



COUNTY GOVERNMENT OF ELGEYO MARAKWET

SECOND KENYA INFORMAL SETTLEMENTS IMPROVEMENT PROJECT (KISIP 2)

RFB No: KE-ELGEYO MARAKWET -397232-CW-RFBEMC/LANDS/KISIP/002

CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEM AND
PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL
SETTLEMENTS OF CHEBIEMIT AND CHEPTONGEI, ELGEYO MARAKWET
COUNTY

BIDDING DOCUMENT:

VOLUME 1 OF 2

PART 1 – BIDDING PROCEDURES

- Section I: Instruction to Bidders (ITB)
- Section II: Bid Data Sheet (BDS)
- Section III: Evaluation and Qualification Criteria
- Section IV: Bidding Forms
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- Section VIII: General Conditions (GC)
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VOLUME 2 OF 2 – BOOK OF DRAWINGS

**Specific Procurement Notice
Template**

**Request for Bids
Small Works**

(One-Envelope Bidding Process)

Country: Republic of Kenya

Name of Project: Second Kenya Informal Settlements Improvement Project (KISIP 2)

Contract Title: CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEM AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF CHEBIEMIT AND CHEPTONGEI, ELGEYO MARAKWET COUNTY

Loan No./Credit No./ Grant No.: 6759-KE

RFB Reference No.: KE-ELGEYO MARAKWET -397232-CW-RFBEMC/LANDS/KISIP/002

1. The Republic Government of Kenya has received financing from the World Bank and Agence Française de Développement towards the cost of the Second Kenya Informal Settlements Improvement Project (KISIP 2), and intends to apply part of the proceeds toward payments under the contract for **CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEM AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF CHEBIEMIT AND CHEPTONGEI, ELGEYO MARAKWET COUNTY**. “For this contract, the Borrower shall process the payments using the Direct Payment disbursement method, as defined in the World Bank’s Disbursement Guidelines for Investment Project Financing.”
2. The **County Government of Elgeyo Marakwet** now invites sealed Bids from eligible Bidders for the **CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEM AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF CHEBIEMIT AND CHEPTONGEI, ELGEYO MARAKWET COUNTY**. Under this project, the Contractor will be expected to perform and deliver construction of the listed works in accordance with the designs including technical specifications included to the tender documents.
 - a. 2084m of Roads to bituminous standards & storm drainage in Cheptongei settlement
 - b. 12No. Street lighting system in Cheptongei settlement
 - c. Upgrading 1Nr. 30m high mast flood light in Cheptongei settlement
 - d. 1Nr.30M high new high mast flood light in cheptongei
 - e. 1461m of roads to bituminous standards storm drainage in chebiemit settlement
 - f. 2No. street lighting system in Chebiemit settlement
 - g. 1Nr.30m high new high mast flood light in chebiemit
3. Bidding will be conducted through national competitive procurement using a Request for Bids (RFB) as specified in the World Bank’s “Procurement Regulations for IPF Borrowers” *July 2016 and revised in January 2017, October 2017, December 2019 and March 2021* (“Procurement Regulations”), and is open to all Bidders as defined in the Procurement Regulations.

4. Interested eligible Bidders may obtain further information from **Head of Supply Chain Management, County Government of Elgeyo Marakwet, e-mail info@elgeyomarakwet.go.ke**, and inspect the bidding document during office hours **8:00 AM to 5:00 PM** at the address given below; **Elgeyo Marakwet Treasury Building**.
5. The bidding document in **English** may be **downloaded for free of charge** at the county website www.elgeyomarakwet.go.ke
6. Sealed Bids must be delivered to the address below **Tender Box at the entrance of Elgeyo Marakwet county Treasury Building** on or before **THURSDAY 22nd JANUARY 2024 at 12:30 P.M.** Electronic Bidding will not be permitted. Late Bids will be rejected. Bids will be publicly opened in the presence of the Bidders' designated representatives and anyone who chooses to attend at the address below, **Elgeyo Marakwet Treasury Building** on **Monday 22nd JANUARY 2024 at 12:30 P.M.**
7. All Bids must be accompanied by a **Bid Security of Kenya Shillings, Ten Million five hundred thousand shillings Only (KES. 10,500,000.00)**
8. All Bids must be accompanied by a Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Declaration.
9. Attention is drawn to the Procurement Regulations requiring the Borrower to disclose information on the successful bidder's beneficial ownership, as part of the Contract Award Notice, using the Beneficial Ownership Disclosure Form as included in the bidding document.”]
10. Pre-Bid meeting **shall** take place on Thursday 4th January 2023 at 10:00 A.M
11. The address(es) referred to above is (are):

Head of Supply Chain Management
P.O Box 220-30700 Elgeyo Marakwet, Kenya
+254(0)704 220 220, +254(0)721 828 359
info@elgeyomarakwet.go.ke
www.elgeyomarakwet.go.ke

Request for Bids

Small Works

(One-Envelope Bidding Process)

Procurement of:

**CONSTRUCTION OF ROADS/FOOTPATHS
& DRAINAGE SYSTEM AND PUBLIC
LIGHTING INFRASTRUCTURE WORKS IN
SELECTED INFORMAL SETTLEMENTS OF
CHEBIEMIT AND CHEPTONGEI; BOTH
WITHIN ELGEYO MARAKWET COUNTY**

RFB No: KE-ELGEYO MARAKWET -397232-CW-RFBEMC/LANDS/KISIP/002

Project: Second Kenya Informal Settlements Improvement Project (KISIP 2)

Employer: Department of Housing and Urban Development; County
Government of Elgeyo Marakwet

Country: Republic of Kenya

Issued on: 22nd December 2023

Standard Procurement Document

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PART 1 – Bidding Procedures

Section I - Instructions to Bidders

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Section I - Instructions to Bidders

A. General

1. Scope of Bid

1.1 In connection with the Specific Procurement Notice - Request for Bids (RFB), specified in the Bid Data Sheet (BDS), the Employer, as specified **in the BDS**, issues this bidding document for the provision of Works as specified in Section VII, Works' Requirements. The name, identification and number of lots (contracts) of this RFB are specified **in the BDS**.

1.2 Throughout this bidding document:

- (a) the term **"in writing"** means communicated in written form (e.g. by mail, e-mail, and fax, including if specified **in the BDS**, distributed or received through the electronic-procurement system used by the Employer) with proof of receipt;
- (b) if the context so requires, **"singular"** means **"plural"** and vice versa;
- (c) **"Day"** means calendar day, unless otherwise specified as **"Business Day"**. A Business Day is any day that is an official working day of the Borrower. It excludes the Borrower's official public holidays;
- (d) **"ES"** means environmental and social (including Sexual Exploitation, and Abuse (SEA) and Sexual Harassment (SH));
- (e) **"Sexual Exploitation and Abuse"** **"(SEA)"** means the following:

"Sexual Exploitation" is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;

"Sexual Abuse" is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;

- (f) **"Sexual Harassment"** **"(SH)"** is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor's Personnel with other Contractor's or Employer's Personnel;

- (g) **“Contractor’s Personnel”** is as defined in Sub- Clause 1 (ii) of the General Conditions of Contract; and
- (h) **“Employer’s personnel”** is as defined in GCC Sub-Clause 1 (nn) of the General Conditions of Contract.

A non-exhaustive list of (i) behaviors which constitute SEA and (ii) behaviors which constitute SH is attached to the Code of Conduct form in Section IV.

- 2. Source of Funds**
 - 2.1 The Borrower or Recipient (hereinafter called “Borrower”) specified **in the BDS** has received or has applied for financing (hereinafter called “funds”) from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called “the Bank”) in an amount specified **in the BDS**, toward the project named **in the BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this bidding document is issued.
 - 2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank, and will be subject, in all respects, to the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of goods, equipment, plant, or materials, if such payment or import is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing).
- 3. Fraud and Corruption**
 - 3.1 The Bank requires compliance with the Bank’s Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG’s Sanctions Framework, as set forth in Section VI.
 - 3.2 In further pursuance of this policy, bidders shall permit and shall cause their agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit the Bank to inspect all accounts, records and other documents relating to any initial selection process, prequalification process, bid submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.
- 4. Eligible Bidders**
 - 4.1 A Bidder may be a firm that is a private entity, or a state-owned enterprise or institution, subject to ITB 4.6, or any combination of

them 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 letter 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 Bidding process and, in the event the JV is awarded the Contract, during contract execution. Unless specified **in the BDS**, there is no limit on the number of members in a JV.

4.2 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this Bidding process, if the Bidder:

- (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
- (b) receives or has received any direct or indirect subsidy from another Bidder; or
- (c) has the same legal representative as another Bidder; or
- (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the Bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- (e) or 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 Bid; or
- (f) or any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Project Manager for the Contract implementation;
- (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 BDS ITB 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;
- (h) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding document or specifications of the contract, and/or the Bid

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 Bank throughout the procurement process and execution of the contract.

- 4.3 A firm that is a Bidder (either individually or as a JV member) shall not participate in more than one Bid, except for permitted alternative Bids. This includes participation as a Subcontractor in other Bids. Such participation shall result in the disqualification of all Bids in which the firm is involved. A firm that is not a Bidder or a JV member may participate as a subcontractor in more than one Bid.
- 4.4 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.8. A Bidder shall be deemed to have the nationality of a country if the Bidder 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 may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or subconsultants for any part of the Contract including related Services.
- 4.5 A Bidder that has been sanctioned by the Bank, pursuant to the Bank's Anti-Corruption Guidelines, in accordance with its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework as described in Section VI paragraph 2.2 d., shall be ineligible to be prequalified for, initially selected for, bid for, propose for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address specified in the BDS.
- 4.6 Bidders that are state-owned enterprises or institutions in the Employer's Country may be eligible to compete and be awarded a Contract(s) only if they can establish, in a manner acceptable to the Bank, that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Employer.
- 4.7 A Bidder shall not be under suspension from Bidding by the Employer as the result of the operation of a Bid-Securing or Proposal-Securing Declaration.
- 4.8 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower's

country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; 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, the Borrower's country 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. When the Works are implemented across jurisdictional boundaries (and more than one country is a Borrower, and is involved in the procurement), then exclusion of a firm or individual on the basis of ITB 4.8 (a) above by any country may be applied to that procurement across other countries involved, if the Bank and the Borrowers involved in the procurement agree.

4.9 A Bidder shall provide such documentary evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

4.10 A firm that is under a sanction of debarment by the Borrower from being awarded a contract is eligible to participate in this procurement, unless the Bank, at the Borrower's request, is satisfied that the debarment;

(a) relates to fraud or corruption, and

(b) followed a judicial or administrative proceeding that afforded the firm adequate due process.

**5. Eligible
Materials,
Equipment and
Services**

5.1 The materials, equipment and services to be supplied under the Contract and financed by the Bank may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

B. Contents of Bidding Document

**6. Sections of
Bidding
Document**

6.1 The bidding document consists of Parts 1, 2, and 3, which include all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

- Section I - Instructions to Bidders (ITB)
- Section II - Bid Data Sheet (BDS)

- Section III - Evaluation and Qualification Criteria
- Section IV - Bidding Forms
- Section V - Eligible Countries
- Section VI - Fraud and Corruption

PART 2 Works' Requirements

- Section VII - Works' Requirements

PART 3 Conditions of Contract and Contract Forms

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

6.2 The Specific Procurement Notice - Request for Bids (RFB) issued by the Employer is not part of this bidding document.

6.3 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the bidding document, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.

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

7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting

7.1 A Bidder requiring any clarification of the bidding document shall contact the Employer in writing at the Employer's address specified **in the BDS** or raise its inquiries during the pre-Bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of Bids within a period specified **in the BDS**. The Employer shall forward copies of its response to all Bidders who have acquired the bidding document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so specified **in the BDS**, the Employer shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the bidding document, the Employer shall amend the bidding document following the procedure under ITB 8 and ITB 22.2.

- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4 If so specified **in the BDS**, the Bidder's designated representative is invited to attend a pre-Bid meeting and/or a Site of Works visit. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested, to submit any questions in writing, to reach the Employer not later than one week before the meeting.
- 7.6 Minutes of the pre-Bid meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the bidding document in accordance with ITB 6.3 Any modification to the bidding document that may become necessary as a result of the pre-Bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-Bid meeting. Nonattendance at the pre-Bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Document

- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the bidding document by issuing addenda.
- 8.2 Any addendum issued shall be part of the bidding document and shall be communicated in writing to all who have obtained the bidding document from the Employer in accordance with ITB 6. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with ITB 7.1.

- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2.

C. Preparation of Bids

- 9. Cost of Bidding** 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.
- 10. Language of Bid** 10.1 The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Employer, shall be written in the language specified **in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified **in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents Comprising the Bid** 11.1 The Bid shall comprise the following:
- (a) **Letter of Bid** prepared in accordance with ITB 12;
 - (b) **Bill of Quantities or Activity Schedule**: completed in accordance with ITB 12 and ITB 14, as specified **in the BDS**;
 - (c) **Bid Security or Bid-Securing Declaration**, in accordance with ITB 19.1;
 - (d) **Alternative Bid**, if permissible, in accordance with ITB 13;
 - (e) **Authorization**: written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.3;
 - (f) **Bidder's Eligibility**: documentary evidence in accordance with ITB 17 establishing the Bidder's eligibility to Bid;
 - (g) **Qualifications**: documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the contract if its Bid is accepted;
 - (h) **Conformity**: a technical proposal in accordance with ITB 16;

- (i) any other document required **in the BDS**.
- 11.2 In addition to the requirements under ITB 11.1, Bids 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 bid shall be signed by all members and submitted with the Bid, together with a copy of the proposed Agreement.
- 11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.
- 12. Letter of Bid and Schedules**
- 12.1 The Letter of Bid and Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.3. All blank spaces shall be filled in with the information requested.
- 13. Alternative Bids**
- 13.1 Unless otherwise specified **in the BDS**, alternative Bids shall not be considered.
- 13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included **in the BDS** and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.
- 13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the bidding document must first price the Employer's design as described in the bidding document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, 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 Bidder with the Most Advantageous Bid conforming to the basic technical requirements shall be considered by the Employer.
- 13.4 When specified **in the BDS**, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified **in the BDS** and described in Section VII, Works' Requirements. The method for their evaluation will be stipulated in Section III, Evaluation and Qualification Criteria.
- 14. Bid Prices and Discounts**
- 14.1 The prices and discounts quoted by the Bidder in the Letter of Bid and in the Activity Schedule or Bill of Quantities shall conform to the requirements specified below.

- 14.2 The Bidder shall submit a Bid for the whole of the Works described in ITB 1.1 by filling in prices for all items of the Works, as identified in Section IV. Bidding Forms. In case of admeasurement contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.
- 14.3 The price to be quoted in the Letter of Bid, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered.
- 14.4 The Bidder shall quote any discounts and indicate the methodology for their application in the Letter of Bid in accordance with ITB 12.1.
- 14.5 Unless otherwise specified **in the BDS** and the Conditions of Contract, the prices quoted by the Bidder shall be fixed. If the prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data in Section IV- Bidding Forms and the Employer may require the Bidder to justify its proposed indices and weightings.
- 14.6 If so specified in ITB 1.1, Bids are invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer discounts for the award of more than one Contract shall specify in their Bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all lots (contracts) are opened at the same time.
- 14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of Bids, shall be included in the rates and prices¹ and the total Bid price submitted by the Bidder.

15. Currencies of Bid and Payment

- 15.1 The currency(ies) of the Bid and the currency(ies) of payments shall be the same and shall be as specified **in the BDS**.
- 15.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency

¹ In lump sum contracts, delete "rates and prices and the."

requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data are reasonable², in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

- 16. Documents Comprising the Technical Proposal**
- 16.1 The Bidder shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Bidding Forms, in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work's requirements and the completion time.
- 17. Documents Establishing the Eligibility and Qualifications of the Bidder**
- 17.1 To establish Bidder's eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid, included in Section IV, Bidding Forms.
- 17.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.
- 17.3 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1.
- 18. Period of Validity of Bids**
- 18.1 Bids shall remain valid until the date specified **in the BDS** or any extended date if amended by the Employer in accordance with ITB 8. A Bid that is not valid until the date specified **in the BDS**, or any extended date if amended by the Employer in accordance with ITB 8, shall be rejected by the Employer as nonresponsive.
- 18.2 In exceptional circumstances, prior to the date of expiry of the Bid validity, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 19, it shall also be extended for twenty-eight (28) days beyond the extended date for Bid validity. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 18.3.
- 18.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the date of expiry of the Bid validity specified in

² For lump sum contracts, delete "unit rates and prices and shown in the Schedule of Adjustment Data are reasonable" and replace with "Lump Sum."

accordance with ITB 18.1, the Contract price shall be determined as follows:

- (a) in the case of **fixed price** contracts, the Contract price shall be the Bid price adjusted by the factor specified **in the BDS**;
- (b) in the case of **adjustable** price contracts, no adjustment shall be made; or
- (c) in any case, Bid evaluation shall be based on the Bid price without taking into consideration the applicable correction from those indicated above.

19. Bid Security

- 19.1 The Bidder shall furnish as part of its Bid, either a Bid-Securing Declaration or a Bid Security as specified **in the BDS**, in original form and, in the case of a Bid Security, in the amount and currency specified **in the BDS**.
- 19.2 A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.
- 19.3 If a Bid Security is specified pursuant to ITB 19.1, the Bid Security shall be a demand guarantee in any of the following forms at the Bidder's option:
 - (a) an unconditional guarantee issued by a bank or non-bank financial institution (such as an insurance, bonding or surety company);
 - (b) an irrevocable letter of credit;
 - (c) a cashier's or certified check; or
 - (d) another security specified **in the BDS**,

from a reputable source from an eligible country. If an unconditional guarantee is issued by a non-bank financial institution located outside the Employer's Country, the issuing non-bank financial institution shall have a correspondent financial institution located in the Employer's Country to make it enforceable, unless the Employer has agreed in writing, prior to Bid submission, that a correspondent financial institution is not required. In the case of a bank guarantee, the Bid Security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Employer prior to Bid submission. The Bid Security shall be valid for twenty-eight (28) days beyond the original date of expiry of the Bid validity, or beyond any extended date if requested under ITB 18.2.

- 19.4 If a Bid Security or Bid Securing Declaration is specified pursuant to ITB 19.1, any Bid not accompanied by a substantially responsive Bid Security or Bid-Securing Declaration shall be rejected by the Employer as non-responsive.
- 19.5 If a Bid Security is specified pursuant to ITB 19.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the Performance Security and if required in the BDS, the Environmental and Social (ES) Performance Security pursuant to ITB 48.
- 19.6 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security, and if required in the BDS, the Environmental and Social (ES) Performance Security.
- 19.7 The Bid Security may be forfeited:
- (a) if a Bidder withdraws its Bid prior to the expiry date of the Bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder; or
 - (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 47; or
 - (ii) furnish a Performance Security and if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with ITB 48.
- 19.8 The Bid Security or the Bid-Securing Declaration of a JV shall be in the name of the JV that submits the Bid. If the JV has not been constituted into a legally enforceable JV, at the time of Bidding, the Bid Security or the Bid-Securing Declaration shall be in the names of all future members as named in the letter of intent mentioned in ITB 4.1 and ITB 11.2.
- 19.9 If a Bid Security is not required **in the BDS**, pursuant to ITB 19.1, and;
- (a) if a Bidder withdraws its Bid prior to the expiry date of the Bid validity specified by the Bidder on the Letter of Bid or any extended date provided by the Bidder; or
 - (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 47; or

- (ii) furnish a Performance Security and if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with ITB 48;

the Borrower may, if provided for **in the BDS**, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time stated **in the BDS**.

20. Format and Signing of Bid

- 20.1 The Bidder shall prepare one original of the documents comprising the Bid as described in ITB 11 and clearly mark it "ORIGINAL". Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE". In addition, the Bidder shall submit copies of the Bid in the number specified **in the BDS**, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
- 20.2 Bidders shall mark as "CONFIDENTIAL" information in their Bids which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.
- 20.3 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified **in the BDS** and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid.
- 20.4 In case the Bidder is a JV, the Bid 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.
- 20.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

- 21.1 The Bidder shall deliver the Bid in a single, sealed envelope (one-envelope Bidding process). Within the single envelope the Bidder shall place the following separate, sealed envelopes:
 - (a) in an envelope marked "ORIGINAL", all documents comprising the Bid, as described in ITB 11; and

- (b) in an envelope marked “COPIES”, all required copies of the Bid; and
- (c) if alternative Bids are permitted in accordance with ITB 13, and if relevant:
 - (i) in an envelope marked “ ORIGINAL - ALTERNATIVE BID”, the alternative Bid; and
 - (ii) in the enveloped marked “COPIES – ALTERNATIVE BID” all required copies of the alternative Bid.

21.2 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with ITB 22.1;
- (c) bear the specific identification of this Bidding process specified in accordance with BDS 1.1; and
- (d) bear a warning not to open before the time and date for Bid opening.

21.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

22. Deadline for Submission of Bids

22.1 Bids must be received by the Employer at the address and no later than the date and time specified **in the BDS**. When so specified **in the BDS**, Bidders shall have the option of submitting their Bids electronically. Bidders submitting Bids electronically shall follow the electronic bid submission procedures specified **in the BDS**.

22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the bidding document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

23.1 The Employer shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 22. Any Bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.

24. Withdrawal, Substitution, and

24.1 A Bidder may withdraw, substitute, or modify its Bid 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 ITB 20.3, (except that withdrawal

Modification of Bids

notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be:

- (a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION”; and
- (b) received by the Employer prior to the deadline prescribed for submission of Bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the date of expiry of the Bid validity specified by the Bidder on the Letter of Bid or any extended date thereof.

25. Bid Opening

25.1 Except in the cases specified in ITB 23 and ITB 24.2, the Employer shall publicly open and read out in accordance with this ITB, all Bids received by the deadline, at the date, time and place specified **in the BDS**, in the presence of Bidders’ designated representatives and anyone who chooses to attend. All Bidders, or their representatives and any interested party may attend a public opening. Any specific electronic Bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be as specified **in the BDS**.

25.2 First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No Bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Bid opening.

25.3 Next, envelopes marked “SUBSTITUTION” shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Bid opening.

25.4 Next, envelopes marked “MODIFICATION” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a

valid authorization to request the modification and is read out at bid opening.

