scheduling is proper		☐	☐	☐	☐	☐	☐	☐	☐		
		7-2	Actual proceedings are periodically compared to the planned schedule described in Works Execution Programme		☐	☐	☐	☐	☐	☐	☐	☐		

		7-3	Changes caused by site conditions are properly handled to keep things on schedule		☐	☐	☐	☐	☐	☐	☐	☐		
		7-4	All works are completed within the contract term or within the extended term as allowed										☐	
8	Work safety management	8-1	No accident occurs to workers, operators, or third-parties.		☐	☐	☐	☐	☐	☐	☐	☐		
		8-2	Safety of workers and operators is considered		☐	☐	☐	☐	☐	☐	☐	☐		
		8-3	Accident prevention efforts for third-parties are proper		☐	☐	☐	☐	☐	☐	☐	☐		
		8-4	Traffic and site safety devices are properly installed and managed		☐	☐	☐	☐	☐	☐	☐	☐		
		8-5	Temporary facilities (e.g. scaffolding) are constantly checked		☐	☐	☐	☐	☐	☐	☐	☐		
9	Environmental and social management	9-1	Environmental and social mitigation efforts (e.g. against noise,		☐	☐	☐	☐	☐	☐	☐	☐		

			vibration, emission, and dust) are conducted											
		9-2	Waste material from site is properly disposed		☐	☐	☐	☐	☐	☐	☐	☐		
		9-3	Damage to existing roads, works and services is avoided or are repaired when it occurs		☐	☐	☐	☐	☐	☐	☐	☐		
		9-4	No overloading for work-related vehicles is reported		☐	☐	☐	☐	☐	☐	☐	☐		

Filling Example : ✓Check point is satisfactory ■ Check point is unsatisfactory N/A Not applicable