- 25.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative Bids; the presence or absence of a Bid Security, or Bid Securing Declaration, if required; and any other details as the Employer may consider appropriate.
- 25.6 Only Bids, alternative Bids and discounts that are opened and read out at Bid opening shall be considered further for evaluation. The Letter of Bid and the priced Schedules are to be initialed by representatives of the Employer attending Bid opening in the manner specified **in the BDS**.
- 25.7 The Employer shall neither discuss the merits of any Bid nor reject any Bid (except for late Bids, in accordance with ITB 23.1).
- 25.8 The Employer shall prepare a record of the Bid opening that shall include, as a minimum:
- (a) the name of the Bidder and whether there is a withdrawal, substitution, or modification;
 - (b) the Bid Price, per lot (contract) if applicable, including any discounts;
 - (c) the presence or absence of a Bid Security or Bid-Securing Declaration, if one was required; and
 - (d) any alternative Bids.
- 25.9 The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder'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 Bidders.

E. Evaluation and Comparison of Bids

26. Confidentiality

- 26.1 Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the Bidding process until information on Intention to Award the Contract is transmitted to all Bidders in accordance with ITB 43.

- 26.2 Any effort by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
- 26.3 Notwithstanding ITB 26.2, from the time of Bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the Bidding process, it shall do so in writing.
- 27. Clarification of Bids**
- 27.1 To assist in the examination, evaluation, and comparison of the Bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid given a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids, in accordance with ITB 31.
- 27.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.
- 28. Deviations, Reservations, and Omissions**
- 28.1 During the evaluation of Bids, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the bidding document;
 - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the bidding document; and
 - (c) "Omission" is the failure to submit part or all of the information or documentation required in the bidding document.
- 29. Determination of Responsiveness**
- 29.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.
- 29.2 A substantially responsive Bid is one that meets the requirements of the bidding 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, inconsistent with the bidding document, the Employer's rights or the Bidder's obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.

29.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, in particular, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.

29.4 If a Bid is not substantially responsive to the requirements of the bidding document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

**30. Nonmaterial
Nonconformities**

30.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid.

30.2 Provided that a Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

30.3 Provided that a Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only to reflect the price of a missing or non-conforming item or component, by adding the average price of the item or component quoted by substantially responsive Bidders. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Employer shall use its best estimate.

**31. Correction of
Arithmetical
Errors**

31.1 Provided that the Bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

(a) only for admeasurement contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of

the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;

(b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1, shall result in the rejection of the Bid.

32. Conversion to Single Currency

32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified **in the BDS**.

33. Margin of Preference

33.1 Unless otherwise specified **in the BDS**, a margin of preference for domestic Bidders³ shall not apply.

34. Subcontractors

34.1 Unless otherwise stated **in the BDS**, the Employer does not intend to execute any specific elements of the Works by subcontractors selected in advance by the Employer, Financial Parts

34.2 The subcontractor's qualifications shall not be used by the Bidder to qualify for the Works unless their specialized parts of the Works were previously designated by the Employer **in the BDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Bidder may be added to the qualifications.

34.3 Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified **in the BDS**. Subcontractors proposed by the Bidder shall be fully qualified for their parts of the Works.

³ An individual firm is considered a domestic Bidder for purposes of the margin of preference if it is registered in the country of the Employer, has more than 50 percent ownership by nationals of the country of the Employer, and if it does not subcontract more than 10 percent of the contract price, excluding provisional sums, to foreign contractors. JVs are considered as domestic Bidders and eligible for domestic preference only if the individual member firms are registered in the country of the Employer or have more than 50 percent ownership by nationals of the country of the Employer, and the JV shall be registered in the country of the Borrower. The JV shall not subcontract more than 10 percent of the contract price, excluding provisional sums, to foreign firms. JVs between foreign and national firms will not be eligible for domestic preference.

35. Evaluation of Bids

- 35.1 The Employer shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Employer shall determine the Most Advantageous Bid. This is the Bid of the Bidder that meets the Qualification Criteria and whose Bid has been determined to be:
- (a) substantially responsive to the bidding document; and
 - (b) the lowest evaluated cost.
- 35.2 To evaluate a Bid, the Employer shall consider the following:
- (a) the Bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities⁴ for admeasurement contracts, but including Daywork⁵ items, where priced competitively;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 14.4;
 - (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
 - (e) price adjustment for nonconformities in accordance with ITB 30.3; and
 - (f) the additional evaluation factors are specified in Section III, Evaluation and Qualification Criteria.
- 35.3 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 taken into account in Bid evaluation.
- 35.4 If this bidding document allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated cost of the contract combinations, including any

⁴ In lump sum contracts, delete “Bill of Quantities” and replace with “Activity Schedule.”

⁵ Daywork is work carried out following instructions of the Project Manager and paid for on the basis of time spent by workers, and the use of materials and the Contractor’s equipment, at the rates quoted in the Bid. For Daywork to be priced competitively for Bid evaluation purposes, the Employer must list tentative quantities for individual items to be costed against Daywork (e.g., a specific number of tractor driver staff-days, or a specific tonnage of Portland cement), to be multiplied by the Bidders’ quoted rates and included in the total Bid price.

discounts offered in the Letter of Bid, is specified in Section III, Evaluation and Qualification Criteria.

- 36. Comparison of Bids**
- 36.1 The Employer shall compare the evaluated costs of all substantially responsive Bids established in accordance with ITB 35.2 to determine the Bid that has the lowest evaluated cost.
- 37. Abnormally Low Bids**
- 37.1 An Abnormally Low Bid is one where the Bid price, in combination with other constituent elements of the Bid, appears unreasonably low to the extent that the Bid price raises material concerns as to the capability of the Bidder to perform the Contract for the offered Bid price.
- 37.2 In the event of identification of a potentially Abnormally Low Bid, the Employer shall seek written clarifications from the Bidder, including detailed price analyses of its Bid 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 bidding document.
- 37.3 After evaluation of the price analyses, in the event that the Employer determines that the Bidder has failed to demonstrate its capability to perform the Contract for the offered Bid Price, the Employer shall reject the Bid.
- 38. Unbalanced or Front Loaded Bids**
- 38.1 If the Bid for an admeasurement contract, which results in the lowest evaluated cost is, in the Employer's opinion, seriously unbalanced or, front loaded, the Employer may require the Bidder to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Bid price as with the scope of works, proposed methodology, schedule and any other requirements of the bidding document.
- 38.2 After the evaluation of the information and detailed price analyses presented by the Bidder, the Employer may as appropriate:
- (a) accept the Bid; or
 - (b) require that the amount of the Performance Security be increased at the expense of the Bidder to a level not exceeding 20% of the Contract Price; or
 - (c) reject the Bid.
- 39. Qualification of the Bidder**
- 39.1 The Employer shall determine to its satisfaction whether the eligible Bidder that is selected as having submitted the lowest evaluated cost and substantially responsive Bid meets the

qualifying criteria specified in Section III, Evaluation and Qualification Criteria.

- 39.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the bidding document), or any other firm(s) different from the Bidder.
- 39.3 Prior to Contract award, the Employer will verify that the successful Bidder (including each member of a JV) is not disqualified by the Bank due to noncompliance with contractual SEA/SH prevention and response obligations. The Employer will conduct the same verification for each subcontractor proposed by the successful Bidder. If any proposed subcontractor does not meet the requirement, the Employer will require the Bidder to propose a replacement subcontractor.
- 39.4 An affirmative determination of qualification shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the Bid, in which event the Employer shall proceed to the substantially responsive Bid which offers the next lowest evaluated cost to make a similar determination of that Bidder's qualifications to perform satisfactorily.
- 40. Most Advantageous Bid** 40.1 Having compared the evaluated costs of Bids, the Employer shall determine the Most Advantageous Bid. The Most Advantageous Bid is the Bid of the Bidder that meets the Qualification Criteria and whose Bid has been determined to be:
- (a) substantially responsive to the bidding document; and
 - (b) the lowest evaluated cost.
- 41. Employer's Right to Accept Any Bid, and to Reject Any or All Bids** 41.1 The Employer reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract Award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, Bid securities, shall be promptly returned to the Bidders.
- 42. Standstill Period** 42.1 The Contract shall not be awarded earlier than the expiry of the Standstill Period. The Standstill Period shall be ten (10) Business Days unless extended in accordance with ITB 46. The Standstill Period commences the day after the date the Employer has transmitted to each Bidder the Notification of Intention to Award the Contract. Where only one Bid is submitted, or if this contract is

in response to an emergency situation recognized by the Bank, the Standstill Period shall not apply.

43. Notification of Intention to Award

43.1 The Employer shall send to each Bidder the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information:

- (a) the name and address of the Bidder submitting the successful Bid;
- (b) the Contract price of the successful Bid;
- (c) the names of all Bidders who submitted Bids, and their Bid prices as readout, and as evaluated;
- (d) a statement of the reason(s) the Bid (of the unsuccessful Bidder to whom the notification is addressed) was unsuccessful, unless the price information in c) above already reveals the reason;
- (e) the expiry date of the Standstill Period;
- (f) instructions on how to request a debriefing and/or submit a complaint during the standstill period.

F. Award of Contract

44. Award Criteria

44.1 Subject to ITB 41, the Employer shall award the Contract to the successful Bidder. This is the Bidder whose Bid has been determined to be the Most Advantageous Bid as specified in ITB 40.

45. Notification of Award

45.1 Prior to the expiration of the Bid validity and upon expiry of the Standstill Period, specified in ITB 42.1 or any extension thereof, and, upon satisfactorily addressing any complaint that has been filed within the Standstill Period, the Employer shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification of award (hereinafter and in the Conditions of Contract and Contract Forms called the "Letter of Acceptance") shall specify the sum that the Employer will pay the Contractor in consideration of the execution of the contract (hereinafter and in the Conditions of Contract and Contract Forms called "the Contract Price").

45.2 Within ten (10) Business Days after the date of transmission of the Letter of Acceptance, the Employer shall publish the Contract Award Notice which shall contain, at a minimum, the following information:

- (a) name and address of the Employer;
- (b) name and reference number of the contract being awarded, and the selection method used;
- (c) names of all Bidders that submitted Bids, and their Bid prices as read out at Bid opening, and as evaluated;
- (d) names of all Bidders whose Bids were rejected either as nonresponsive or as not meeting qualification criteria, or were not evaluated, with the reasons therefor;
- (e) the name of the successful Bidder, the final total contract price, the contract duration and a summary of its scope; and
- (f) successful Bidder's Beneficial Ownership Disclosure Form, if specified in BDS ITB 47.1.

45.3 The Contract Award Notice shall be published on the Employer's website with free access if available, or in at least one newspaper of national circulation in the Employer's Country, or in the official gazette. The Employer shall also publish the contract award notice in UNDB online.

45.4 Until a formal contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract.

46. Debriefing by the Employer

46.1 On receipt of the Employer's Notification of Intention to Award referred to in ITB 43.1, an unsuccessful Bidder has three (3) Business Days to make a written request to the Employer for a debriefing. The Employer shall provide a debriefing to all unsuccessful Bidders whose request is received within this deadline.

46.2 Where a request for debriefing is received within the deadline, the Employer shall provide a debriefing within five (5) Business Days, unless the Employer decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the standstill period shall automatically be extended until five (5) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than five (5) Business Days after the last debriefing takes place. The Employer shall promptly inform, by the quickest means available, all Bidders of the extended standstill period

46.3 Where a request for debriefing is received by the Employer later than the three (3)-Business Day deadline, the Employer should provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of Public Notice of Award of contract. Requests for debriefing

received outside the three (3)-day deadline shall not lead to extension of the standstill period.

46.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The Bidder shall bear their own costs of attending such a debriefing meeting.

47. Signing of Contract

47.1 The Employer shall send to the successful Bidder the Letter of Acceptance including the Contract Agreement, and, if specified in the BDS, a request to submit the Beneficial Ownership Disclosure Form providing additional information on its beneficial ownership. The Beneficial Ownership Disclosure Form, if so requested, shall be submitted within eight (8) Business Days of receiving this request.

47.2 The successful Bidder shall sign, date and return to the Employer, the Contract Agreement within twenty-eight (28) days of its receipt.

48. Performance Security

48.1 Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the Employer, the successful Bidder shall furnish the Performance Security and, if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with the General Conditions of Contract, subject to ITB 38.2 (b), using for that purpose the Performance Security and ES Performance Security Forms included in Section X, Contract Forms, or another form acceptable to the Employer. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country, unless the Employer has agreed in writing that a correspondent financial institution is not required.

48.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and, if required in the BDS, the Environmental and Social (ES) Performance Security, or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the Bidder offering the next Most Advantageous Bid.

49. Adjudicator

49.1 The Employer proposes the person named **in the BDS** to be appointed as Adjudicator under the Contract, at the hourly fee specified **in the BDS**, plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in his Bid. If, in the Letter of Acceptance, the Employer does not agree on the

appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the Particular Conditions of Contract (PCC) pursuant to Clause 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.

**50. Procurement
Related
Complaint**

50.1 The procedures for making a Procurement-related Complaint are as specified in the BDS.

Section II - Bid Data Sheet (BDS)

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

[Where an e-procurement system is used, modify the relevant parts of the BDS accordingly to reflect the e-procurement process]

[Instructions for completing the Bid Data Sheet are provided, as needed, in the notes in italics mentioned for the relevant ITB.]

ITB Reference	A. General
ITB 1.1	<p>The number of the Invitation for Bids is: <i>[insert number of the Request for Bids]</i></p> <p>The Employer is: : The County Government of Elgeyo Marakwet – Lands, Physical Planning, Housing and Urban Development (LPPH&UD)</p> <p>The reference number of the Request for Bids (RFB) is:</p> <p>The name of the RFB is: KE-ELGEYO MARAKWET -397232-CW-RFBEMC/LANDS/KISIP/002</p> <p>Procurement of construction of roads/footpaths & drainage system, water supply & sanitation system and public lighting infrastructure works in selected informal settlements of Chebiemit and Cheptongei in Elgeyo Marakwet county</p> <p>The number and identification of lots (contracts) comprising this RFB is: Not Applicable</p>
ITB 1.2(a)	<p>Electronic –Procurement System- Not Applicable</p> <p>The Employer shall use the following electronic-procurement system to manage this Bidding process: www.elgeyomarakwet.go.ke</p> <p>The electronic-procurement system shall be used to manage the following aspects of the Bidding process:</p> <ul style="list-style-type: none"> • Issuing the Bidding Documents
ITB 2.1	<p>The Borrower is: The Government of Kenya</p> <p>Loan or Financing Agreement amount: IDA USD 150 Million AfD USD 45 Million</p>

	The name of the Project is: Second Kenya Informal Settlements Improvement Project (KISIP 2)
ITB 4.1	Maximum number of members in the Joint Venture (JV) shall be: Three (3)
ITB 4.5	A list of debarred firms and individuals is available on the Bank’s external website: http://www.worldbank.org/debarr .
B. Contents of Bidding Document	
ITB 7.1	For <u>Clarification of Bid purposes</u> only, the Employer’s address is: Attention: Head of Supply Chain Management Address: P.O. Box 220-30700 12. Elgeyo Marakwet Treasury Building on Monday 22nd JANUARY 2024 at 12:30 P.M. City: Iten, Elgeyo Marakwet ZIP Code: Not Applicable Country: Kenya Telephone: +254(0)704 220 220, +254(0)721 828 359 Facsimile number: Not Applicable Electronic mail address: info@elgeyomarakwet.go.ke Web page: www.elgeyomarakwet.go.ke
ITB 7.1	Requests for clarification should be received by the Employer no later than: 14 Days before bid closure
ITB 7.1	Web page: www.elgeyomarakwet.go.ke
ITB 7.4	A Pre-Bid meeting shall take place at the following date, time and place Date: <u>Thursday 4th January 2024</u> Time: <u>10:00 AM</u> Place: <u>CHEPTONGEI CENTER.</u> A site visit conducted by the Employer shall be organized
C. Preparation of Bids	
ITB 10.1	The language of the Bid is: English All correspondence exchange shall be in English language. Language for translation of supporting documents and printed literature is English
ITB 11.1 (b)	The following schedules shall be submitted with the Bid: Letter of Bid, Priced Bills of Quantities, Technical Proposal, CVs for key personnel, forms for equipment, Power of Attorney, Financial

	<p>information, Forms of Contractor’s experience and all schedules stipulated in ITB 11.1</p>
ITB 11.1 (i)	<p>The Bidder shall submit the following additional documents in its Bid:</p> <ul style="list-style-type: none"> • Certificate of Incorporation • CR12 form • KRA PIN Certificate • Valid Tax Compliance Certificate • National Construction Authority Registration Certificate in the category NCA 2 and above for or Equivalent in the following Classes, <ul style="list-style-type: none"> - Roads Works - Water Works • Current NCA Practicing License for Roads and Water Works <p><i>Employer reserves the right to verify the veracity of NCA Certificates through the NCA Portal</i></p> <p>Code of Conduct for Contractor’s Personnel (ES)</p> <p>The Bidder shall submit its Code of Conduct that will apply to Contractor’s Personnel (as defined in Sub- Clause 1 (ii) of the General Conditions of Contract), to ensure compliance with the Contractor’s Environmental and Social (ES) obligations under the Contract. The Bidder shall use for this purpose the Code of Conduct form provided in Section IV. No substantial modifications shall be made to this form, except that the Bidder may introduce additional requirements, including as necessary to take into account specific Contract issues/risks.</p> <p>Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks</p> <p>The Bidder shall submit Management Strategies and Implementation Plans (MSIPs) to manage the following key Environmental and Social (ES) risks:</p> <ul style="list-style-type: none"> • Sexual Exploitation, and Abuse (SEA) prevention and response action plan • Environmental and Social Management Plan (C-ESMP); • Traffic Management Plan to ensure safety of local communities from construction traffic; • Water Resource Protection Plan to prevent contamination of drinking water; • Boundary Marking and Protection Strategy for mobilization and construction to prevent offsite adverse impacts;
ITB 13.1	Alternative Bids shall not be considered.
ITB 13.2	Alternative times for completion shall not be permitted.

ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: Not Applicable
ITB 14.5	The prices quoted by the Bidder shall be: fixed
ITB 15.1	The price shall be quoted by the Bidder in: Kenyan shillings A Bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer’s Country (referred to as the “foreign currency requirements”) and wishing to be paid accordingly, shall indicate up to three foreign currencies of their choice expressed as a percentage of the Bid price, together with the exchange rates used in the calculations in the appropriate form(s) included in Section IV, Bidding Forms.
ITB 18.1	The Bid shall be valid until 21ST MAY 2024
ITB 18.3 (a)	The Bid price shall be adjusted by the following factor(s): Not Applicable
ITB 19.1	A Bid Security shall be required. A Bid-Securing Declaration shall not be required. If a Bid Security shall be required, the amount and currency of the Bid security shall be Kenya Shillings, Seven Million Only (KES. 7,000,000.00)
ITB 19.3 (d)	Other types of acceptable securities: None
ITB 20.1	In addition to the original of the Bid, the number of copies is: Two (2)
ITB 20.3	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Duly Executed and Sealed Power of Attorney. The Power of Attorney shall be witnessed by a Commissioner of Oaths. The Power of Attorney shall be specific to the current bid and not general
D. Submission and Opening of Bids	
ITB 22.1	For <u>Bid submission purposes</u> only, the Employer’s address is: P.O. Box 220-30700 Iten, Elgeyo Marakwet Attention: County Secretary - Tender Reference No KE-ELGEYO MARAKWET -397232-CW-RFBEMC/LANDS/KISIP/002 Street Address: Iten-Kapsowar Road, , Elgeyo Marakwet Floor/ Room number: Elgeyo Marakwet Treasury building City: Iten, Elgeyo Marakwet ZIP/Postal Code: Not applicable Country: Kenya The deadline for Bid submission is: Date: Monday 22nd January 2024 Time: 12:30 Noon Bidders shall not have the option of submitting their Bids electronically. The electronic bidding submission procedures shall be: Not Applicable

ITB 25.1	The Bid opening shall take place at: Elgeyo Marakwet Treasury building Street Address: Iten-Kapsowar Road, Floor/ Room number: Elgeyo Marakwet Treasury building City: Iten, Elgeyo Marakwet Country: Kenya Date: Tuesday 22ND January 2024 Time: 12:30 P.M
T	The electronic Bid opening procedures shall be: Not Applicable
ITB 25.6	The Letter of Bid and Schedules shall be initialed by All representatives of the Employer conducting Bid opening.
E. Evaluation and Comparison of Bids	
ITB 32.1	The currency that shall be used for Bid evaluation and comparison purposes to convert at the selling exchange rate all Bid prices expressed in various currencies into a single currency is: Kenyan Shillings The source of exchange rate shall be: The Central Bank of Kenya The date for the exchange rate shall be: Tuesday 22ND January 2024
ITB 33.1	A margin of domestic preference shall not apply.
ITB 34.1	At this time the Employer does not intend to execute certain specific parts of the Works by subcontractors selected in advance.
ITB 34.2	<i>Not Applicable</i> The parts of the Works for which the Employer permits Bidders to propose Specialized Subcontractors are designated as follows: a. _____ b. _____ c. _____ For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Bidder for the purpose of evaluation.
ITB 34.3	Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: 25% of the total contract amount or 25% of the volume of work. Bidders planning to subcontract more than 10% of total volume of work shall specify, in the Letter of Bid, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience. The qualification and experience of the sub-contractors must meet the minimum criteria for the relevant work to be sub-contracted failing which such sub-contractors will not be permitted to participate.

	Sub-contractors' qualification and experience will not be considered for evaluation of the Bidder. The Bidder on its own (without taking into account the qualification and experience of the sub-contractor) should meet the qualification criteria.
F. Award of Contract	
ITB 47.1	The successful Bidder shall submit the Beneficial Ownership Disclosure Form.
ITB 48.1 and 48.2	Not Applicable The successful Bidder shall be required to submit an Environmental and Social (ES) Performance Security.
ITB 49	The Adjudicator proposed by the Employer is: _____ <i>[insert name and address of proposed Adjudicator]</i> . The hourly fee for this proposed Adjudicator shall be: _____ <i>[insert amount and currency]</i> . The biographical data of the proposed Adjudicator is as follows: _____ <i>[provide relevant information, such as education, experience, age, nationality, and present position; attach additional pages as necessary]</i>
ITB 50.1	The procedures for making a Procurement-related Complaint are detailed in the " Procurement Regulations for IPF Borrowers (Annex III)." If a Bidder wishes to make a Procurement-related Complaint, the Bidder shall submit its complaint following these procedures, In Writing (by the quickest means available, such as by email or fax), to: For the attention: Elgeyo Marakwet county Title/position: Head of Supply Chain Management Employer: The County Government of Elgeyo Marakwet – Lands, Physical Planning, Housing and Urban Development (LPPH&UD) Email address: info@elgeyomarakwet.go.ke Fax number: Not Applicable In summary, a Procurement-related Complaint may challenge any of the following: <ol style="list-style-type: none">1. the terms of the Bidding Documents; and2. the Employer's decision to award the contract.

Section III - Evaluation and Qualification Criteria

This section contains all the criteria that the Employer shall use to evaluate Bids and qualify Bidders through post-qualification. No other factors, methods or criteria shall be used other than specified in this bidding document. The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms.

Wherever a Bidder is required to state a monetary amount, Bidders should indicate the KES equivalent using the rate of exchange determined as follows:

- 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; or
- value of single contract - Exchange rate prevailing on the date of the contract.

Exchange rates shall be taken from the publicly available source identified in the ITB 32.1. Any error in determining the exchange rates in the Bid may be corrected by the Employer

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1. Qualification

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
1. Eligibility							
1.1	Nationality	Nationality in accordance with ITB 4.4	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.2	Conflict of Interest	No conflicts of interest in accordance with ITB 4.2	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
1.3	Bank Eligibility	Not having been declared ineligible by the Bank, as described in ITB 4.5.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
1.4	State-owned enterprise or institution of the Borrower country	Meets conditions of ITB 4.6	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.5	United Nations resolution or Borrower's country law	Not having been excluded as a result of prohibition in the Borrower's country laws or official regulations against commercial relations with the Bidder's country, or by an act of compliance with UN Security Council resolution, both in accordance with ITB 4.8 and Section V.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
2. Historical Contract Non-Performance							
2.1	History of Non-	Non-performance of a	Must meet	Must meet	Must meet	N/A	Form CON-2

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
	Performing Contracts	contract ¹ did not occur as a result of contractor default since 1st January 2019	requirement ^{1 & 2}	requirements	requirement ²		
2.2	Suspension Based on Execution of Bid /Proposal Securing Declaration by the Employer	Not under suspension based on execution of a Bid/Proposal Securing Declaration pursuant to ITB 4.7 and ITB 19.9	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
2.3	Pending Litigation	Bidder's financial position and prospective long-term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	N/A	Must meet requirement	N/A	Form CON – 2
2.4	Litigation History	No consistent history of court/arbitral award decisions against the	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Form CON – 2

¹ Nonperformance, as decided by the Employer, shall include all contracts where (a) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

² This requirement also applies to contracts executed by the Bidder as JV member.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		Bidder ³ since 1 st January 2019					
2.5	Declaration: Environmental and Social (ES) past performance	Declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for breach of environmental or social (including Sexual Exploitation and Abuse)) contractual obligations in the past five years. ⁴	Must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	Each must make the declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration.	N/A	Form CON-3 ES Performance Declaration
2.6	Bank's SEA and/or SH Disqualification	At the time of Contract Award, not subject to disqualification by the Bank for non-compliance with SEA/SH obligations	Must meet requirement (including each subcontractor proposed by the Bidder)	N/A	Must meet requirement (including each subcontractor proposed by the Bidder)	N/A	Letter of Bid, Form CON-4
		If the Bidder had been subject to	Must meet requirement	N/A	Must meet requirement	N/A	Letter of Bid, Form CON-4

³ The Bidder shall provide accurate information on the Letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of court/arbitral awards against the Bidder or any member of a joint venture may result in disqualifying the Bidder.

⁴ The Employer may use this information to seek further information or clarifications in carrying out its due diligence.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		disqualification by the Bank for non-compliance with SEA/SH obligations, the Bidder shall either (i) provide evidence of an arbitral award on the disqualification made in its favour; or (ii) demonstrate that it has adequate capacity and commitment to comply with SEA/SH prevention and response obligations; or (iii) provide evidence that it has already demonstrated such capacity and commitment on another Bank financed works contract.	(including each subcontractor proposed by the Bidder)		(including each subcontractor proposed by the Bidder)		
3. Financial Situation and Performance							
3.1	Financial Capabilities	(i) The Bidder 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 the construction	Must meet requirement	Must meet Requirement	N/A	N/A	Form FIN – 3.1, with attachments

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		cash flow requirements estimated as KES.87.5Million for three (3) months for the subject contract(s) net of the Bidder's other commitments					
		(ii) The Bidders shall also demonstrate, to the satisfaction of the Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.	Must meet requirement	Must meet requirement	N/A	N/A	
		(iii) The audited balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Employer, for the last five (5) years shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-	Must meet requirement	N/A	Must meet requirement	N/A	

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		term profitability.					
3.2	Average Annual Construction Turnover	Minimum average annual construction turnover of KES.525Million , calculated as total certified payments received for contracts in progress and/or completed within the last five (5) years, divided by 5 years	Must meet requirement	Must meet requirement	Must meet 60%, (Sixty Percent) of the requirement	Must meet 80 % , [Eighty Percent] of the requirement	Form FIN – 3.2
4. Experience							
4.1 (a)	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, subcontractor, or management contractor for at least the last 10 years, starting 1st January 2014 .	Must meet requirement	N/A	Must meet requirement	N/A	Form EXP – 4.1
4.2 (a)	Specific Construction & Contract Management Experience	(i) A minimum number of two (2) similar contracts specified below that have been	Must meet requirement	Must meet requirement ⁷	N/A	Must meet 80% the listed requirements	Form EXP 4.2(a)

⁷ In the case of JV, the value of contracts completed by its members shall not be aggregated to determine whether the requirement of the minimum value of a single contract has been met. Instead, each contract performed by each member shall satisfy the minimum value of a single contract as required for single entity. In determining whether the JV meets the requirement of total number of contracts, only the number of contracts completed by all members each of value equal or more than the minimum value required shall be aggregated.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		satisfactorily and substantially ⁵ completed as a prime contractor, joint venture member ⁶ , management contractor or sub-contractor ⁶ between 1st January 2016 and bid submission deadline: (i) 2 contracts, each of minimum value KES.180Million ; Or (ii) 1 contract of minimum value KES.360Million . The similarity of the contracts shall be based on the following: <ul style="list-style-type: none"> • At least 4km of urban roads (minimum width 				for the key activities	

⁵ Substantial completion shall be based on 80% or more works completed under the contract.

⁶ For contracts under which the Bidder participated as a joint venture member or sub-contractor, only the Bidder’s share, by value, shall be considered to meet this requirement.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		of carriageway 5.5m) to bitumen standards <ul style="list-style-type: none"> • At least 4km of urban slotted drainage system • At least 3km of pedestrian walkways in urban setup • At least 2No. Electrical High mast flood lights system • At least 30Nr. Integrated Solar Street lighting installations 					
4.2 (b)		For the above and any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or sub-contractor between 1st January 2016 and Application	Must meet requirements	Must meet requirements	N/A	Must meet 80% the listed requirements for the key activities	Form EXP – 4.2 (b)

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
		submission deadline, a minimum construction experience in the following key activities successfully completed ⁸ : <ol style="list-style-type: none"> 1. Site clearance & Top soil stripping of 45,000m² per year 2. Earthworks of 1,800m³ per year; 3. Concrete works of 1,500m³ per year; 4. 2Nr. 30m high mast flood lights per year 5. Supply, installation of integrated solar streetlights works of 30Nr of Street lights per year 					

⁸ Volume, number or rate of production of any key activity can be demonstrated in one or more contracts combined if executed during same time period.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All members Combined	Each Member	At least one Member	
4.2 (c)		For contracts [substantially completed and under implementation] as prime contractor, joint venture member, or Subcontractor between 1st January 2016 and Application submission deadline, experience in managing ES risks and impacts in the following aspects: <ul style="list-style-type: none"> • Traffic Management Plan to ensure safety of local communities from construction traffic • Sexual Exploitation, and Abuse (SEA) prevention and response 	Must meet requirements	Must meet requirements	Must meet the requirements:	Must meet the requirements:	Form EXP – 4.2 (c)

Note: [For Multiple lots (contracts) specify financial and experience criteria for each lot under 3.1, 3.2, 4.2(a), 4.2(b) and 4.2 (c)]

2. Key Personnel

The Bidder must demonstrate that it will have suitably qualified (and in adequate numbers) Key Personnel, as described in the Specification.

The Bidder shall provide details of the Key Personnel and such other Key Personnel that the Bidder considers appropriate to perform the Contract, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in Section IV, Bidding Forms.

Item No.	Position/specialization	Minimum Relevant academic qualifications	Minimum years of relevant work experience
1	Contractor's Representative/ Site Agent - (1No.)	<ul style="list-style-type: none"> - BSc./BEng./BTech. or Equivalent Degree in Civil Engineering - Registered Professional Engineer with EBK or Equivalent Body - Valid Practicing License 	<ul style="list-style-type: none"> i. 15 years' general experience ii. 10 years' specific experience in construction of bituminous paved roads iii. At least 5 years as a Site Agent in a project as in ii above but within urban setup or informal settlement of minimum value KES 500Million.
2	Assistant Site Agent/ Site Engineer – (2No.)	<ul style="list-style-type: none"> - HND Civil or Equivalent - Registered Technician Engineer with EBK or equivalent 	<ul style="list-style-type: none"> i. 10 years' general experience ii. 8 years' specific experience in construction of bituminous paved roads iii. At least 5 years as a Site Engineer or Assistant Site Agent in a project as in ii above but within urban setup or informal settlement
3	Surveyors – (2No.)	<ul style="list-style-type: none"> - BSc.(Survey/Geomatics/Geospatial Engineering) or equivalent. - Registered with ISK or any other equivalent body - Conversant in AUTOCAD/CIVIL 3D 	<ul style="list-style-type: none"> i. 8 years' general experience ii. 5 years' specific experience in construction projects iii. At least 3 years as a Surveyor in a project as in ii above but within urban setup or informal settlement

Section III - Evaluation and Qualification Criteria

4	Environmental – (2No.)	- BSc. In Environmental science/Natural science or its equivalent - Registered by NEMA as a Lead expert - Valid NEMA License	i. 8 years' general experience ii. 5 years' specific experience in construction projects iii. At least 3 years as an Environmentalist in a project as in ii above but within urban setup or informal settlement
5	Sociologist – (2No.)	- B.A(Sociology/Community Development/Social Work/Political Science) or its equivalent	i. 8 years' general experience ii. 5 years' specific experience in construction projects iii. At least 3 years as a Sociologist in a project as in ii above but within urban setup or informal settlement
6	Health & Safety Officer – (2No.)	- Dip.(Occupational Health and Safety) or its equivalent - Be a Certified Health and Safety Officer by relevant body	i. 8 years' general experience ii. 5 years' specific experience in construction projects iii. At least 3 years as an HSO in a project as in ii above but within urban setup or informal settlement
7	Earthworks Foreman – (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
8	Pavement Works Foreman – (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
9	Concrete Works Foreman (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
10	Material Technologist – (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
11	Water & Sanitation Works Foreman – (1No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of Water Supply and Sewer system and Individual Sewer connections

12	Electrical Foreman – (1No.)	- Diploma (Electrical Engineering)	i. 8 years' general experience ii. 5 years' specific experience in installation of integrated solar street lights and/or public high mast flood lighting
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3. Equipment

The Bidder must demonstrate that it will have access to the key Contractor's equipment listed hereafter:

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV.

No.	Equipment Type and Characteristics	Minimum Number required
1.	Excavator - hydraulic crawler or wheel mounted, 14.0-17.0t nominal wt. of machine	2
2.	10 Ton Lorries/Tippers	8
3.	5m ³ concrete mixers	3
4.	0.75m ³ concrete dumpers	4
5.	40mm concrete vibrators	6
6.	Air compressor - Rated by Normal Delivery of Free Air per min at 7 kg per cm ²	2
7.	Crawler Dozer, 100 - 135 kW rated flywheel power	1
8.	(50mm inlet) Dewatering pumps	2
9.	40 Ton Mobile lift crane	1
10.	Reinforcement bending tools	2
11.	Motor Grader 111-120kW rated flywheel power	2
12.	Poulover mixer	1
13.	Asphalt concrete mixer/batching plant	1
14.	Asphalt concrete paver	1
15.	Water bowser 20,000l	2
16.	Bitumen sprayer up to 10,000l	2

Section III - Evaluation and Qualification Criteria

17.	Steel drum (8T) and sheep foot vibrating rollers	2
18.	Survey Equipment <ul style="list-style-type: none"> • Total station with tripod and prism • Automatic level • 5m Ranging Rods • 100m Steel Tapes • 30m Steel Tapes • 5m Steel Tapes 	1 3 10 10 10 10
19.	10 Ton Pneumatic roller	2
20.	Butt Fusion Machine for HDPE pipe of 50mm Dia up to 200mm Dia	1

Section IV - Bidding Forms

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Letter of Bid

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

The Bidder must prepare this Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

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

RFB No.: *[insert number of RFB process]*

Alternative No.: *[insert identification No. if this is a Bid for an alternative]*

To: *[insert complete name of Employer]*

- (a) **No reservations:** We have examined and have no reservations to the bidding document, including Addenda issued in accordance with ITB 8;
- (b) **Eligibility:** We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) **Bid-Securing Declaration:** We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration or Proposal-Securing Declaration in the Employer's Country in accordance with ITB 4.7;
- (d) **Exploitation and Abuse (SEA) and/or Sexual Harassment (SH):** *[select the appropriate option from (i) to (v) below and delete the others].*

We *[where JV, insert: "including any of our JV members"]*, and any of our subcontractors:

- i. *[have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.]*
- ii. *[are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.]*
- iii. *[had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations. An arbitral award on the disqualification case has been made in our favor.]*
- iv. *[had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations for a period of two years. We have subsequently provided and demonstrated that we have adequate capacity and commitment to comply with SEA and SH prevention and response obligations.]*
- v. *[had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations for a period of two years. We have attached documents*

demonstrating that we have adequate capacity and commitment to comply with SEA and SH prevention and response obligations.]

(e) **Conformity:** We offer to execute in conformity with the bidding document the following Works: [insert a brief description of the Works]

(f) **Bid Price:** The total price of our Bid, excluding any discounts offered in item (f) below is: *[Insert one of the options below as appropriate]*

[Option 1, in case of one lot:] Total price is: [insert the total price of the Bid in words and figures, indicating the various amounts and the respective currencies];

Or

[Option 2, in case of multiple lots:] (a) Total price of each lot [insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]; and (b) Total price of all lots (sum of all lots) [insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies];

(g) **Discounts:** The discounts offered and the methodology for their application are:

(i) The discounts offered are: *[Specify in detail each discount offered.]*

(ii) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts];*

(h) **Bid Validity:** Our Bid shall be valid until *[insert day, month and year in accordance with ITB 18.1]*, and it shall remain binding upon us and may be accepted at any time on or before this date;

(i) **Performance Security:** If our Bid is accepted, we commit to obtain a performance security *[and an Environmental and Social (ES) Performance Security, **Delete if not applicable**]* in accordance with the bidding document;

(j) **One Bid Per Bidder:** We are not submitting any other Bid(s) as an individual Bidder or as a subcontractor, and we are not participating in any other Bid(s) as a Joint Venture member, and meet the requirements of ITB 4.3, other than alternative Bids submitted in accordance with ITB 13;

(k) **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 World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Employer's Country laws or official regulations or pursuant to a decision of the United Nations Security Council;

- (l) **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 ITB 4.6];*
- (m) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding 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.”)

- (n) **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (o) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Bid, the Most Advantageous Bid or any other Bid that you may receive;
- (p) **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; and
- (q) **Adjudicator:** We accept the appointment of *[insert name proposed in Bid Data Sheet]* as the Adjudicator.

[or]

We do not accept the appointment of *[insert name proposed in Bid Data Sheet]* as the Adjudicator, and propose instead that *[insert name]* be appointed as Adjudicator, whose daily fees and biographical data are attached.

Name of the Bidder: **[insert complete name of person signing the Bid]*

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

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

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]*

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid

Schedules

Bill of Quantities

A. Preamble

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Particular Conditions of Contract, Technical Specifications and Drawings.
2. The brief description of the items in the Bill of Quantities is purely for the purpose of identification, and in no way modifies or supersedes the detailed descriptions given in the conditions of Contract and Specifications for the full direction and description of work and materials.
3. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Project Manager and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Project Manager may fix within the terms of the Contract.
4. There is no guarantee to the Contractor that he will be required to carry out all the quantities of work indicated under any one particular item or group of items in the Bill of Quantities.
5. The price and rates entered in the Bill of Quantities shall, except in so far as it is otherwise provided under the Contract, include cost of performance bond, all constructional plant to be used, contractors staff and labour, all insurances, supervision, compliance testing, Environment Health and Safety Compliances, materials, erection, maintenance of works, overheads and profits, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract, transport, electricity and telephones, water, use and replenishment of all consumables, including those required under the Contract by The Project Manager and his staff.
6. A rate or price shall be entered against each item in the priced Bill 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 Bill of Quantities.
7. Any entry of “nil” or any other price or rate that shall render the Bid unresponsive in accordance with Clause 29 of the instructions to Bidders, unless deemed justifiably covered elsewhere in the Bills of Quantities, may lead to the entire Bid being rejected
8. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill 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.
9. General directions and descriptions of work and materials are not necessarily repeated or summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill

of Quantities and all works shall be done in accordance with the specifications and as directed by The Project Manager.

10. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of The Project Manager in accordance with the Conditions of Contract.
11. The method of measurement of completed work for payment shall be in accordance with *Civil Engineering Standard Method of Measurement*.
12. "Authorized" "Directed" or "Approved" shall mean the authority, direction or approval of the Project Manager.
13. 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 Project Manager.
14. Units of Measurement and Abbreviations used herein shall have the following meanings:

Unit	Abbreviation	Unit	Abbreviation
cubic meter	m ³ or cu m	litre	L
hectare	ha	millimetre	mm
hour	hr	month	mth
kilogram	kg	number	No.
kilometre	Km	provisional sum	Prov Sum
lump sum	L Sum.	square meter	m ² or sq m
prime cost	PC Sum	square millimetre	mm ² or sq mm
meter	m	vehicle	Veh
metric ton (1,000kg)	t	week	wk

**SECOND KENYA INFORMAL SETTLEMENT IMPROVEMENT PROJECT
(KISIP 2)**

CONTRACT No. KE-ELGEYO MARAKWET -397232-CW-RFBEMC/LANDS/KISIP/002**CONSTRUCTION OF INFRASTRUCTURE IMPROVEMENT WORKS AT
CHEPTONGEI AND CHEBIEMIT INFORMAL SETTLEMENTS IN ELGEIYO
MARAKWET COUNTY****BILLS OF QUANTITIES GRAND SUMMARY**

BILL No.	ITEM DESCRIPTION	AMOUNT (KES)
1	Preliminary & General Items	
2	Cheptongei Roads	
3	Chebiemit Roads	
4	Street Lighting Cheptongei and Chebiemit	
5	Dayworks	
6	Environmental & Social Safeguards	
A	SUBTOTAL 1	
	Add the sum of 5% of sub-total 1 for contingencies to be expended in whole or in part or deleted as directed by the Engineer	
B	SUBTOTAL 2	
C	16% VAT (To be paid directly to KRA)	
D	GRAND TOTAL CARRIED TO TENDER SUM	

BILL No.1: PRELIMINARIES AND GENERAL

Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<u>CONTRACTUAL REQUIREMENTS</u>				
	<u>Performance Securities and Insurances</u>				
1.01	Provision of Performance Security in accordance with GCC Clause 52.1	L Sum	1		
1.02	Provision of Insurance of Works, Plant and Materials in accordance with GCC Clause 13.1 (a)	L Sum	1		
1.04	Provision of Insurance of Contractor's Equipment in accordance with GCC Clause 13.1 (b)	L Sum	1		
1.05	Provision of Third Party Insurance in accordance with GCC Clause 13.1 (c)	L Sum	1		
1.06	Provision of Insurance of Contractor's Personnel in accordance GCC Clause 13.1 (d)	L Sum	1		
	<u>Dispute Adjudication/Avoidance Board</u>				
1.07	Allow Prime Cost Sum of KES 1,000,000 for Employer's contribution towards fees and expenses for appointment of Dispute Avoidance/Adjudication Board (DAAB) in accordance with GCC/PCC Clause 23 and Clause 24	PC Sum			1,000,000
1.08	Add Contractor's profits and overheads on Item 1.07	%	1,000,000		
	<u>SPECIFIED REQUIREMENTS</u>				
	<u>Offices for the Engineer's staff</u>				
1.09	Allow Prime Cost Sum of KES 2,700,000 for leasing offices for Engineer's supervision staff, including provision of furniture, equipment and consumables for during construction period, in accordance with the General and Special Specifications Clause 132.	PC Sum			2,700,000
1.10	Add Contractor's profits and overheads on Item 1.09	%	2,700,000		
Page Total Carried Forward to Next Page					

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<u>Services for the Engineer's staff</u>					
<u>Employer's Counterpart Staff Costs</u>					
1.11	Allow Prime Cost Sum of KES 2,000,000 for costs of the Employer's counterpart staff assigned to the Project including transport, communication, meeting allowances, etc. as instructed by the Engineer.	PC Sum			2,000,000
1.12	Add Contractor's profits and overheads on Item 1.11	%	2,000,000		
<u>Equipment for use by the Engineer's Staff</u>					
1.13	Allow Prime Cost Sum of KES 1,440,000 for provision of Survey Equipment as specified in the Standard and Special Specifications Clause 132, for exclusive use by the Engineer, to revert to Employer at end of the Contract.	PC Sum			1,440,000
1.14	Add Contractor's profits and overheads on Item 1.13	%	1,440,000		
<u>Testing of Materials</u>					
1.15	Allow a Provisional Sum of KES 2,400,000 for testing of materials as instructed by the Engineer in approved independent testing laboratory	Prov Sum			2,400,000
1.16	Add Contractor's profits and overheads on Item 1.15	%	2,400,000		
<u>Capacity building for Employer's Staff</u>					
1.17	Prime Cost Sum of KES 2,000,000 for capacity building efforts for skills and knowledge transfer to Employer's staff during construction, testing and commissioning of the Works in accordance with the Special Specifications Clause 144.	PC Sum			2,000,000
1.18	Add Contractor's profits and overheads on Item 1.17	%	2,000,000	1	
Page Total Carried Forward to Next Page					

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	<u>Project Sign Boards</u>				
1.19	Provision, erection and maintenance of Project Sign Boards at locations instructed by the Engineer in accordance with the Standard Special Specifications Clause 131 and the Drawings - FINAL WORDING ON THE SIGN BOARD TO BE DECIDED IN CONSULTATION WITH THE EMPLOYER. The rate quoted by the Contractor to include for payment of all statutory charges to the relevant Authority and removal after completion of the Project.	Nr.	4		
	<u>Contractor's Progress Reports and Photographs, "As Built" Drawings and O&M Manuals</u>				
1.20	Provision of Contractor's monthly progress reports and photographs in accordance with the GCC Clause 28 and the Standard and Special Specifications Clause 106, Clause 115 and Clause 130.	L Sum	1		
1.21	Provision of "As Built" Drawings and Operating and Maintenance Manuals in accordance with the GCC Clause 58 and the Standard and Special Specifications Clause 106 and Clause 115.	L Sum	1		
	Page Total Carried Forward to Next Page				

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	<u>METHOD-RELATED CHARGES</u>			
	<u>Contractor's Camp, Offices, and other facilities and services</u>			
1.22	Mobilisation, operation and maintenance of Contractor's camps, offices, laboratories, stores, services and plant, and Temporary Works, for execution of the Works for the entire Contract Period, and demobilisation and necessary reinstatement works upon Completion, all in accordance with the Specifications and General Conditions. The Employer has no available land to offer for the above. Identification and procurement of suitable area of land, whether rented or purchased, is the responsibility of the Contractor. Contractor to provide in his bid cost breakdown for (i) the mobilisation, (ii) the operation and maintenance, (iii) the demobilisation and (iv) the reinstatement works for each of the camps, offices, laboratories, stores, services, plant and Temporary Works.	L Sum	1	
	<u>PROVISIONAL SUMS</u>			
	<u>Supplementary Charges</u>			
1.23	Provisional Sum of KES 2,000,000 for payments demanded by the Authorities for relocation / diversion of existing services (water, sewer, power, telecom etc.) in accordance with the General and Special Specifications Clause 121.	Prov Sum		2,000,000
1.24	Add Contractor's profits and overheads on Item 1.23	%	2,000,000	
Page Total Carried Forward to Next Page				

Total Brought Forward from Previous Page					
Other Provisional Sums					
1.25	The Contractor shall describe in detail hereunder other items of works, obligations or things which may be referred to in the Specifications or which he may consider to have been omitted from the Bills of Quantities and for which he desires to enter a separate charge (the charge to be carried direct to the amount column). If no separate charge is made hereunder, the rates in the Bills of Quantities will be held as covering all expenses for all such Works.	L Sum			500,000
1.26	Add Contractor's profits and overheads on Item 1.25	%	500,000		
Totals Carried to Grand Summary Page					

CHEPTONGEI – ROADS AND DRAINAGE

The bills of quantities prepared are for the following roads in Cheptongei Settlement

No.	Name of the road	Length (km)
1	Cheptile to Chemweno	0.485
2	Catholic Church to Rama	0.49
3	Kirias to Health Centre	0.195
4	Ndiema to Petrol Station	0.22
5	Lokale Chebaimo to Petrol Station	0.537
6	Highway to Secondary.	0.075
7	Outreach to Main Highway	0.082
	Total length of the roads	2.084

BILL NO.4 : SITE CLEARANCE AND TOPSOIL STRIPPING					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	NOTE: All costs and charges connected with haulage are to be included within the unit rates entered by tenderers against the items described in this Bill of Quantities. No separate items for overhaul are included in any section of this Bill and no additional payment whatsoever will be made for haulage. Tenderers are therefore deemed to have included, in the unit rates entered against an item, for all costs and charges associated with haulage.				
	Site Clearance				
4.01	Clear the site within the road reserve extending to the boundary of the works plus 2m, including removal of trees, hedges, bushes, and other vegetation or deleterious organic material, and back filling of holes left by removal of stumps and roots using approved material to 100% MDD (AASHTO T99), in accordance with the specification				
	(a) In light bush	Ha	1.10		
	Topsoil Stripping				
4.02	Remove topsoil on the roadway, junctions and accesses to an approved depth and cart away to spoil or stock pile for re-use as directed by the engineer (Average depth = 200mm)	m ³	3,873.34		
4.03	Excavate and remove existing pipes and culverts of any size and the inlet and outlet structures including back filling.	m	42.00		

BILL NO.4 : SITE CLEARANCE AND TOPSOIL STRIPPING					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
4.04	Allow a Provisional Sum of Kshs 250,000.00 for removal, alteration and reinstatement of existing services, all in accordance with the Contract and Engineer's instructions	P.C. Sum	1	250,000.00	250,000
4.05	Add overheads and profits for item 4.04 above.	%	250,000		
Total for Bill 4 Forwarded to Summary Page for Cheptongei					

BILL NO.5 : EARTHWORKS					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	NOTE: All costs and charges connected with haulage are to be included within the unit rates entered by tenderers against the items described in this Bill of Quantities. No separate items for overhaul are included in any section of this Bill and no additional payment whatsoever will be made for haulage. Tenderers are therefore deemed to have included, in the unit rates entered against an item, for all costs and charges associated with haulage.				
5.01	Excavate from borrow, transport over any distance and fill in the embankment soft material, including watering and compaction, all in accordance with the specifications or as directed by the Engineer (min CBR 10%)	m ³	4,927.23		
5.02	Excavate, transport over any distance and fill in hard material, all in accordance with the specifications or as directed by the Engineer	m ³	492.72		
5.03	Excavate, transport over any distance and stockpile for re-use or spoil in soft material as directed by the Engineer	m ³	164.5		
5.04	As Item 5.03 but in hard material	m ³	16.45		
5.05	Compact to 150mm depth of existing ground below fills and cuts to 95% MDD (AASHTO T99)	m ³	2,332.00		
	Page Total Carried Forward to Next Page				

BILL NO.5 : EARTHWORKS					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Total Brought Forward from Previous Page				
5.06	Compaction of the 300 mm for sub-grade below formation level in cuts to 100% MDD (AASHTO T99)	m ³	2,460.00		
5.07	Compaction of top 300mm for sub-grade in fills to 100% MDD (AASHTO T99)	m ³	2,205.00		
5.08	Excavate material, transport over any distance lay, water and compact improved sub grade, all in accordance with the specifications or as directed by the Engineer. The rate to include all treatment required for the upper 300mm below formation both in cut and fill all in accordance with the specifications (min CBR 15%)	m ³	2,189.00		
5.09	Top soiling prior to grassing, minimum compacted thickness of topsoil shall be 50mm; all in accordance with Specifications	m ²	-		
5.10	Grassing - Planting of sprigs of approved indigenous grass types; to embankments, cuttings or where directed by the Engineer in accordance with the Specifications, including tending, watering and cutting until the grass is firm and established	Ha	-		
5.11	Rock fill in swamps	m ³	2,420.00		
5.12	Provide and lay Filter fabric under, over or around rockfill	m ²	7,400.00		
5.13	Provide a provisional sum for grading and protection of embankments	PC Sum	-	1,000,000.00	-
Total for Bill 5 Forwarded to Summary for Cheptongei					

BILL NO.8: CULVERTS AND DRAINAGE WORKS.					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	No separate payment shall be made for the haulage of surplus or unsuitable excavated material and the cost of such haulage shall be included in the rates and/or prices				
8.01	Excavate for side drains in soft material	m ³	2,700.86		
8.02	Excavate as in 8.01 above but in hard material	m ³	300.10		
8.03	Excavate for inlet, outfall, mitre and catch water drains in soft material	m ³	352.08		
8.04	Excavate as in 8.03 above but in hard material	m ³	35.21		
8.05	Excavation in soft material for pipe culverts, headwalls wing walls, apron, toe walls and drop inlets and compact as specified or as directed by the engineer.	m ³	352.08		
8.06	Excavate as a in 8.05 above but in hard material	m ³	35.21		
8.07	Provide, lay and joint 600mm dia. Precast concrete pipes for access roads	m ³	258.00		
8.08	As for item 8.03 but 900mm dia concrete pipes for cross culverts	m ³	60.00		
8.09	As for item 8.03 but 1200mm dia concrete pipes for cross culverts	m ²	-		
8.10	Provide and place class 15/20 concrete to beds, surround and haunches	m ³	180.78		
8.11	Provide place and compact class 25/20 concrete for headwalls, wing walls, aprons, and toe walls to pipe culvert including all form work and the provision and placing of reinforcement as shown in the drawings	m ³	158.00		
8.12	Provide 150mm thick stone pitching and grout with mortar as specified or as directed by the engineer	m ²	2,299.84		
8.13	Construct in concrete class 15/20 side drains scour checks as instructed	m ³	-		
8.14	Provide and place A193 fabric wire mesh reinforcement (cross culverts)	m ²	1,087.68		
8.15	Provide and place A193 fabric wire mesh reinforcement(access culverts)	m ²	-		

	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
8.16	Invert Block Drains: Provide and place 300mm IBD complete with two course side slabs including jointing mortar bedding and backfilling with selected material; all in accordance with the specifications and in conformity with the Engineer's instructions.	m	2,764.00		
8.17	Provide all materials and construct 600mm (Bottom width) wide (internal dimension) rectangular concrete drains 150mm thick, average height of 0.8m, class 20/20. Include the steel reinforcement for concrete drain and concrete class 15(20) blinding as specified in the drawings	m ³	-		
Total for Bill 8 carried forward to summary for Cheptongei					

BILL NO.9 : PASSAGE OF TRAFFIC					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	NOTE: No separate payments 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				
9.01	Construct temporary deviations where directed by the Engineer in accordance with Clause 904 of the Standard Specifications	km	2.10		
9.02	Provide and maintain the signs and barriers for safe passage of traffic	km	2.10		
9.03	Maintain the passage of traffic	Lump sum	1.010		
9.04	Allow for reinstatement of deviations	km	2.10		
Total for Bill 9 Forwarded to Cheptongei Summary					

BILL No.12: NATURAL MATERIAL SUBBASE & BASE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	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 for all costs for acquiring, site clearance, overburden removal, excavation and hauling to site.				
12.01	Provide, lay and compact sub base in 175mm thick natural gravel material in carriageway, bus bays, footpaths, shoulders and junctions from the designated quarries listed in the Special Specification in accordance with the Specification and in conformity with the RE instructions (Stabilization paid in Bill 14)	m ³	2,420.36		
12.02	Provide, lay and compact base in 125mm thick Cement Treated Gravel in carriageway, bus bays, footpaths, shoulders and junctions from the designated quarries listed in the Special Specification in accordance with the Specification and in conformity with the RE instructions (Stabilization paid in Bill 14)	m ³	1,024.98		
Total for Bill 12 Forwarded to Cheptongei Summary					

BILL No.13: HAND PACKED STONE BASE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	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 for all costs for acquiring, site clearance, overburden removal, excavation and hauling to site.				
13.01	Provide, lay Hand Packed Stone base as per specifications and drawings	m ³	1,813.40		
Total for Bill 13 Forwarded to Cheptongei Summary					

BILL No.14: CEMENT AND LIME IMPROVED SUBBASE & BASE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
14.01	Provide, store and spread cement for improving gravel base & subbase at 2% to 4%	tonne	130.41		
14.02	E.O. item 14.01 for processing and mixing cement in gravel.	m ³	3,551.86		
14.03	Allow for curing and protection of the treated material base & sub-base.	m ²	12,470.26		
Total for Bill 14 carried forward to summary page for Cheptongei					

BILL No.15 : BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	No haulage will be paid for bitumen or chippings and these shall be included in the rates entered by the tenderers				
15.01	Prepare surface of road base and shoulders, provide, heat and spray M.C. 30 cut back bitumen prime coat at 0.8 to 1.2 litres per sq. metre.	Litre	18,339.43		
15.02	Provide, heat and spray 80/100 bitumen cut back with kerosene or diesel as seal on carriageway at a rate of 0.8-1.0l/m ²	Litre	-		
15.03	K1-60 cationic emulsion tack coat on primed treated base at nominal rate of 0.4 - 1.0 ltr/m ² to base course on on carriageway, bus bays, footpaths, shoulders and junctions	Litre	10,272.02		
Total for Bill 15 carried forward to summary page for Cheptongei					

BILL No. 16: BITUMINOUS MIXES					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
16.01	Provide, lay and compact 50mm heavy duty Asphalt Concrete Type II (0/14 mm gradation) as wearing course to carriageway and shoulders at nominal bitumen content of 5.5 % by weight of total mix	m ³	598.24		
16.02	Provide, lay and compact 35mm Asphalt Concrete Type II (0/14 mm gradation) as wearing course to Walkways at nominal bitumen content of 5.6 % by weight of total mix	m ³	91.90		
Total for Bill 16 carried forward to summary page for Cheptongei					

BILL No. 20: ROAD FURNITURE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
20.01	Provide and erect permanent road signs where instructed by the Engineer and in accordance with the special specification clause 2004 as follows:-				
	(a) Warning signs	No.	44.00		
	(b) Priority, prohibitory and mandatory signs	No.	65.00		
	(c) Standard informatory signs	No.	51.00		
	(d) Non- standard informatory signs area				
	(i) Less than 1 m ²	No.	51.00		
	(ii) 2-5 m ² area	No.	65.00		
20.02	Paint 0.1 m wide yellow centerline on the road	m ²	208.40		
20.03	Paint 0.1 m wide white line on the road edge marking as shown	m ²	416.80		
20.04	As item 20.02 but 0.2 m wide (Bus bay separation marking)	m ²	240.00		
20.05	As item 20.02 but 0.4 m wide give way line	m ²	23.64		
20.06	As item 20.02 but 0.5 m wide but for pedestrian crossing	m ²	60.00		
20.07	Paint 0.25 m thick wide yellow lines on edge marking as directed by the Engineer.	m ²	35.00		
20.08	Provide lay and join precast concrete kerbs		-		
	(a) Straight	m	4,376.40		
	(b) Radius 1-5 m	m	218.82		
20.09a	Provide lay and join precast concrete chanel	m	5,281.50		
20.09b	Provide and fix 'Armco' flex beam guardrail including all nuts, bolts, washers, posts etc.	m	-		
20.10	Provide, plant water and tender tree seedlings until firmly established as directed by the Engineer.	No.	70.00		
20.11	Paint single headed road arrow as directed by the Engineer	No.	-		
	Page Total Carried Forward to Next Page				

BILL No. 20: ROAD FURNITURE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Total Brought Forward from Previous Page				
20.12	Provide and paint white reflective paint every alternative section of guard rail as directed by the Engineer.	m	70.00		
20.13	Provide all materials for and construct raised asphalt concrete pedestrian crossing including painting as shown on the drawings.	m ³	23.49		
20.14	Provide all materials for and construct raised asphalt concrete pedestrian crossing including painting as shown on the drawings.	m ³	23.49		
20.15	Provide all materials for and construct 200mm PVC Service Duct at given intervals and locations as indicated in the drawings	m	94.60		
Total of Bill 20 carried forward to summary page for Cheptongei					

SUMMARY SHEET FOR CHEPTONGEI ROADS AND DRAINAGE

SUMMARY OF CHEPTONGEI ROADS AND DRAINAGE		
Bill	Description	Amount, Kshs
4	SITE CLEARANCE AND TOPSOIL STRIPPING	
5	EARTHWORKS	
8	CULVERTS AND DRAINAGE	
9	PASSAGE OF TRAFFIC	
12	NATURAL MATERIAL SUBBASE AND BASE	
13	HAND PACKED STONE	
14	CEMENT AND LIME IMPROVED SUBBASE AND BASE	
15	BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING	
16	BITUMINOUS MIXES	
20	ROAD FURNITURE	
	Totals for Cheptongei Carried to Grand Summary	

CHEBIEMIT – ROADS AND DRAINAGE

The bills of quantities prepared are for the following roads in Chebiemit Settlement

No	Description	Length (km)
1	Beelek Shop-Mamгаа-Chesumet petrol station-Tarmac road	0.315
2	Hospital-Catholic-Msafiri	0.324
3	Kapsiliot Sochon-Ap line Teikuchu	0.822
	Total road length for Chebiemit	1.461

BILL NO.4 : SITE CLEARANCE AND TOPSOIL STRIPPING					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	NOTE: All costs and charges connected with haulage are to be included within the unit rates entered by tenderers against the items described in this Bill of Quantities. No separate items for overhaul are included in any section of this Bill and no additional payment whatsoever will be made for haulage. Tenderers are therefore deemed to have included, in the unit rates entered against an item, for all costs and charges associated with haulage.				
	Site Clearance				
4.01	Clear the site within the road reserve extending to the boundary of the works plus 2m, including removal of trees, hedges, bushes, and other vegetation or deleterious organic material, and back filling of holes left by removal of stumps and roots using approved material to 100% MDD (AASHTO T99), in accordance with the specification				
	(a) In light bush	Ha	1.00	150,000.00	149,580.00
	Topsoil Stripping				
4.02	Remove topsoil on the roadway, junctions and accesses to an approved depth and cart away to spoil or stock pile for re-use as directed by the engineer (Average depth = 200mm)	m ³	2,413.16		
4.03	Excavate and remove existing pipes and culverts of any size and the inlet and outlet structures including back filling.	m	50.00		
4.04	Allow a Provisional Sum of Kshs 250,000.00 for removal, alteration and reinstatement of existing services, all in accordance with the Contract and Engineer's instructions	P.C. Sum	1.00	250,000.00	250,000.00
4.05	Add overheads and profits for item 4.04 above.	%	250,000.00		
Total for Bill 4 Forwarded to Summary Page for Chebiemit					

BILL NO.5 : EARTHWORKS					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	NOTE: All costs and charges connected with haulage are to be included within the unit rates entered by tenderers against the items described in this Bill of Quantities. No separate items for overhaul are included in any section of this Bill and no additional payment whatsoever will be made for haulage. Tenderers are therefore deemed to have included, in the unit rates entered against an item, for all costs and charges associated with haulage.				
5.01	Excavate from borrow, transport over any distance and fill in the embankment soft material, including watering and compaction, all in accordance with the specifications or as directed by the Engineer (min CBR 10%)	m ³	2,956.41		
5.02	Excavate, transport over any distance and fill in hard material, all in accordance with the specifications or as directed by the Engineer	m ³	147.82		
5.03	Excavate, transport over any distance and stockpile for re-use or spoil in soft material as directed by the Engineer	m ³	1,139.82		
5.04	As Item 5.03 but in hard material	m ³	113.04		
5.05	Compact to 150mm depth of existing ground below fills and cuts to 95% MDD (AASHTO T99)	m ³	1,626.00		

	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
5.06	Compaction of the 300 mm for sub-grade below formation level in cuts to 100% MDD (AASHTO T99)	m ³	1,393.00		
5.07	Compaction of top 300mm for sub-grade in fills to 100% MDD (AASHTO T99)	m ³	1,859.00		
5.08	Excavate material, transport over any distance lay, water and compact improved sub grade, all in accordance with the specifications or as directed by the Engineer. The rate to include all treatment required for the upper 300mm below formation both in cut and fill all in accordance with the specifications (min CBR 15%)	m ³	3,068.00		
5.09	Top soiling prior to grassing, minimum compacted thickness of topsoil shall be 50mm; all in accordance with Specifications	m ²	-		
5.10	Grassing - Planting of sprigs of approved indigenous grass types; to embankments, cuttings or where directed by the Engineer in accordance with the Specifications, including tending, watering and cutting until the grass is firm and established	Ha	-		
5.11	Rock fill in swamps	m ³	-		
5.12	Provide and lay Filter fabric under, over or around rock fill	m ³	-		
5.13	Provide a provisional sum for grading and protection of embankments	PC Sum	-		
Total for Bill 5 Forwarded to Summary for Chebiemit					

BILL NO.8: CULVERTS AND DRAINAGE WORKS.					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	No separate payment shall be made for the haulage of surplus or unsuitable excavated material and the cost of such haulage shall be included in the rates and/or prices				
8.01	Excavate for side drains in soft material	m ³	1,893.46		
8.02	Excavate as in 8.01 above but in hard material	m ³	210.38		
8.03	Excavate for inlet, outfall, mitre and catch water drains in soft material	m ³	316.80		
8.04	Excavate as in 8.03 above but in hard material	m ³	31.68		
8.05	Excavation in soft material for pipe culverts, headwalls wing walls, apron, toe walls, and drop inlets and compact as specified or as directed by the engineer.	m ³	316.80		
8.06	Excavate as in 8.05 above but in hard material	m ³	31.68		
8.07	Provide, lay and joint 600mm dia. Precast concrete pipes for access roads	m ³	168.00		
8.08	As for item 8.03 but 900mm dia concrete pipes for cross culverts	m ³	48.00		
8.09	As for item 8.03 but 1200mm dia concrete pipes for cross culverts	m ²	-		
8.10	Provide and place class 15/20 concrete to beds, surround and haunches	m ³	125.04		
8.11	Provide place and compact class 25/20 concrete for headwalls, wing walls, aprons, and toe walls to pipe culvert including all form work and the provision and placing of reinforcement as shown in the drawings	m ³	105.92		
8.12	Provide 150mm thick stone pitching and grout with mortar as specified or as directed by the engineer	m ²	2,225.97		
	Page Total Carried Forward to Next Page				

	Total Brought Forward from Previous Page				
8.13	Construct in concrete class 15/20 side drains scour checks as instructed	m ³	-		
8.14	Provide and place A193 fabric wire mesh reinforcement (cross culverts)	m ²	725.12		
8.15	Provide and place A193 fabric wire mesh reinforcement(access culverts)	m ²	-		
8.16	Invert Block Drains: Provide and place 300mm IBD complete with two course side slabs including jointing mortar bedding and backfilling with selected material; all in accordance with the specifications and in conformity with the Engineer's instructions.	m	1,461.00		
8.17	Provide all materials and construct 600mm (Bottom width) wide (internal dimension) rectangular concrete drains 150mm thick, average height of 0.8m, class 20/20. Include the steel reinforcement for concrete drain and concrete class 15(20) blinding as specified in the drawings	m ³	-		
Total for Bill 8 carried forward to summary for Chebiemit					

BILL NO.9 : PASSAGE OF TRAFFIC					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	NOTE: No separate payments 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				
9.01	Construct temporary deviations where directed by the Engineer in accordance with Clause 904 of the Standard Specifications	km	1.40		
9.02	Provide and maintain the signs and barriers for safe passage of traffic	km	1.40		
9.03	Maintain the passage of traffic	Lump sum	1		
9.04	Allow for reinstatement of deviations	km	1.40		
Total for Bill 9 Forwarded to Summary for Chebiemit					

BILL No.12: NATURAL MATERIAL SUBBASE & BASE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	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 for all costs for acquiring, site clearance, overburden removal, excavation and hauling to site.				
12.01	Provide, lay and compact sub base in 175mm thick natural gravel material in carriageway, bus bays, footpaths, shoulders and junctions from the designated quarries listed in the Special Specification in accordance with the Specification and in conformity with the RE instructions (Stabilization paid in Bill 14)	m ³	2,132.95		
12.02	Provide, lay and compact base in 125mm thick Cement Treated Gravel in carriageway, bus bays, footpaths, shoulders and junctions from the designated quarries listed in the Special Specification in accordance with the Specification and in conformity with the RE instructions (Stabilization paid in Bill 14)	m ³	1,050.29		
Total for Bill 12 Forwarded to Summary for Chebiemit					

BILL No.13: HAND PACKED STONE BASE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	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 for all costs for acquiring, site clearance, overburden removal, excavation and hauling to site.				
13.01	Provide, lay Hand Packed Stone base as per specifications and drawings	m ³	609.49		
Total for Bill 13 Forwarded to Summary for Chebiemit					

BILL No.14: CEMENT AND LIME IMPROVED SUBBASE & BASE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
14.01	Provide, store and spread cement for improving gravel base & sub base at 2% to 4%	tonne	169.34		
14.02	E.O. item 14.01 for processing and mixing cement in gravel.	m ³	3,316.65		
14.03	Allow for curing and protection of the treated material base & sub-base.	m ²	8,735.88		
Total for Bill 14 carried forward to summary page for Chebiemit					

BILL No.15 : BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	No haulage will be paid for bitumen or chippings and these shall be included in the rates entered by the tenderers				
15.01	Prepare surface of road base and shoulders, provide, heat and spray M.C. 30 cut back bitumen prime coat at 0.8 to 1.2 litres per sq. metre.	Litre	12,785.09		
15.02	Provide, heat and spray 80/100 bitumen cut back with kerosene or diesel as seal on carriageway at a rate of 0.8-1.0l/m ²	Litre	-		
15.03	K1-60 cationic emulsion tack coat on primed treated base at nominal rate of 0.4 - 1.0 ltr/m ² to base course on carriageway, bus bays, footpaths, shoulders and junctions	Litre	7,163.86		
Total for Bill 15 carried forward to summary page for Chebiemit					

BILL No. 16: BITUMINOUS MIXES					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
16.01	Provide, lay and compact 50mm heavy duty Asphalt Concrete Type II (0/14 mm gradation) as wearing course to carriageway and shoulders at nominal bitumen content of 5.5 % by weight of total mix	m ³	417.06		
16.02	Provide, lay and compact 35mm Asphalt Concrete Type II (0/14 mm gradation) as wearing course to Walkways at nominal bitumen content of 5.6 % by weight of total mix	m ³	64.43		
Total for Bill 16 carried forward to summary page for Chebiemit					

BILL No. 20: ROAD FURNITURE					
Item	Description	Unit	Qty	Rate (Kes)	Amount (Kes)
20.01	Provide and erect permanent road signs where instructed by the Engineer and in accordance with the special specification clause 2004 as follows:-				
	(a) Warning signs	No.	46.00		
	(b) Priority, prohibitory and mandatory signs	No.	69.00		
	(c) Standard informatory signs	No.	55.00		
	(d) Non-standard informatory signs area				
	(i) Less than 1 m ²	No.	55.00		
	(ii) 2-5 m ² area	No.	69.00		
20.02	Paint 0.1 m wide yellow centerline on the road	m ²	146.10		
20.03	Paint 0.1 m wide white line on the road edge marking as shown	m ²	292.20		
20.04	As item 20.02 but 0.2 m wide (Bus bay separation marking)	m ²	240.00		
20.05	As item 20.02 but 0.4 m wide give way line	m ²	20.21		
20.06	As item 20.02 but 0.5 m wide but for pedestrian crossing	m ²	94.00		
20.07	Paint 0.25 m thick wide yellow lines on edge marking as directed by the Engineer.	m ²	70.00		
20.08	Provide lay and join precast concrete kerbs		-		
	(a) Straight	m	3,068.10		
	(b) Radius 1-5 m	m	153.41		
20.09a	Provide lay and join precast concrete chanelns	m	7,191.45		
20.09b	Provide and fix 'Armco' flexbeam guardrail including all nuts, bolts, washers, posts e.t.c	m	-		
20.10	Provide, plant water and tender tree seedlings until firmly established as directed by the Engineer.	No.	49.00		
20.11	Paint single headed road arrow as directed by the Engineer	No.	-		
	Page Total Carried Forward to Next Page				

BILL No. 20: ROAD FURNITURE					
Item	Description	Unit	Qty	Rate (Kes)	Amount (Kes)
	Total Brought Forward from Previous Page				
20.12	Provide and paint white reflective paint every alternative section of guard rail as directed by the Engineer.	m	49.00		
20.13	Provide all materials for and construct raised asphalt concrete pedestrian crossing including painting as shown on the drawings.	m ³	35.67		
20.14	Provide all materials for and construct raised asphalt concrete pedestrian crossing including painting as shown on the drawings.	m ³	35.67		
20.15	Provide all materials for and construct 200mm PVC Service Duct at given intervals and locations as indicated in the drawings	m	190.60		
Total of Bill 20 carried forward to summary page for Chebiemit					

SUMMARY SHEET FOR CHEBIEMIT ROADS AND DRAINAGE

SUMMARY OF CHEPTONGEI ROADS AND DRAINAGE		
Bill	Description	Amount, Kshs
4	SITE CLEARANCE AND TOPSOIL STRIPPING	
5	EARTHWORKS	
8	CULVERTS AND DRAINAGE	
9	PASSAGE OF TRAFFIC	
12	NATURAL MATERIAL SUBBASE AND BASE	
13	HAND PACKED STONE	
14	CEMENT AND LIME IMPROVED SUBBASE AND BASE	
15	BITUMINOUS SURFACE TREATMENT AND SURFACE DRESSING	
16	BITUMINOUS MIXES	
20	ROAD FURNITURE	
	Totals for Chebiemit Carried to Grand Summary	

BILL No.21(1): CHEPTONGEI ELECTRICAL WORKS – NEW HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<u>NEW HIGH MAST</u>				
21.00	Supply, install, test and commission the following:				
21.01	30m high mast column made from Class C galvanised steel of polygonal cross-section, root-mounted, continuous taper to 30m above ground level, complete with heavy duty electrical winch driven by a single-phase 230V, 1500W electric motor fitted with a reduction gearbox and automatic torque limiter for raising and lowering the luminaire carriage assembly and remote operation, luminaire carriage assembly for 9No. 400W LED floodlights, pulleys, anchoring bolts, and lowering steel ropes, and all other accessories necessary for installation and operation of the high mast, including all civil works. The high mast to be painted reflective red and white colours to in accordance with Kenya Civil Aviation Authority's requirements.	Nr	1		
21.02	Civil works for the above including geotechnical investigations, foundation design, excavations and earthworks, supply and installation of reinforced steel bars in column, sleeve tower installation works and associated accessories, and all other associated civil works for successful installation and operation of the high mast.	Nr	1		
	Page Total Carried Forward to Next Page				

BILL No.21(1): CHEPTONGEI ELECTRICAL WORKS – NEW HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Total Brought Forward from Previous Page				
21.03	Allow for installation of 200W high quality, heavy duty beacon aircraft warning lighting luminaire with polycarbonate lenses and bases per high mast. The luminaire to be complete with blinking flash illumination and all accessories and wiring for each high mast.	Nr	1		
21.04	400W LED luminaire with at least 120lm/W (48,000 lumen) and IP66, IK08, 4000K, and at least 50,000h service life, as Philips or equivalent and approved.	Nr	9		
21.05	25mm ² x 3-core Al/XLPE/SWA/PVC copper cable buried in 100mm HG. PVC duct in the ground from Feeder Pillar Panel to high mast control panel	M	10		
21.06	100mm HG. PVC duct and accessories for power distribution as shown in the drawing complete with steel in-draw wires laid in all the power distribution ducts	Nr	3		
21.07	50mm HG. PVC duct and accessories for power distribution as shown in the drawing complete with steel in-draw wires laid in all the power distribution ducts	Nr	2		
21.08	Trenching, tiling, laying and backfilling with concrete surround	M	10		
	Page Total Carried Forward to Next Page				

BILL No.21(1): CHEPTONGEI ELECTRICAL WORKS – NEW HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Total Brought Forward from Previous Page				
21.09	Weatherproof, vandal-protected feeder pillar kiosk complete with 63A 2P+E aluminium busbars, KPLC single-phase meter, cutouts, surge protection device, RCBO, MCBs, and cables as shown in the drawing. Feeder Pillar to have a hinged lockable door and meter viewing window, powder coated to approved shade. Feeder pillar to be raised 300mm above finished ground level and housed in a concrete housing with a door for security reasons as per the Civil Structural Engineers specifications. Feeder pillar to contain 1no. 1-Phase KPLC meter, KPLC cutouts, and all the devices shown in the drawing.	Nr	1		
21.10	Earthing of the high mast comprising 1500mm long x 16mm diameter threaded copper rods complete with driving tips and clamp and all other accessories, 25mm ² PVC/SC aluminum earth wire, and 300mm x 300mm x 300mm deep RC earth chamber complete with weatherproof RC cover marked 'EARTH'. Earthing to be carried out in accordance with the Kenya Power requirements, the Government Electrical Engineers Regulations and other statutory requirements as detailed in the particular specifications.	Nr	1		
	Page Total Carried Forward to Next Page				

BILL No.21(1): CHEPTONGEI ELECTRICAL WORKS – NEW HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Total Brought Forward from Previous Page				
21.11	Photocell to fit photocell kit with 70-75 lux switch on level and 1.5 maximum differential and 40A switching capacity. As Thorn Switchlite Exterior Photocell	Nr	1		
21.12	1.5mm ² x 2-core + 1.5mm ² ECC PVC/SC copper cables for wiring photocell kit	M	1		
21.13	900mm x 900mm x 900mm reinforced concrete manhole complete with removable cover	Nr	1		
21.14	Testing and commissioning of the high mast	Sum	1		
21.15	Any other item required to complete installation but not listed above (specify)	Sum			
Total for New High Mast Carried forward to Collection Page for Cheptongei					

BILL No.21 (1): CHEPTONGEI ELECTRICAL WORKS –HIGH MAST UPGRADE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	HIGH MAST UPGRADE				
21.0 0	Supply, install, test and commission the following:				
21.0 1	Allow for installation of 200W high quality, heavy duty beacon aircraft warning lighting luminaire with polycarbonate lenses and bases per high mast. The luminaire to be complete with blinking flash illumination and all accessories and wiring for each high mast.	Nr	1		
21.0 2	400W LED luminaire with at least 120lm/W (48,000 lumen) and IP66, IK08, 4000K, and at least 50,000h service life, as Philips or equivalent and approved.	Nr	9		
21.0 3	25mm ² x 3-core Al/XLPE/SWA/PVC copper cable buried in 100mm HG. PVC duct in the ground from Feeder Pillar Panel to high mast control panel	M	10		
21.0 4	100mm HG. PVC duct and accessories for power distribution as shown in the drawing complete with steel in-draw wires laid in all the power distribution ducts	Nr	3		
21.0 5	50mm HG. PVC duct and accessories for power distribution as shown in the drawing complete with steel in-draw wires laid in all the power distribution ducts	Nr	2		
21.0 6	Trenching, tiling, laying and backfilling with concrete surround	M	10		

BILL No.21 (1): CHEPTONGEI ELECTRICAL WORKS –HIGH MAST UPGRADE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
21.0 7	Weatherproof, vandal-protected feeder pillar kiosk complete with 40A aluminium bus bars, KPLC single-phase meter, cutouts, surge protection device, RCBO, MCBs, and cables as shown in the drawing. Feeder Pillar to have a hinged lockable door and meter viewing window, powder coated to approved shade. Feeder pillar to be raised 300mm above finished ground level and housed in a concrete housing with a door for security reasons as per the Civil Structural Engineers specifications. Feeder pillar to contain 1no. 1-Phase KPLC meter, KPLC cutouts, and all the devices shown in the drawing.	Nr	1		
21.0 8	Earthing of the high mast comprising 1500mm long x 16mm diameter threaded copper rods complete with driving tips and clamp and all other accessories, 25mm ² PVC/SC aluminum earth wire, and 300mm x 300mm x 300mm deep RC earth chamber complete with weatherproof RC cover marked 'EARTH'. Earthing to be carried out in accordance	Nr	1		

BILL No.21 (1): CHEPTONGEI ELECTRICAL WORKS –HIGH MAST UPGRADE					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	with the Kenya Power requirements, the Government Electrical Engineers Regulations and other statutory requirements as detailed in the particular specifications.				
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
21.09	Photocell to fit photocell kit with 70-75 lux switch on level and 1.5 maximum differential and 40A switching capacity. As Thorn Switch lite Exterior Photocell	Nr	1		
21.10	1.5mm ² x 2-core + 1.5mm ² ECC PVC/SC copper cables for wiring photocell kit	M	1		
21.11	900mm x 900mm x 900mm reinforced concrete manhole complete with removable cover	Nr	1		
21.12	Testing and commissioning of the high mast	Sum	1		
21.13	Any other item required to complete installation but not listed above (specify)	Sum			
Total for High Mast upgrade Carried Forward to Collection Page for Cheptongei					

BILL No.21 (1): CHEPTONGEI ELECTRICAL WORKS –STREET LIGHTS					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	STREET LIGHTING				
21.16	An integrated solar street light fitting with 30Ah, 12.8V Lithium Ferro Phosphate battery with 2000 charge and discharge cycles; in-built 60Wp, 17Vmp, 21Voc monocrystalline solar panel; 35W MPPT charge controller; light on/off control and motion detection sensors; pressure die cast aluminium for sturdiness and long life, and specially designed pole mounting bracket to allow different tilt angles, lateral and pole top mounting. The luminaire to be of LED type with 6000 lumen, 175lm/W, 5700K, L70B50 50000h lifespan, and rated IP65 and IK08; complete with mounting accessories for 10m high galvanized steel lighting pole, as Philips Sun Stay or approved equivalent.	Nr	1		

21.17	8m single-arm street lighting round-section tapering column complete with 0.5m bracket with 0.5 degrees tilt angle manufactured from Class C galvanized steel pipe with anti-vandal, anti-theft, and anti-climbing features and all accessories to meet 6m mounting height requirements as shown in the drawings and in the Technical Specifications.	Nr	1		
21.18	Allow for excavation of pit for mounting of columns at 1.2m depth below the finished surface complete with concrete backfill and compact to natural ground level, as shown in the drawings.	Nr	1		
21.19	Testing and commissioning of 1No. Street light	Nr	1		
Total for Street Light Carried Forward to Collection Page for Cheptongei					

COLLECTION PAGE FOR CHEPTONGEI ELECTRICAL WORKS					
S/NO	Description	Unit	Quantity	Rate, Kshs	Amount, Kshs
1.00	High Mast	No	1		
2.00	High Mast Upgrade	No	1		
3.00	Street Lighting	No	12		
4.00	Allow for Shop drawings of high mast	Sum	1		
5.00	Allow for Shop drawings of street light	Sum	1		
6.00	Allow for KPLC connection PC sum per high mast	Sum	1		
7.00	Allow for Contingency sum	Sum	1		
Cheptongei Totals carried to Summary page for Electrical Works					

BILL No.21(1): CHEBIEMIT ELECTRICAL WORKS – HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount(Kshs)
	<u>HIGH MAST</u>				
21.00	Supply, install, test and commission the following:				
21.01	30m high mast column made from Class C galvanised steel of polygonal cross-section, root-mounted, continuous taper to 30m above ground level, complete with heavy duty electrical winch driven by a single-phase 230V, 1500W electric motor fitted with a reduction gearbox and automatic torque limiter for raising and lowering the luminaire carriage assembly and remote operation, luminaire carriage assembly for 9No. 400W LED floodlights, pulleys, anchoring bolts, and lowering steel ropes, and all other accessories necessary for installation and operation of the high mast, including all civil works. The high mast to be painted reflective red and white colours to in accordance with Kenya Civil Aviation Authority's requirements.	Nr	1		
21.02	Civil works for the above including geotechnical investigations, foundation design, excavations and earthworks, supply and installation of reinforced steel bars in column, sleeve tower installation works and associated accessories, and all other associated civil works for successful installation and operation of the high mast.	Nr	1		

BILL No.21(1): CHEBIEMIT ELECTRICAL WORKS – HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount(Kshs)
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
21.03	Allow for installation of 200W high quality, heavy duty beacon aircraft warning lighting luminaire with polycarbonate lenses and bases per high mast. The luminaire to be complete with blinking flash illumination and all accessories and wiring for each high mast.	Nr	1		
21.04	400W LED luminaire with at least 120lm/W (48,000 lumen) and IP66, IK08, 4000K, and at least 50,000h service life, as Philips or equivalent and approved.	Nr	9		
21.05	25mm ² x 3-core Al/XLPE/SWA/PVC copper cable buried in 100mm HG. PVC duct in the ground from Feeder Pillar Panel to high mast control panel	M	10		
21.06	100mm HG. PVC duct and accessories for power distribution as shown in the drawing complete with steel in-draw wires laid in all the power distribution ducts	Nr	3		
21.07	50mm HG. PVC duct and accessories for power distribution as shown in the drawing complete with steel in-draw wires laid in all the power distribution ducts	Nr	2		
21.08	Trenching, tiling, laying and backfilling with concrete surround	M	10		

BILL No.21(1): CHEBIEMIT ELECTRICAL WORKS – HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount(Kshs)
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
21.09	Weatherproof, vandal-protected feeder pillar kiosk complete with 63A 2P+E aluminum bus bars, KPLC single-phase meter, cutouts, surge protection device, RCBO, MCBs, and cables as shown in the drawing. Feeder Pillar to have a hinged lockable door and meter viewing window, powder coated to approved shade. Feeder pillar to be raised 300mm above finished ground level and housed in a concrete housing with a door for security reasons as per the Civil Structural Engineers specifications. Feeder pillar to contain 1no. 1-Phase KPLC meter, KPLC cutouts, and all the devices shown in the drawing.	Nr	1		
21.10	Earthing of the high mast comprising 1500mm long x 16mm diameter threaded copper rods complete with driving tips and clamp and all other accessories, 25mm ² PVC/SC aluminium earth wire, and 300mm x 300mm x 300mm deep RC earth chamber complete with weatherproof RC cover marked 'EARTH'. Earthing to be carried out in accordance with the Kenya Power requirements, the Government Electrical Engineers Regulations and other statutory requirements as detailed in the particular specifications.	Nr	1		

BILL No.21(1): CHEBIEMIT ELECTRICAL WORKS – HIGH MAST					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount(Kshs)
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
21.11	Photocell to fit photocell kit with 70-75 lux switch on level and 1.5 maximum differential and 40A switching capacity. As Thorn Switchlite Exterior Photocell	Nr	1		
21.12	1.5mm ² x 2-core + 1.5mm ² ECC PVC/SC copper cables for wiring photocell kit	M	1		
21.13	900mm x 900mm x 900mm reinforced concrete manhole complete with removable cover	Nr	1		
21.14	Testing and commissioning of the high mast	Sum	1		
21.15	Any other item required to complete installation but not listed above (specify)	Sum			
Total for High Mast Carried Forward to Collection Page for Chebiemit					

BILL No.21(1): CHEBIEMIT ELECTRICAL WORKS – STREET LIGHTING					
Item	Description	Unit	Quantity	Rate(Kshs)	Amount (Kshs)
	STREET LIGHTING				
21.16	An integrated solar street light fitting with 30Ah, 12.8V Lithium Ferro Phosphate battery with 2000 charge and discharge cycles; in-built 60Wp, 17Vmp, 21Voc monocrystalline solar panel; 35W MPPT charge controller; light on/off control and motion detection sensors; pressure die cast aluminium for sturdiness and long life, and specially designed pole mounting bracket to allow different tilt angles, lateral and pole top mounting. The luminaire to be of LED type with 6000 lumen, 175lm/W, 5700K, L70B50 50000h lifespan, and rated IP65 and IK08; complete with mounting accessories for 10m high galvanised steel lighting pole, as Philips Sun Stay or approved equivalent.	Nr	1		
21.17	8m single-arm street lighting round-section tapering column complete with 0.5m bracket with 0.5 degrees tilt angle manufactured from Class C galvanised steel pipe with anti-vandal, anti-theft, and anti-climbing features and all accessories to meet 6m mounting height requirements as shown in the drawings and in the Technical Specifications.	Nr	1		
21.18	Allow for excavation of pit for mounting of columns at 1.2m depth below the finished surface complete with concrete backfill and compact to natural ground level, as shown in the drawings.	Nr	1		
21.19	Testing and commissioning of 1No. Street light	Nr	1		

Total for Street Light Carried Forward to Collection Page for Chebiemit	
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COLLECTION FOR CHEBIEMIT ELECTRICAL WORKS					
S/NO	Page Particulars	Unit	Quantity	Rate, Kshs	Amount, Kshs
1.00	High Mast	Nr	1		
2.00	Street Lighting	Nr	25		
3.00	Allow for Shop drawings of high mast	Sum	1		
4.00	Allow for Shop drawings of street light	Sum	1		
5.00	Allow for KPLC connection PC sum per high mast	Sum	1		
6.00	Allow for Contingency sum	Sum	1		
Totals for Chebiemit carried to summary page for electrical works					

SUMMARY OF ELECTRICAL WORKS		
Item	Description	Amount (Ksh)
1	CHEPTONGEI	
2	CHEBIEMIT	
	Totals carried to Grand Summary Page	

BILL No.22: DAYWORKS (PROVISIONAL SUM)					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<u>Plant</u>				
22.01	Crawler Dozers with Dozer and Hydraulic Ripper Attachments:				
	a) 100 - 135 kW rated flywheel power	hr	10		
	b) 136 - 185 kW rated flywheel power	hr	10		
	c) 186-250 kw rated flywheel power	hr.	10		
22.02	Motorized rubber tyred single engine scrapers				
	a) up to 16m ³ heaped capacity	hr.	10		
	b) 17 - 26m ³ heaped capacity	hr.	10		
22.03	Motorized rubber tyred twin engine scrapers				
	a) up to 16m ³ heaped capacity	hr.	10		
	b) 17 - 26m ³ heaped capacity	hr.	10		
22.04	Motor graders complete with Hydraulic Ripper or scarifier				
	a) 80-110 kw rated flywheel power	hr.	10		
	b) 111-120 kw rated flywheel power	hr.	10		
	c) 121-160 kw rated flywheel power	hr.	10		
22.05	Rollers - Towed Vibratory Including Tractor:				
	a) 6.5 - 8.8 t unballasted wt.	hr	10		
	b) 8.9 - 11.7 t unballasted wt.	hr	10		
22.06	Rollers - Road Deadweight (steel three wheel):				
	a) 6.1 - 8.5 t unballasted wt.	hr	10		
22.07	Rollers - Rubber Tyred Self-Propelled:				
	a) up to 1.0 t per wheel	hr	10		
22.08	Rollers - Vibratory Single Roll Rubber Tyred:				
	a) 8.3 - 10.5 t unballasted wt.	hr	10		
22.09	Rollers - Vibratory Pedestrian Operated Twin Roller:				

BILL No.22: DAYWORKS (PROVISIONAL SUM)					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	a) 651 kg - 1.3 t un-ballasted weight	hr	10		
22.10	Vibrating Plate Compactor:				
	a) 114 - 200 kg operating weight.	hr	10		
22.11	Compressors - Rated by Normal Delivery of Free Air per min at 7 kg per cm ² Complete with all Tools, Hoses, Steel etc.				
	a) 6.0 - 7.4m ³ /min	Day	1.5		
	b) 7.5 - 9.7m ³ /min	Day	1.5		
	(c) 9.8-25.5m ³ /min	Day	1.5		
22.12	Cranes - Mobile Rubber Tyred Rough Terrain Type:				
	a) 23.0 - 40.0 t max working load	hr	10		
22.13	Cranes - Excavator Cranes Tracked:				
	a) 20.0 - 28.0t max working load	hr	10		
22.14	Small Dumpers:				
	a) 751kg - 1.2t maker's rated payload	hr	10		
22.15	Excavator - hydraulic crawler or wheel mounted, full circle slew (back actor):				
	a) 14.0-17.0t nominal wt of machine	hr	10		
22.16	Excavators - hydraulic wheeled dual purpose (backhoe/loader):				
	a) 14.0-17.0t nominal wt of machine	hr	10		
22.17	Pumps (inclusive of all hoses):				
	a) 50 - 76mm delivery	hr	10		
	(b) 77-101mm delivery	hr.	10		
22.18	Tractors - Rubber Tyred Including Trailer:				
	a) 50 - 70 kW rated flywheel power	hr	10		
	<u>Loaders</u>				
	<i>The basis of loader classification is the society of Automotive Engineers of America (SAE) rated capacity of the bucket. The classification is based on the</i>				

BILL No.22: DAYWORKS (PROVISIONAL SUM)					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
	<i>largest general purpose bucket by the manufacturer or the bucket size adopted by the Contractor whichever is lesser</i>				
22.19	Wheeled Loaders - 4 wheel drive, articulated:				
	a) 50 - 70 kW rated flywheel power	hr	10		
	b) 2.01 - 3.40m ³ SAE rated capacity	hr	10		
22.20	Crawler Loader:				
	a) 0.80 - 1.30m ³ SAE rated capacity	hr	10		
	b) 1.31 - 1.90m ³ SAE rated capacity	hr	10		
22.21	Concrete mixers (wet capacity)				
	(a) up to 100 litres	hr.	10		
	(b) 101-200 litres	hr.	10		
	(c) 201-300 litres	hr.	10		
22.22	Transit Mixer 4.5 m ³ /hour	hr.	10		
22.23	Concrete pump of 4.5 and 30m ³ capacity	hr.	10		
22.24	Concrete Vibrator (poker type):	hr	10		
22.25	Lorries - Flatbed				
	(a) up to 7.5t gross vehicle weight	hr.	10		
	(b) 7.6-12.0t gross vehicle weight	hr.	10		
22.26	Lorries -Tipper:				
	a) up to 11.0t gross vehicle wt	hr	10		
	b) 11.1 - 17.0t gross vehicle wt	hr	10		
22.27	Van, Pick-up or Similar Utility Vehicle:				
	a) up to 1.0t carrying capacity	hr	10		
22.28	Water or Fuel Tanker - Self Propelled:				
	a) 3500 - 4550 litre capacity	hr	10		
	b) 4551 - 7000 litre capacity	hr	10		
	(c) 7001-12000 litre capacity	hr.	10		
22.29	Pressure Bitumen Distributor:				
	a) 3500 - 4550 litre capacity	hr	10		
	(b) 4551-9000 litre capacity	hr.	10		
22.30	Hot mix plant - 60 tonnes per hour	hr.	10		

BILL No.22: DAYWORKS (PROVISIONAL SUM)					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
22.31	Wet mix plant - 60 tonnes per hour	hr.	10		
22.32	Hydrostatic paver & finisher with sensor control	hr.	10		
22.33	Batching and mixing plant 15-20 m' capacity	hr.	10		
22.34	Chip spreader	hr.	10		
22.35	Mechanical Broom	hr	10		
22.36	Bitumen Hands Sprayer of 200 litres carrying capacity	hr.	10		
22.37	Road marking machine	hr.	10		
22.38	Electric generator				
	(a)100KVA	hr.	10		
	(b) 125 KVA	hr.	10		
22.39	Crusher Plant	hr.	10		
22.40	Pulvimixer	hr.	10		
22.41	Oxy-acetylene cutting and welding set including oxygen and acetylene gases.	hr.	10		
22.42	Electrical welding set including electrodes	hr.	10		
	<u>Labour</u>				
22.50	Unskilled Labour	hr	10		
22.51	Skilled Labour	hr	10		
22.52	Artisan	hr	10		
22.53	Plant Operator	hr	10		
22.54	Driver	hr	10		
22.55	Foreman	hr	10		
22.56	Site Surveyor	hr	10		
22.57	Chainman	hr	10		
22.58	Watchman (all round surveillance)	hr.	10		
22.59	Blaster (Certified)	hr.	10		
22.60	Office attendants	hr.	10		
	<u>Materials</u>				
22.80	Ordinary Portland Cement	t	0.5		
22.81	Hydrated Lime	t	0.5		
22.82	Mild steel				
	a) up to and including 16mm dia.	t	0.5		
	b) over 16mm dia.	t	0.5		

BILL No.22: DAYWORKS (PROVISIONAL SUM)					
Item	Description	Unit	Quantity	Rate (Kshs)	Amount (Kshs)
22.83	High tensile steel				
	a) up to and including 16mm dia.	t	0.5		
	b) over 16mm dia.	t	0.5		
22.84	Aggregate for concrete				
	a) fine	t	5		
	b) coarse	t	5		
22.85	Concrete:				
	a) Class 15/20	m ³	5		
	b) Class 20/20	m ³	5		
	c) Class 25/20	m ³	5		
22.86	d) Class 30/20	m ³	5		
22.87	Formwork				
	a) F1	m ²	10		
	b) F2	m ²	10		
	c) F3	m ²	10		
22.88	150mm Blockwork	m ²	10		
22.89	200mm Blockwork	m ²	10		
22.90	Bitumen and emulsions				
	a) 80/100 penetration grade bitumen	litre	200		
	b) MC 3000 cut-back bitumen	litre	200		
	a) MC 70 cut-back bitumen	litre	200		
	d) K1-70 bitumen emulsion	litre	200		
22.91	Chippings				
	a) nominal size 6/10	m ³	10		
	a) nominal size 10/14	m ³	10		
22.92	Gabion Size 2.0 x 1.0 x 1.0m	No.	5		
22.93	Rock fill to gabions	m ³	10		
22.94	Imported Fill (marrum)	m ³	50		
22.95	Imported fill (Hardcore)	m ³	50		
Totals for Day works Carried to Grand Summary					

BILLS OF QUANTITIES FOR ENVIRONMENT, HEALTH AND SAFETY

BILL NO.28 - ESMP - CHEBIEMIT AND CHEPTONGEI					
Item	Description	Unit	Quantity	Rate, Kshs	Amount (Kshs)
	ALL ITEMS UNDER THIS BILL TO COVER THE ENTIRE CONTRACT PERIOD INCLUDING DEFECTS LIABILITY PERIOD. THE CONTRACTOR SHALL COMPLY WITH THE ENVIRONMENTAL AND SOCIAL PERFORMANCE REQUIREMENTS				
28.0 1	Allow for a provisional sum for obtaining necessary licenses and approvals except for the ESIA for the project				
A	ESIA for borrow pits/material sites, campsites, Batching plants etc. and decommissioning certificate	LS	1		
B	Water abstraction licenses/approvals	LS	1		
C	OSHA work place registration	LS	1		
D	Others (where applicable): Effluent Discharge License, Excessive Noise and Vibration, Bulk Petroleum Storage/Handling, NCA Registration, Raw Materials Haulage permits etc.	LS	1		
28.0 2	Allow a provisional sum for creating awareness on E&S risks among the communities and workers				
A	Allow a PC Sum of 600,000 for awareness on environmental and social risks to communities before works commencement and during works	PC Sum	1		600,000
B	Allow a PC sum of 300,000 for HIV/Aids Awareness and prevention measures	PC Sum	1		300,000
C	Allow a PC Sum of 300,000 for Gender: Gender Based Violence (GBV), Sexual Exploitation, Abuse and Harassment (SEAH)	PC Sum	1		300,000
D	Allow a PC Sum of 300,000 for Climate Resilience and disaster management	PC Sum	1		300,000
E	Allow a PC Sum of 300,000 for Operation and maintenance: Solid waste management	PC Sum	1		300,000
F	E. O. item 28.02(a) to 28.02(e) for the contractor's overheads and profit.	%	1,800,000		

BILL NO.28 - ESMP - CHEBIEMIT AND CHEPTONGEI					
Item	Description	Unit	Quantity	Rate, Kshs	Amount (Kshs)
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
28.03	Allow for a provisional sum to undertake stakeholder engagement activities				
A	Allow a PC Sum 300,000 for Community meetings (with SEC and GRCs)	PC Sum	1		300,000
B	Allow a PC Sum of 400,000 to Facilitate SECs and GRCs where necessary to deliver on their mandates	PC Sum	1		400,000
C	Allow PC sum of 480,000 for meetings with County- CPCTs and other stakeholders	PC Sum	1		480,000
D	E. O. item 28.03(a) to 28.03(c) for the contractor's overheads and profit.	%	1,180,000		
28.04	Allow for the implementation of actions in the ESMP				
A	Allow for the preparation and quarterly reviews of site-specific ESMP.	LS	1		
B	Traffic management- awareness, traffic Marshalls, signage, diversions etc.	LS	1		
C	Occupational health and safety - Induction, training/awareness, First Aiders, Fire Marshals, safety committees, supervisors, Safety Officers access rumps etc.	LS	1		
D	Capacity building and support of the project Management and HS Officer to implement and Report Climate Mainstreaming actions	LS	1		
E	Provision of personal protective equipment	LS	1		
F	Dust/noise and excessive vibrations control	LS	1		
G	Facilities e.g., toilets and bathrooms, drinking water etc.	LS	1		
H	Disposal of construction waste	LS	1		
28.05	Provide for rehabilitation and restoration of disturbed environments				
A	Rehabilitations of material sites	LS	1		
B	Revegetation of cleared areas	LS	1		

BILL NO.28 - ESMP - CHEBIEMIT AND CHEPTONGEI					
Item	Description	Unit	Quantity	Rate, Kshs	Amount (Kshs)
C	Restoration of impacted community assets	LS	1		
	Page Total Carried Forward to Next Page				
	Total Brought Forward from Previous Page				
28.06	Allow for a provisional sum for the project closure Environmental audit and submission to NEMA				
A	Allow a PC Sum of 200,000 for Project closure Environmental audit	PC Sum	1		200,000
B	Allow a PC sum of 100,000 for Submission of the report and approval by NEMA	PC Sum	1		100,000
C	E. O. item 28.06(a) and 28.06(b) for the contractor's overheads and profit.	%	300,000		
	Total for Bill 28 Carried to Grand Summary Page				

Schedule(s) of Adjustment Data

Price Adjustment Shall Not Apply

Forms of Bid Security

Form of Bid Security - Bank Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary:

[Insert name and address of the Employer]

Request for Bids No: *_[Insert reference number for the Request for Bids]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *_[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of *[insert description of contract]* under Request for Bids No. *[insert number]* ("the RFB").

Furthermore, we understand that, according to the Beneficiary's conditions, Bids must be supported by a Bid 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 *[insert amount in letters]* (*insert amount in numbers*) upon receipt by us of the Beneficiary's complying supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has withdrawn its Bid prior to the Bid validity expiry date specified by the Applicant in the Letter of Bid, or any extended date provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary prior to the expiry date of the Bid validity or any extension thereto provided by the Applicant, (i) fails to execute the contract agreement or (ii) fails to furnish the performance security and, if required, the Environmental and Social (ES) Performance Security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security and, if

required, the Environmental and Social (ES) Performance Security, issued to the Beneficiary in relation to such contract agreement; and (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) twenty-eight days after the expiry date of the Bid validity.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

[signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Technical Proposal - MANDATORY

Technical Proposal Forms

- **Key Personnel Schedule**
- **Equipment**
- **Site Organization**
- **Method Statement**
- **Mobilization Schedule**
- **Construction Schedule**
- **ES Management Strategies and Implementation Plans**
- **Code of Conduct (ES)**
- **Others**

FORM PER -1

Key Personnel Schedule

Bidders 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:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
2.	Title of position: <i>[Environmental Specialist]</i>	
	Name of candidate:	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
3.	Title of position: <i>[Health and Safety Specialist]</i>	
	Name of candidate:	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
4.	Title of position: <i>[Social Specialist]</i>	
	Name of candidate:	

	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
5.	Title of position: Sexual Exploitation, Abuse and Harassment Expert <i>[Where a Project SEA risks are assessed to be substantial or high, Key Personnel shall include an expert with relevant experience in addressing sexual exploitation, sexual abuse and sexual harassment cases]</i>	
	Name of candidate	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
6.	Title of position: <i>[insert title]</i>	
	Name of candidate	
	Duration of appointment:	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	Time commitment for this position:	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	Expected time schedule for this position:	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>

**Form PER-2:
Resume and Declaration
Key Personnel**

Name of Bidder

Position [#1]: <i>[title of position from Form PER-1]</i>											
Personnel information	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">Name:</td> <td style="width: 50%; padding: 5px;">Date of birth:</td> </tr> <tr> <td style="padding: 5px;">Address:</td> <td style="padding: 5px;">E-mail:</td> </tr> <tr> <td colspan="2" style="padding: 5px;">Professional qualifications:</td> </tr> <tr> <td colspan="2" style="padding: 5px;">Academic qualifications:</td> </tr> <tr> <td colspan="2" style="padding: 5px;">Language proficiency:<i>[language and levels of speaking, reading and writing skills]</i></td> </tr> </table>	Name:	Date of birth:	Address:	E-mail:	Professional qualifications:		Academic qualifications:		Language proficiency: <i>[language and levels of speaking, reading and writing skills]</i>	
Name:	Date of birth:										
Address:	E-mail:										
Professional qualifications:											
Academic qualifications:											
Language proficiency: <i>[language and levels of speaking, reading and writing skills]</i>											
details	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="padding: 5px;">Address of employer:</td> </tr> <tr> <td style="width: 50%; padding: 5px;">Telephone:</td> <td style="width: 50%; padding: 5px;">Contact (manager / personnel officer):</td> </tr> <tr> <td style="padding: 5px;">Fax:</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px;">Job title:</td> <td style="padding: 5px;">Years with present employer:</td> </tr> </table>	Address of employer:		Telephone:	Contact (manager / personnel officer):	Fax:		Job title:	Years with present employer:		
Address of employer:											
Telephone:	Contact (manager / personnel officer):										
Fax:											
Job title:	Years with present employer:										

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

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

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 Bid:

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

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

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

Name of Key Personnel: *[insert name]*

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Bidder:

Signature: _____

Date: (day month year): _____

Equipment

The Bidder 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, or for alternative equipment proposed by the Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (*) shall be used for evaluation.

Type of Equipment*	
Equipment Information	Name of manufacturer,
	Capacity*
Current Status	Model and power rating
	Year of manufacture*
Current Status	Current location
	Details of current commitments
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured

The following information shall be provided only for equipment not owned by the Bidder.

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

Site Organization

[Insert Site Organization information]

Method Statement

[insert Method Statement]

Mobilization Schedule

[insert Mobilization Schedule]

Construction Schedule

[insert Construction Schedule]

ES Management Strategies and Implementation Plans

(ES-MSIP)

The Bidder shall submit comprehensive and concise Environmental and Social Management Strategies and Implementation Plans (ES-MSIP) as required by ITB 11.1 (i) of the Bid Data Sheet. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

In developing these strategies and plans, the Bidder shall have regard to the ES provisions of the contract including those as may be more fully described in the Works Requirements in Section VII.

Code of Conduct for Contractor's Personnel (ES) Form

Note to the Employer:

The following minimum requirements shall not be modified. The Employer may add additional requirements to address identified issues, informed by relevant environmental and social assessment.

The types of issues identified could include risks associated with: labor influx, spread of communicable diseases, and Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH)etc.

Delete this Box prior to issuance of the bidding documents.

Note to the Bidder:

The minimum content of the Code of Conduct form as set out by the Employer shall not be substantially modified. However, the Bidder may add requirements as appropriate, including to take into account Contract-specific issues/risks.

The Bidder shall initial and submit the Code of Conduct form as part of its bid.

CODE OF CONDUCT FOR CONTRACTOR'S PERSONNEL

We are the Contractor, [enter name of Contractor]. We have signed a contract with [enter name of Employer] for [enter description of the Works]. These Works will be carried out at [enter the Site and other locations where the Works will be carried out]. Our contract requires us to implement measures to address environmental and social risks related to the Works, including the risks of sexual exploitation, sexual abuse and sexual harassment.

This Code of Conduct is part of our measures to deal with environmental and social risks related to the Works. It applies to all our staff, laborers and other employees at the Works Site or other places where the Works are being carried out. It also applies to the personnel of each subcontractor and any other personnel assisting us in the execution of the Works. All such persons are referred to as "**Contractor's Personnel**" and are subject to this Code of Conduct.

This Code of Conduct identifies the behavior that we require from all Contractor's Personnel.

Our workplace is an environment where unsafe, offensive, abusive or violent behavior will not be tolerated and where all persons should feel comfortable raising issues or concerns without fear of retaliation.

REQUIRED CONDUCT

Contractor's Personnel shall:

1. carry out his/her duties competently and diligently;

2. comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Personnel and any other person;
3. maintain a safe working environment including by:
 - a. ensuring that workplaces, machinery, equipment and processes under each person's control are safe and without risk to health;
 - b. wearing required personal protective equipment;
 - c. using appropriate measures relating to chemical, physical and biological substances and agents; and
 - d. following applicable emergency operating procedures.
4. report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health;
5. treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
6. not engage in Sexual Harassment, which means unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Contractor's or Employer's Personnel;
7. not engage in Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;
8. not engage in Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;
9. not engage in any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage;
10. complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH);
11. report violations of this Code of Conduct; and
12. not retaliate against any person who reports violations of this Code of Conduct, whether to us or the Employer, or who makes use of the grievance mechanism for Contractor's Personnel or the project's Grievance Redress Mechanism.

RAISING CONCERNS

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [*enter name of the Contractor's Social Expert with relevant experience in handling gender-based violence, or if such person is not required under the Contract,*

another individual designated by the Contractor to handle these matters] in writing at this address [] or by telephone at [] or in person at []; or

2. Call [] to reach the Contractor's hotline (*if any*) and leave a message.

The person's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT

Any violation of this Code of Conduct by Contractor's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

FOR CONTRACTOR'S PERSONNEL:

I have received a copy of this Code of Conduct written in a language that I comprehend. I understand that if I have any questions about this Code of Conduct, I can contact [*enter name of Contractor's contact person with relevant experience*] requesting an explanation.

Name of Contractor's Personnel: [insert name]

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Contractor:

Signature: _____

Date: (day month year): _____

ATTACHMENT 1: Behaviors constituting Sexual Exploitation and Abuse (SEA) and behaviors constituting Sexual Harassment (SH)

ATTACHMENT 1 TO THE CODE OF CONDUCT FORM**BEHAVIORS CONSTITUTING SEXUAL EXPLOITATION AND ABUSE (SEA) AND
BEHAVIORS CONSTITUTING SEXUAL HARASSMENT (SH)**

The following non-exhaustive list is intended to illustrate types of prohibited behaviors:

(1) **Examples of sexual exploitation and abuse** include, but are not limited to:

- A Contractor's Personnel tells a member of the community that he/she can get them jobs related to the work site (e.g. cooking and cleaning) in exchange for sex.
- A Contractor's Personnel that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex.
- A Contractor's Personnel rapes, or otherwise sexually assaults a member of the community.
- A Contractor's Personnel denies a person access to the Site unless he/she performs a sexual favor.
- A Contractor's Personnel tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.

(2) **Examples of sexual harassment in a work context**

- Contractor's Personnel comment on the appearance of another Contractor's Personnel (either positive or negative) and sexual desirability.
- When a Contractor's Personnel complains about comments made by another Contractor's Personnel on his/her appearance, the other Contractor's Personnel comment that he/she is "asking for it" because of how he/she dresses.
- Unwelcome touching of a Contractor's or Employer's Personnel by another Contractor's Personnel.
- A Contractor's Personnel tells another Contractor's Personnel that he/she will get him/her a salary raise, or promotion if he/she sends him/her naked photographs of himself/herself.

The Covenant of Integrity Form

Invitation of bids/ proposals / Contact

No.....

To:.....

We declare and undertake that neither we nor anyone, including any member of our joint venture or any of our suppliers, contracts, sub-contractors, consultants, sub-consultants, where these exist, acting on our behalf with due authority or with our knowledge or consent, or facilitated by us, as engaged, or will engage, in any activity prohibited under AFD’s General Policy On Combating Corruption, Fraud Anti-Competitive Practices, Money Laundering And Terrorist Financing {1} (“AFDs General Policy”) in connection with the present procurement process and (in case of award) the execution on the above-referenced contract (“Contract”), including any amendments thereto.

We acknowledge that AFD’s participation in the financing of the contract is subject to AFD’s General Policy. As such, we acknowledge that AFD will not be able to participate in the financing of the contract if we, including any member of our joint venture, or any of our suppliers, contractors, subcontractors, consultants or sub-consultants are ineligible as a result of a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nation or are on any of the following lists (AFD’S sanction lists):

EU financial sanction list [https://eeas.europa.eu/headquarters/headquarters-homepage/8442/consolidated-list-sanction fr](https://eeas.europa.eu/headquarters/headquarters-homepage/8442/consolidated-list-sanction_fr)

French financial Sanction list <http://www.tresor.economie.gouv.fr/4248> Dispositif -National-de-Gel-Terroriste

EU commercial sanction list [https:// eeas.europa.eu/sites/eeas/files/restrictive measures-2017-08-04.pdf](https://eeas.europa.eu/sites/eeas/files/restrictive_measures-2017-08-04.pdf)

We shall permit, and shall cause our sub-contractors, Sub consultants, agents (whether declared or not), personnel, consultants, service providers or suppliers, to permit the AFD to inspect all accounts, records, and other documents relating to the procurement process and/ or contractors’ execution (In the case of award), and to have them audited by auditors appointed by the AFD.

We agree to preserve all accounts, records, and other documents (whether in hard copy or electronic format) related to the procurement and the execution of the contract.

Name:.....In the Capacity

of:.....

Duly empowered to sign in the name and on behalf of {2}:

Signature:.....

Dated:.....

Bidder's Qualification

To establish its qualifications to perform the contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder

Form ELI -1.1: Bidder Information Form

Date: _____
 RFB No. and title: _____
 Page _____ of _____ pages

Bidder's name
In case of Joint Venture (JV), name of each member:
Bidder's actual or intended country of registration: <i>[indicate country of Constitution]</i>
Bidder's actual or intended year of incorporation:
Bidder's legal address [in country of registration]:
Bidder's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.4. <input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. <input type="checkbox"/> In case of state-owned enterprise or institution, in accordance with ITB 4.6 documents establishing: <ul style="list-style-type: none"> • Legal and financial autonomy • Operation under commercial law • Establishing that the Bidder is not under the supervision of the Employer
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. <i>[If required under BDS ITB 47.1, the successful Bidder shall provide additional information on beneficial ownership, using the Beneficial Ownership Disclosure Form.]</i>

Form ELI -1.2: Information Form for JV Bidders

(to be completed for each member of Joint Venture)

Date: _____

RFB No. and title: _____

Page _____ of _____ pages

Bidder's Joint Venture 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 <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4. <input type="checkbox"/> In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and is not under the supervision of the Employer, in accordance with ITB 4.6.
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. <i>[If required under BDS ITB 47.1, the successful Bidder shall provide additional information on beneficial ownership for each JV member using the Beneficial Ownership Disclosure Form.]</i>

Form CON – 2: Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder’s Name: _____

Date: _____

Joint Venture Member’s Name _____

RFB No. and title: _____

Page _____ of _____ pages

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> Contract non-performance did not occur since 1 st January <i>[insert year]</i> <input type="checkbox"/> Contract(s) not performed since 1 st January <i>[insert year]</i>			
Year	Non-performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and KES equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No pending litigation <input type="checkbox"/> Pending litigation.			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), KES Equivalent (exchange rate)
		Contract Identification: _____ Name of Employer: _____ Address of Employer: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
		Contract Identification: Name of Employer: Address of Employer: Matter in dispute: Party who initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No Litigation History			
<input type="checkbox"/> Litigation History			
Year of award	Outcome as percentage of Net Worth	Contract Identification	Total Contract Amount (currency), KES Equivalent (exchange rate)
<i>[insert year]</i>	<i>[insert percentage]</i>	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Matter in dispute: <i>[indicate main issues in dispute]</i> Party who initiated the dispute: <i>[indicate "Employer" or "Contractor"]</i> Reason(s) for Litigation and award decision <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Form CON – 3: Environmental and Social Performance Declaration

[The following table shall be filled in for the Bidder, each member of a Joint Venture and each Specialized Subcontractor]

Bidder's Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Member's or Specialized Subcontractor's Name: *[insert full name]*

RFB No. and title: *[insert RFB number and title]*

Page *[insert page number]* of *[insert total number]* pages

Environmental and Social Performance Declaration in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No suspension or termination of contract: An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental, or Social (ES) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.5.			
<input type="checkbox"/> Declaration of suspension or termination of contract: The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental, or Social (ES) performance since the date specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.5. Details are described below:			
Year	Suspended or terminated portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and KES equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for suspension or termination: <i>[indicate main reason(s) e.g. for gender-based violence; sexual exploitation or sexual abuse breaches]</i>	<i>[insert amount]</i>
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i>	<i>[insert amount]</i>

		Reason(s) for suspension or termination: <i>[indicate main reason(s)]</i>	
...	...	<i>[list all applicable contracts]</i>	...
Performance Security called by an employer(s) for reasons related to ES performance			
Year	Contract Identification		Total Contract Amount (current value, currency, exchange rate and KES equivalent)
<i>[insert year]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for calling of performance security: <i>[indicate main reason(s) e.g. for gender-based violence; sexual exploitation, or sexual abuse breaches]</i>		<i>[insert amount]</i>

Form CON – 4 Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment Performance Declaration

[The following table shall be filled in by the Bidder, each member of a Joint Venture and each subcontractor proposed by the Bidder]

Bidder’s Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Member’s or Subcontractor’s Name: *[insert full name]*

RFB No. and title: *[insert RFB number and title]*

Page *[insert page number]* of *[insert total number]* pages

<p>SEA and/or SH Declaration in accordance with Section III, Evaluation and Qualification Criteria</p>
<p>We:</p> <p><input type="checkbox"/> (a) have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations</p> <p style="padding-left: 40px;"><input type="checkbox"/> (b) are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations</p> <p><input type="checkbox"/> (c) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations. An arbitral award on the disqualification case has been made in our favor.</p> <p><input type="checkbox"/> (d) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations for a period of two years. We have subsequently demonstrated that we have adequate capacity and commitment to comply with SEA/ SH obligations.</p> <p><input type="checkbox"/> (e) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations for a period of two years. We have attached evidence demonstrating that we have adequate capacity and commitment to comply with SEA/ SH obligations.</p>
<p>[If (c) above is applicable, attach evidence of an arbitral award reversing the findings on the issues underlying the disqualification.]</p>
<p>[If (d) or (e) above are applicable, provide the following information:]</p>
<p>Period of disqualification: From: _____ To: _____</p>
<p>If previously provided on another Bank financed works contract, details of evidence that demonstrated adequate capacity and commitment to comply with SEA/ SH obligations (as per (d) above)</p> <p style="padding-left: 40px;">Name of Employer: _____</p> <p style="padding-left: 80px;">Name of Project: _____</p> <p style="padding-left: 40px;">Contract description: _____</p>

Brief summary of evidence provided: _____

Contact Information: (Tel, email, name of contact person): _____

As an alternative to the evidence under (d), other evidence demonstrating adequate capacity and commitment to comply with SEA/ SH obligations (as per (e) above) [attach details as appropriate].

Form CCC: Current Contract Commitments / Works in Progress

Bidders and each member of a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter 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.

Name of contract	Employer, contact address/tel/fax	Value of outstanding work (current KES equivalent)	Estimated completion date	Average monthly invoicing over last six months (KES/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Form FIN – 3.1: Financial Situation and Performance

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

RFB No. and title: _____

Page _____ of _____ pages

1. Financial data

Type of Financial information in (currency)	Historic information for previous _____ years, _____				
	(amount in currency, currency, exchange rate, KES equivalent)				
	Year 1	Year 2	Year 3	Year 4	Year 5
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 (KES equivalent)
1		
2		
3		

3. Financial documents

The Bidder and its parties shall provide copies of financial statements for _____ years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.2. The financial statements shall:

- (a) reflect the financial situation of the Bidder 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.
- Attached are copies of financial statements¹ for the _____ years required above; and complying with the requirements

¹ 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 - 3.2: Average Annual Construction Turnover

Bidder's Name: _____
 Date: _____
 Joint Venture Member's Name _____
 RFB No. and title: _____
 Page _____ of _____ pages

		Annual turnover data (construction only)	
Year	Amount Currency	Exchange rate	KES equivalent
<i>[indicate year]</i>	<i>[insert amount and indicate currency]</i>		
Average Annual Construction Turnover *			

* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.

Form FIN - 3.3: Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section III, Evaluation and Qualification Criteria.

Source of financing	Amount (KES equivalent)
1.	
2.	
3.	
4.	

Form EXP - 4.1: General Construction Experience

Bidder's Name: _____
 Date: _____
 Joint Venture Member's Name _____
 RFB No. and title: _____
 Page _____ of _____ pages

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of Employer: _____ Address: _____	

Form EXP - 4.2(a): Specific Construction and Contract Management Experience

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

RFB No. and title: _____

Page _____ of _____ pages

Similar Contract No.	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount			KES *	
If member in a JV or subcontractor, specify participation in total Contract amount			*	
Employer's Name:				
Address:				
Telephone/fax number				
E-mail:				

Form EXP - 4.2(a) (cont.)
Specific Construction and Contract Management Experience
(cont.)

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

Form EXP - 4.2(b): Construction Experience in Key Activities

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

Subcontractor's Name² (as per ITB 34.2 and 34.3): _____

RFB No. and title: _____

Page _____ of _____ pages

Subcontractor's Name (as per ITB 34.2 and 34.3): _____

All subcontractors for key activities must complete the information in this form as per ITB 34.2 and 34.3 and Section III, Qualification Criteria and Requirements, Sub-Factor 4.2.

1. Key Activity No One: _____

Information				
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount				KES
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) x (ii)	
Year 1				
Year 2				
Year 3				
Year 4				
Employer's Name:				

² If applicable.

Address:	
Telephone/fax number	
E-mail:	

	Information
Employer's Name:	
Address:	
Telephone/fax number	
E-mail:	

	Information
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

2. Activity No. Two

3.

Form EXP - 4.2(c): Specific Experience in Managing ES aspects S

[The following table shall be filled in for contracts performed by the Bidder, and each member of a Joint Venture]

Bidder's Name: _____
 Date: _____
 Bidder's JV Member Name: _____
 RFB No. and title: _____
 Page _____ of _____ pages

1. Key Requirement no 1 in accordance with 4.2 (c): _____

Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Subcontractor <input type="checkbox"/>
Total Contract Amount			KES	
Details of relevant experience				

2. Key Requirement no 2 in accordance with 4.2 (c): _____

3. Key Requirement no 3 in accordance with 4.2 (c): _____

Section V - Eligible Countries

Eligibility for the Provision of Goods, Works and Services in Bank-Financed Procurement

In reference to ITB 4.8, and 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this Bidding process:

Under ITB 4.8 (a) and 5.1 *[insert a list of the countries following approval by the Bank to apply the restriction or state “none”]*

Under ITB 4.8 (b) and 5.1 *[insert a list of the countries following approval by the Bank to apply the restriction or state “none”]*

Section VI - Fraud and Corruption

(Section VI shall not be modified)

1. Purpose

1.1 The Bank’s Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

2. Requirements

2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

2.2 To this end, the Bank:

- a. Defines, for the purposes of this provision, 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:
 - (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation 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
 - (b) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 2.2 e. below.

- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, 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;
- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti- Corruption Guidelines and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;¹ (ii) to be a nominated² sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants/proposers), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents personnel, permit the Bank to inspect³ 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 Bank.

¹ For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, 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 A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

³ Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank 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.

PART 2 – Works' Requirements

Section VII - Works’ Requirements

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Scope of Works

CONTRACT:

CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEM AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF CHEBIEMIT AND CHEPTONGEI; BOTH WITHIN ELGEYO MARAKWET COUNTY.

(a) Roads, Footpath and Drainage System

Local Road Name	Drawing Reference Name	Road Length (Metres)	Width (m)	Name of Settlement
Cheptile to Chemweno	CP01	485	10	Cheptongei – Elgeyo Marakwet
Catholic Church to Rama..6m	CP02	490	6	
Kirias to Health Centre with sidewalks	CP03	195	14	
Ndiema to Petrol station	CP04	220	6	
Lokale Chebaimo to Petrol station	CP05	537	6	
Highway to Secondary School.	CP06	75	6	
Outreach to Main Highway	CP07	82	10	
Beelek Shop-Mamгаа-Chesumet petrol station-Tarmac road	CB01	315	6	Chebiemit – Elgeyo Marakwet
Hospital-Catholic-Msafiri	CB02	324	10	
Kapsiliot Sochon-AP line Teikuchu	CB03	822	12	

The **Road works** entail.

- Carriage way of varied widths between 3.0m to 6m specific to each Alignment
- Pavement structure comprising of;
 - o 300mm thick improved subgrade compacted in two layers of 150mm to 100% MDD (AASHTO T99)
 - o 175mm thick Natural Gravel material Sub base, minimum CBR 30%
 - o 125mm thick 3% Cement Treated Gravel Base
 - o 50mm Asphalt Concrete Type II- Surfacing on the carriageway

The **Footpaths/Walkway works** shall partly comprise concrete blocks surfacing also functioning as the closed drains covers and Asphalt concrete Type II surfacing with similar pavement structure as the carriage way.

The **Drainage system construction works** shall include;

- Cross pipe culverts and access culverts
- Lined rectangular and/ or closed drains
- The drains shall outfall to existing trunk storm water drains and/or natural water courses

(b) Public Lighting Works

The **public lighting works** shall comprise of;

Installation of 1Nr. 30m high mast flood lights with the following works being carried out;

- Pad foundation concrete works for mounting of mast
- Installation of 30m mast having a round section tapering column from Class C galvanized steel pipe as per the detailed drawings
- Supply and Installation of mast light fittings as per the detailed drawings and specifications
- Connection to KPLC mains

Installation of 12Nr. Street lights with the following works being carried out;

- Pad foundation concrete works for mounting of street light column
- Installation of 6m single –arm street lighting round section tapering column from Class c galvanized steel pipe as per the detailed drawings
- Supply and Installation of integrated solar street light fittings as per the detailed drawings and specifications

Relocation and rehabilitation of 1Nr. High mast flood light

Specification

A: Standard Specification

The Standard Specification referred to in this document is the *Standard Specifications for Road and Bridge Construction, 1986 Edition* published by the Ministry of Transport and Communications.

This document shall form part of the Contract. Work shall be carried out in accordance with the Standard Specification except as supplemented or revised in the Special Specification.

B: Special Specifications

B-1: Special Specifications for Roads/Footpaths and Drainage works

B-I: SPECIAL SPECIFICATION FOR ROADS/FOOTPATHS AND DRAINAGE WORKS

SECTION 1 – GENERAL

Add following new Clause 100:

100 PREAMBLES TO THE SPECIFICATIONS

Special specification is supplementary to the Standard Specifications for Road and Bridge Construction, 1986 Edition and the two must be read in conjunction. In any case where there appears to be conflict between the two then the Special Specifications will take precedence.

101 LOCATIONS AND EXTENT OF WORKS

101.1 Description of the Project

This project is a construction of approximately 3.545Km of Roads/Footpath & Drainage system, 37No. Streetlights and 2Nr 30m High mast flood lights in informal settlements of Chebiemit and Cheptongei both in Elgeyo Marakwet county.

101.2 The Site

(a) Location of the project site

Projects site are both located in Elgeyo Marakwet County. The site of the Works shall be the area demarcated as the Road reserve and any other place as may be designated in the Contract.

(b) Access Facilities

Without limiting any of his obligations or responsibilities under the Contract, the Contractor will be deemed to have obtained all necessary information pertaining to and to have complied with all laws, regulations and procedures governing the use of national and international facilities. These facilities are such as access, transport, handling and storage facilities, including roads, railroads, harbours airports, airways, border crossings and the like for the due fulfilment of the Contract.

The Contractor shall use every reasonable means to ensure that all loading limits and other limitations on roads are observed, and in the event of moving any load of equipment or pre-construction unit or part of the Works, the Contractor shall before move the load obtain all necessary permits and approvals from relevant authorities and comply with all lawful requirements.

The Contractor shall fully acquaint himself with the conditions of inland transportation to the Site, including clearances, restrictions, bridge-load limits, and other limitations that affect or may affect transportation and ingress and egress at the Site.

The Contractor shall construct and maintain at his own expense any additional temporary roads and structures required by him for the purpose of the Works Furthermore, he shall make any necessary repairs or replacements as the case may be to any structure on route which has been damaged by the

Contractor as the result of his own negligence. Such repair or replacements shall be satisfactory to the Project Manager or the appropriate government authorities.

(c) Basic Data

The natural conditions such as climatological and hydrological data, water levels, topography, and geological conditions related to the Site and the structures to be built are not presented in the Bid Documents. However, Topographical survey data and Geological conditions data can be availed by the Project Manager upon request during Construction. Nevertheless, provision and subsequent use of such data shall not exempt the Contractor from his obligations under contract.

101.3 Use of the Site

(a) Designated Areas

Specific areas forming the Site, as shown on the Drawings, have been designated to be used for working areas.

Use of additional site areas for such other facilities such as quarrying operations, borrow pits, spoil areas, offices, workshops, storage, batch plants, etc. as may be required by the Contractor but not already designated by the Project Manager shall be subject to the prior consent of the Project Manager regarding extent, access, program and layout.

All roads external to the fenced off areas of the Site shall be deemed public roads whether or not built or maintained by the Contractor. The Contractor shall therefore have due regard to the laws and regulations, traffic rules including loading limits governing public roads as well as the provisions of the Contract. The Employer shall have rights to allow any local authorities to enter the fenced areas with a prior notice to the Contractor where necessary for undertaking their duties.

The Contractor shall not use the Site for any purpose other than that of executing the Works or for that purpose for which it has been designated and shall confine his operations to within these areas unless otherwise approved in writing by the Project Manager.

(b) Ownership of Natural Materials and Structures

Earth, stone, gravel and sand, and all other materials excavated or existing on the Site or the access roads, shall not become the property of the Contractor, but will be at his disposal only so far as they are approved for use in the Works. Existing structures on the Site or the access roads shall remain the property of the Employer and, except as and to the extent required elsewhere in the Contract, shall not be interfered with by the Contractor in any way.

101.3 Adverse weather Conditions

Normal rainfall conditions are not regarded as circumstances that may entitle the Contractor to claim for extension of the specified time for completion. The Contractor shall however be mindful of the fact that access to some parts of the project areas may be affected by flooding conditions during rainy seasons.

Extension of time will however be considered for climatic conditions which can be regarded as abnormal according to rainfall statistics provided by Kenya Meteorology Department, in which case the following formula will be used:

$$V = (N_w - N_n) + \frac{(R_w - R_n)}{20}$$

Where:

V = Extension of Time in calendar days in respect of the calendar month under consideration.

N_w = Actual number of days during the calendar month under consideration on which a precipitation of more than 10 mm has been recorded.

R_w = Actual total rainfall in mm recorded during the calendar month under consideration.

N_n = Average number of days, derived from the rainfall records, on which a precipitation of more than 10 mm has been recorded during the relevant calendar month as per the nearest weather station.

R_n = Average total rainfall in mm for the relevant calendar month, derived from rainfall records, according to the nearest weather station.

Where the extension of time due to abnormal rainfall has to be calculated for a portion of a calendar month, pro rata values shall be used. Should V be negative for any particular month and should its absolute value exceed the corresponding value of N_n then V shall be taken as being equal to minus N_n. The total extension of time to be granted shall be the algebraic sum of all the monthly extensions provided that if this total is negative then the extension of time to be granted for abnormal rainfall is taken as zero.

102 EXTENT OF CONTRACT

(a) Construction Works Packages

This works shall be executed in **ONE** Lot.

(b) Scope of Works for This Contract:

The works to be executed under the contract/s consist of, but are not limited to the following:

1. Provision of Quality control laboratory for the Project Manager.
2. Setting out and construction control
3. Maintenance of the temporary road, passage of traffic through the works and rendering all possible assistance to the public and other Contractors when passing through the deviations or main works.
4. General Construction Works of Roads/Footpath, Drainage, Sanitation works and public lighting as detailed in the Drawings
 - i. Site Clearance of working area within the road reserve
 - ii. Topsoil stripping
 - iii. Scarification and compaction of subgrade
 - iv. Earthworks comprising excavations/cuts and fills
 - v. Protection works and provision of longitudinal drainage ditches (lined and unlined)
 - vi. Construction of single carriageway comprising:
 - 2.5m to 5.5m varied widths
 - vii. Road pavement Layers comprising:
 - 300mm improved subgrade compacted in two layers of 150mm to 100% MDD (AASHTO T99)
 - 175mm thick Natural Gravel material Sub base, minimum CBR 30%

- 125mm thick 3% Cement Treated Gravel Base
- 50mm Asphalt Concrete - Surfacing on the carriageway
- viii. Provision and erection of road furniture and road markings, and other miscellaneous works.
- ix. Installation of 2Nr. High mast flood lights.
- x. Rectification of defects affecting the completed works for a period of 12 months.
- xi. 37No. Street lighting system
- xii. Relocation & rehabilitation of 1Nr. 30m high mast flood light
- xiii. Rectification of defects affecting the completed works for a period of 12 months.

The Works detailed above are only indicative of the Scope of Works associated with this contract and the Project Manager may, where necessary, substitute some of the Works with others within the project areas without substantially altering the overall Scope of the Works. Work shall be measured and paid using the relevant rates and prices in the Bill of Quantities.

103 PROGRAMME OF EXECUTION OF THE WORKS

The contractor shall provide the works programme, required under clause 8.3 of the Conditions of Contract, within 28 days of receipt of the Project Manager's Order to commence work.

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

The programme shall be drawn using the Critical Path Method (CPM) or Programme Evaluation and Review Technique (PERT). No other form of programme shall be allowed or approved.

In addition, and as a compliment to the Programme, the Contractor shall submit at the same time, schedules of Contractor's Equipment and labour indicating the projected numbers and types of Contractor's Equipment and labour to be utilized on the works to enable compliance with the Programme. The Schedules shall be itemized under the same heads of items of work as are used in the programme.

The Programme shall include as a minimum the following activities:

- Mobilization including provision of services to the Project Manager
- Confirmation of quantities and placing of orders
- Erection of materials storage sites and facilities
- Procurement of major materials for the works
- Execution of various sections of works

The information to be supplied to the Project Manager shall include but not be limited to drawings showing the general arrangements of the temporary offices and any other temporary building or structures which he proposes to use together with details of the constructional plant and temporary works and all other devices which he proposes to adopt for the construction and completion of the labour strength, skilled and unskilled labour and supervision arrangements.

The whole of the temporary works, plant, equipment and appliances used on the works will be the liability of the Contractor in regard to construction sufficiency, safety and maintenance. The Project Manager's approval shall in no way relieve the Contractor of this liability.

The order in which it is proposed to execute the permanent works is subject to adjustment and approval by the Project Manager and the Contractor's price shall be held to include for any reasonable and necessary adjustments required by the Project Manager during the course of the work.

The main Contractor will be responsible for arranging the above programme with all sub-contractors including the nominated suppliers. When preparing this programme the Contractor shall take due account of the time required for the delivery of any imported material.

The Contractor shall carry out the works in accordance with the programme agreed with the Project Manager, but he shall in no manner be relieved by the Project Manager'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.

104 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 completed work is achieved.

105 SUBMISSIONS TO THE PROJECT MANAGER

Drawings

It shall be the Contractor's responsibility to prepare and submit to the Project Manager for his approval the following drawings.

- Drawings, which in the opinion of the Project Manager are needed to explain methods and details of work to be carried out by the Contractor, which are altered, compared to or not sufficiently illustrated by the Contract Drawings or any further drawings supplied by the Project Manager.
- As-built drawings showing the actual construction of the permanent works under the Contract based on survey carried out by the Contractor.
- The cost for the above drawings including two copies shall be borne by the Contractor and be included in his price.

Contractor's Site Diary

The Contractor shall provide and keep permanently on the site a diary in which he shall record full details of all work carried out each day. Such details shall include the following.

- a. Location of various works undertaken
- b. Type and quality of work achieved with specific record of construction of formwork, pouring concrete, striking of formwork, pipes lay, back filling etc.
- c. Inspections carried out by the Project Manager.
- d. Tests carried out with results.
- e. Numbers of employees and plant working, noting any absence of persons at foreman Level and above.
- f. Weather conditions.

Contractor shall record details of formwork, construction, placing of reinforcement, concreting and curing operations, striking of formwork, making good and daily temperature and weather conditions. This diary shall always be available for inspection by the Project Manager.

106 SITE BOOKS AND STANDARDS

Instructions to be recorded

The Contractor shall provide and keep permanently on the Site a numbered triplicate book wherein the Contractor shall record all instructions relating to work issued by the Project Manager. One copy of every entry therein shall be sent to the Project Manager on the same day as the entry is made.

107 TAKING OVER CERTIFICATE

Taking over certificate will be issued for the whole length of continuous road substantially completed.

108 METHOD OF CONSTRUCTION

The Project Manager's normal working hours shall be 8 hours from Monday to Friday and 5 hours on Saturday with Sunday set aside for rest.

If the Contractor wishes to execute permanent works outside these hours, he shall meet any extra costs arising thereof in addition to giving a day's notice in writing.

109 NOTICES OF OPERATIONS

Add the following sub- Clause.

Notification Terms

It shall be the Contractor's responsibility to notify the Project Manager 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 Project Manager.
- 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.

110 UNITS OF MEASUREMENTS, ABBREVIATIONS AND TERMINOLOGY

Units

Metric units shall be used on all drawings and for all calculations, flow capacities, instruments, etc. Some of the existing Plant may have been supplied to Imperial dimensions.

Where these are quoted in the Specification or shown on the Drawings they are given for reference and identification, and the equivalent metric units shall be used for all new Plant and on drawings.

111 NATIONAL SPECIFICATIONS

Each and every part of the Works shall be designed, constructed, manufactured, tested and installed in accordance with national or internationally recognized Standard, Code of Practice, or Regulation applicable to that part of the Works.

Such standards, etc. shall include:

- a. Kenya Standards (KS)
- b. International Organisation for Standardisation (ISO).
- c. European Standards (EN)
- d. British Standard (BS).
- e. Deutches Institute for Normung (DIN)

- f. South African Bureau of Standards (SABS)
- g. International Electro-technical Commission, where available (IEC).
- h. Other national or international or other authoritative standards equivalent or superior to those designated in the Specifications.

The Contractor shall demonstrate to the Project Manager's satisfaction the equivalence or superiority of any item of Plant supplied to such alternative standards.

All standards shall be the latest published and shall include amendments, which are current at the date of manufacture or construction (as applicable). In the case of category (e) approval must be given in writing by the Project Manager, and the Contractor shall familiarize himself with the requirements of these standards. The Contractor shall supply to the Project Manager four copies in the English language of all such standards prior to approval by the Project Manager.

Electrical diagrams and symbols on drawings shall comply with IEC 617.

Electrical systems shall comply with requirements and regulations of the public electricity supply authority. Electrical installations in buildings shall comply with the local regulations pertaining to such installations. The Contractor shall be deemed to have acquainted himself with such requirements and ensured that all electrical systems comply therewith.

Plant for the electrical installation shall additionally comply with the Regulations of the Institution of Electrical Engineers (Great Britain) for the Electrical Equipment of Buildings (Fifteenth Edition) with amendments. In the case of conflict between the various regulations, the regulations recommended by the Kenya Bureau of Standards (KBS) shall take

Copies of Standards

Within 60 days of acceptance of the Tender, the Contractor shall provide to the Project Manager copies of all National and International Standards which are to apply to the Plant, Materials and Workmanship under the Contract, together with an index cross-referencing these standards with the applicable aspects of the works.

The Contractor shall in addition provide and keep permanently on the Site copies of such other Standards, Codes, Notes and Specifications as may be required by the Project Manager.

115 CONSTRUCTIONS GENERALLY

General

The Contractor shall make his own arrangements for the supply of adequate safe drinking water, electricity and other services to the Permanent Works, Temporary Works and plant and shall provide and maintain all pipes, cables and fittings, which may be necessary to carry such services to his operations.

Water

The Contractor shall make all necessary arrangements for and shall provide at each Site an adequate supply of water both for the execution of the Works and for the health and safety of his workmen and other persons legitimately on the Works.

The water for the execution of the Works shall be of a chemical and purity standard such that it will not pollute injure or cause any deterioration of the Works, and it shall generally comply with the requirements specified in that section of the Specification dealing with concrete.

Electricity

The Contractor shall make all necessary arrangements for and shall provide any electricity supply required for the execution of the Works. Should the Contractor use a generator, he shall minimize nuisance from noise or exhaust fumes and shall effectively guard against contamination or danger due to spillage of fuel or exposure to vapor.

Contractor's Monthly Returns

The Contractor shall report monthly progress in the English language to the Project Manager on charts submitted in triplicate showing actual work done superimposed on his agreed programme of works. The reports shall be delivered to the Project Manager within one week after the end of each month.

The Contractor shall include in his monthly report details of all plant (including their values) and labor force employed on site together with description of their deployment. The names and trade of hired laborers being residents in the project area are to be shown separately. The Contractor shall also provide a list of all materials intended for use in the permanent work delivered to site during the month.

Weather Records

The Contractor shall erect a rain gauge ("Nylex 600" or similar approved) and a double bulb, minimum/maximum thermometer (0.1°C accuracy) at a site agreed with the Project Manager.

The Contractor shall be responsible for the daily measurement of rainfall and minimum and maximum temperature to be taken at 8:00am each day.

Sign Boards and Advertisements

The Contractor shall provide, sign, write, erect and maintain sign boards of sound construction to the satisfaction of the Project Manager and at a location indicated by him in each settlement. As directed by the Project Manager the signboard shall give a brief description of the Works and bear the names of the Employer, the Financier, the Project, the Consultant and the Contractor. The expenses for the signboard shall be priced separately in the Bill of Quantities.

On completion of the works the Contractor shall remove the signboard when instructed by the Project Manager's Representative. No advertisements shall be placed on any boarding, fencing or scaffolding erected for any purpose connected with the contract without the written permission of the Project Manager.

Record Drawings

Within 4 weeks of the commencement of the Defects Correction Period, the Contractor shall deliver to the Project Manager one complete set of record drawings of all works constructed under the Contract. The minimum scales for road alignment plans and longitudinal sections shall be 1:2'000 horizontally and 1:200 vertically. All other works shall be at scales used in the Tender Drawings for comparable

works or as agreed with the Project Manager. The Project Manager shall comment on the draft Record Drawings and within a further 8 weeks the Contractor shall then produce a definitive set-in transparency of CALC material of good quality (min 100g/m²) that shall be delivered to the Project Manager complete with two sets of prints.

In addition, the Contractor shall provide one copy of all as-built drawings in digital format agreed with the Project Manager and certified virus free compact disc (CD).

Operation and Maintenance Manuals

Within 4 weeks of the commencement of the defect's correction period, the Contractor shall deliver to the Project Manager a complete set of Operation and Maintenance (O&M) manuals of works constructed under the contract. The Project Manager shall comment, where applicable, on the draft O&M manuals and within 8 weeks the Contractor shall deliver the final O&M manuals to the Project Manager.

In addition, the Contractor shall provide, where applicable, one soft copy in a format agreed with the Project Manager and certified virus free compact disc (CD).

117 HEALTH, SAFETY AND ACCIDENTS

Safety and Health

The Contractor shall be responsible for the safety and health of all workmen and other persons in or around the works, to the satisfaction of the Project Manager and in accordance with safety and health regulations.

The attention of the Contractor is drawn to regulations and laws in force. The Contractor is fully and, in all respects, responsible for the safety on the Works.

First Aid Outfits/Ambulances/Emergency Services

The Contractor shall provide and maintain for the duration of the Contract adequate and easily accessible first aid outfits on every site at which work is in progress or his personnel are posted.

The Contractor shall have available at all times a vehicle or vehicles for the conveyance of sick or injured people to hospital.

The Contractor shall notify the Public Emergency Service (Fire, Police, Ambulance) of the location and intended duration of all works at each site prior to commencing work at each site.

Protective Clothing

The Contractor shall provide for the Project Manager and his assistants the protective clothing necessary for the proper discharge of their duties on Site. This shall also include equipment, protection and instruments as described below for use in hazardous situations and confined spaces.

Noise Control

All work must be carried out without unreasonable noise. Compressors used on the site shall be silenced either by use of silencer and property lined and sealed acoustic covers or by effective acoustic screens to enclose the noise source.

Ancillary pneumatic tools used on the Site shall be fitted with effective silencers as recommended by the manufacturer.

Hazards

There are hazards associated with the Sites and the Employer's occupation or use of them. Some will be present at all times: others may be intermittent or may not exist until work has been carried out by the Contractor or others, or operational Plant has been commissioned. Hazards comprise of confined spaces, explosive and flammable gases, toxic fumes, Asphyxiating gases, Dangerous fumes and gases, Dangerous chemicals, Electricity cables, Sewage, Reptiles, rodents and insects etc. The Contractor shall take every precaution when working in areas with or susceptible to hazards.

Confined Spaces

Where any part of the Works is to be carried out in a confined space the Contractor shall:

1. Establish a system of written permits for each person to enter a confined space.
2. Display at the entrance to each confined space a sign warning of the need for oxygen and gas levels to be monitored before access and while work is proceeding.
3. Monitor the atmosphere in the confined space for oxygen depletion and dangerous gases before any person enters it.
4. Provide suitable and sufficient Working or Escape breathing apparatus appropriate to the risks identified or expected.
5. If sufficient means of natural ventilation cannot be guaranteed to provide at all times an adequate circulation of uncontaminated air, provide forced air ventilation even if oxygen or other gas levels are shown to be safe.
6. Provide suitable and sufficient gas monitoring equipment in appropriate locations, and ensure that it is used at all times when the confined space is occupied.
7. Ensure that all persons within the confined space vacate it as soon as any alarm sounds, without waiting to record the gas level.
8. Maintain a register of all alarms sounded every day, including Nil returns when appropriate, and provide a copy of the register to the Project Manager each week.
9. Unless he can demonstrate to the Project Manager his own ability to do so, employ a specialist firm to inspect and recalibrate gas detection equipment at proper regular intervals; and clearly label all such equipment with the date by which the next recalibration is to be conducted.
10. Provide appropriate harness, safety ropes and rescue facilities, and if practicable two means of access from top to bottom.

11. Provide when work is in progress radio or telephone communication, or safe visual and oral communication where this is appropriate and background noise levels permit.
12. Ensure that all electrical tools and equipment are of the appropriate type.
13. Provide appropriate protective clothing.
14. Provide hygiene facilities if appropriate.
15. Where a confined space is such that the number of persons within the space cannot be established by external observations, the Contractor shall maintain a written record of everyone entering and leaving the confined space and shall be accessible at all times to the Project Manager's staff and the emergency services.

The contractor shall not, even in an emergency, enter or allow his workmen to enter any confined space until the requirements of this clause have been implemented.

Add to subclause 19.1 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 and maintain on site during the duration of the Contract, a fully equipped dispensary. This shall be with a qualified Clinical Officer / Nurse who shall offer the necessary medical advice on HIV and related diseases to the Project Manager's and Contractor's Site staff. The Contractor shall allow for this in the rates and be responsible for all site welfare arrangements at his own cost.

119 USE OF EXPLOSIVES

Explosives and Blasting

The removal of hard materials by use of explosives will not be permitted unless specifically allowed for in the contract and then only subject to compliance by the Contractor in all respects with the Explosive Laws of Kenya. Blasting shall only be carried out at such parts of the works for which permission in writing has been given by the Project Manager's Representative and shall be restricted to such hours and conditions as he may prescribe.

The purchase, transport and use of explosives shall be carried out in accordance with the most recent explosive ordinance and rules issued by the Government.

The Contractor shall provide a special proper store for explosives in accordance with local regulations and he shall be responsible for the prevention of any unauthorized issue or improper use of any explosives brought on the works. Storage arrangement and quantities of explosives stored shall be approved by the Project Manager and other Authorities concerned.

The Contractor shall employ men experienced in blasting and these men must be in possession of a current blasting certificate.

The charges shall be properly placed, sized and tamped and where necessary the Contractor shall use heavy mesh blasting nets.

Blasting shall in no way weaken existing structures or foundations or ground adjacent to existing and proposed works. Blasting operations shall be carried out with as little interference as possible to traffic or persons and the Contractor shall take all necessary precautions to prevent loss, injury or accident to persons and property. The Contractor shall be entirely liable for any accident or damage that may result from the use of explosives.

If in the opinion of the Project Manager, blasting would be dangerous to persons or property or to any finished work or is being carried out in a reckless manner, the Project Manager may prohibit any further use of explosives.

Contamination of the Works and the Environment

The Contractor shall at all times take every possible precaution against contamination of the Works. The Contractor shall give strict instructions to all persons employed by him to use the sanitary facilities provided. Throughout the Contract the Site and all permanent and Temporary Works shall be kept in a clean, tidy and sanitary condition.

The Contractor shall at all times take measures to avoid contamination of water courses, drains and the environment by petrol, oil or other harmful materials. The Contractor shall be responsible for making all arrangements for the disposal of water from the testing and sterilizing of pipelines, water retaining structures and treatment works.

Compliance with the National Environmental and Management Act, 1999 (NEMA)

The Contractor shall at all times comply with the requirements of the NEMA Act 1999.

121 DIVERSIONS 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 to the standard set by the operator/agency, or repairing of any damage caused all to the satisfaction of the Project Manager shall be included in the tender rates.
- (b) Subject to the agreement with the Project Manager, 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 of any kind.

In addition, the Contractor shall take the full and entire responsibility for the sufficiency of plant, scaffolding, timbering, machinery, tools or implements and generally for all means used for the fulfilment of the Contract. In the event of any of these means proving insufficient, the Contractor is still fully and entirely responsible for the sufficiency of these means notwithstanding any previous approval or recommendation that may have been given by the Project Manager.

Safety of Adjacent Structures or Works

The Contractor shall at his own expense provide and erect to the approval of the Project Manager such supports as may be required to protect efficiently all structures or works which may be endangered by the execution of the Works and he shall remove such supports on completion of the Works or otherwise take such permanent measures as may be required by the Project Manager to protect the structures or works.

Existing Services and Installations

The Contractor shall take every precaution to ensure that all existing services, pipes, culverts, cables, boundary walls and fences, retaining walls, drainage ditches and the like, within and near the line of excavation, are located, supported and safeguarded from damage. Any damage caused to any such services, pipes, culverts, cables, boundary walls and fences, retaining walls, drainage ditches and the like attributable to the Contractor's operations, his constructional traffic or his negligence shall be made good by or for the Contractor at his own expense to the satisfaction of the Project Manager, owner or responsible authority.

In the event of the owner or responsible authority electing to repair such damage the Contractor shall pay the cost of so doing the work. Should the Contractor fail to pay the cost of the said work within one month of the account being presented, the Employer reserves the right to settle the account and deduct the sum paid by him from monies due or which may become due to the Contractor.

Temporary Removal of Existing Services

If it should become necessary for the proper execution of the work temporarily to remove or divert any existing pipe, sewer, field drain, cable, drainage ditch or other service, the Contractor shall obtain permission from the responsible authority or owner and shall carry out the work at his own expense in a manner and at times to be approved by such authority or owner and shall subsequently reinstate the work to the satisfaction of such authority or owner.

In the event of the owner or responsible authority electing to arrange for the temporary removal of an existing service, the Contractor shall pay the cost of his or their doing the work. Should the Contractor fail to pay the cost of the said work within one month of the account being presented, the Employer reserves the right to settle the account and deduct the sum paid by him from monies due or which may become due to the Contractor.

The Contractor's attention is particularly drawn to the requirement to maintain drainage ditches in order to avoid any interruption of flow of water therein to the satisfaction of the Project Manager, owner or responsible authority and the Contractor shall be deemed to have included in his rates and prices for all temporary works so required.

Permanent Diversion of Existing Services

If in the opinion of the Project Manager and/or of the responsible authority or owner it should become necessary permanently to remove or realign any existing pipe, sewer, field-drain, cable, ditch, or other service, other than allowed for in the Bills of Quantities, the Contractor shall obtain permission, where necessary, from the authority or owner and shall carry out and complete the work to the satisfaction of the Project Manager and such authority or owner. Payment for such additional work will be made in accordance with the Contract, provided always that the necessity for such permanent diversion has not arisen due to the fault of the Contractor. In the event of the owner or responsible authority electing to

arrange for the permanent diversion of an existing service, the permanent diversion of which has become necessary due to the fault of the Contractor, the Contractor shall pay the cost of his or their doing the work.

Should the Contractor fail to pay the cost of the said work within one month of the account being presented, the Employer reserves the right to settle the account and deduct the sum paid by him from monies due or which may become due to the Contractor.

Permanent Support for Existing Services

If in the opinion of the Project Manager and/or the responsible authority or owner it should become necessary to provide permanent support for any existing pipe, sewer, cable, structure or other thing disturbed, exposed or injured during or after the execution of the Works, the Contractor shall carry out promptly such additional works as the Project Manager may require to provide such permanent support. Payment for such additional work will be made in accordance with the Conditions of Contract, provided always that the necessity for such permanent support has not arisen due to the fault of the Contractor.

Authority or Owners May Carry Out Work

Any of the work involving repair, replacement or re-alignment of existing pipes, sewers or other services may be carried out by the responsible authority or owners if they so desire. In such case, the Contractor shall allow them the facilities and assistance they may require and shall bear the full expense of the work except in the case of permanent removal or re-alignment which will be paid for by the Employer, provided that the necessity for such removal or re-alignment has not arisen due to the fault of the Contractor.

Care of Boundary Walls and Fences

The Contractor shall not cut through or remove any section of any boundary wall or fence without the prior approval of the Project Manager who will determine the limits of such cutting or removal.

Approval for the cutting through or removal of boundary walls and fences will normally be limited to those crossing the route of drains and pipelines and the Contractor shall so conduct his operations as to minimize the extent of such cutting through or removal.

The Contractor shall repair and reinstate in a manner similar to the original or by other approved means any wall or fence which he may have cut through or removed with or without the approval of the Project Manager or damaged during his operations and all such repairs and reinstatement shall be the Contractor's sole liability and shall be carried out to the satisfaction of the Project Manager and the responsible authority. The Contractor shall at his own expense provide temporary fencing and security measures at

Work through Private and Public Property

Where Works are to be executed in private or public property, the Employer will be responsible for negotiating and obtaining rights of way and the serving of all notices as may be required upon the owners and/or occupiers of the land and it shall be the obligation of the Contractor to keep the Employer and the Project Manager fully informed concerning the rate of progress and of his intention to enter and

begin work. The Contractor shall give the Employer 28 days' notice of his intention to execute Works in each section of private or public property.

Access to Works

All necessary facilities will be given for the access of the Contractor's employees to the Works and the Contractor shall be responsible for seeing that such employees obey all regulations in regard to the conditions of access to the Works.

122 CLOSURE OF ROADS

The Contractor shall be responsible for providing; maintaining and removing, at his own cost, adequate diversions to existing roads, and access tracks interfered with during the execution of the Works, together with any additional policing and signposting, and the erection of barriers as Engineer's approved Traffic Management Plan. The Contractor shall be responsible for advising the appropriate authorities and where necessary obtaining approval prior to interfering with any road. The production of Traffic Management Plan shall be a participatory activity involving the affected community, County Government, Traffic Police Department and RE's office. Such plans shall have full content of all relevant traffic safety warnings and controls and the Contractor indemnifies the Employer from any claim arising from any road traffic related accident on the affected roads within works.

Traffic Restrictions

The Contractor shall not run tracked vehicles or tracked Equipment on any public or private road without the written approval of the Project Manager and of the responsible authority or owner, and subject to such conditions as each may reasonably require.

The Contractor shall observe all weight and dimensions restrictions that apply to roads and tracks in Kenya and he shall comply with all reasonable restrictions, which may from time to time be imposed by the Project Manager, Employer, Police, responsible authority or owner. Where damage to roads and tracks are caused by the Contractor this shall be repaired at the Contractor's expense. In particular the Contractor shall fill potholes in roads with road stone when these are deepened by his Equipment.

The Project Manager shall have the power to restrict the Contractor's use of any roads, or tracks in terms of direction of traffic, speed of traffic, numbers of vehicles or their axle loading in order to preserve such roads or to make them safe for use by the general public.

Where other contractors require the use of these roads or tracks, the Project Manager may prescribe times of usage, or impose some other form of control, which shall be established and operated by the Contractor, including the supply of traffic lights, flagmen, traffic cones or drums, and other controls.

Flagging, Lighting, Watching and Traffic Control

The Contractor shall be responsible for watching and lighting the Works and for the flagging and control of traffic and he shall comply with the requirements of the Employer and Police and the relevant authority in these matters.

Access Roads

All surface roads and tracks and other surfaced areas used by the Contractor for access shall be continually maintained by him in good condition. Immediately after ceasing to use any road, track or other surfaced area the Contractor shall restore it to the satisfaction of the Project Manager and the responsible authority or owner. The provision of this Clause shall apply also to the shoulders and verges of any existing sealed road used by the Contractor and affected by his operations.

123 LIAISON WITH GOVERNMENT AND POLICE OFFICIALS

The Contractor shall keep in close touch with the Police and the other National and County 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 whose budget shall be included in the tender rates.

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 Project Manager but the Contractor will make all necessary arrangements with the property owners concerned and pay all charges arising therefrom. 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.

Notwithstanding Clause 120 of the Standard Specifications, the Contractor shall be required to appoint a competent surveyor who will liaise with the Project Manager on matters related to the demarcation of the existing road reserve, site measurements, removal and reinstatement of existing services. The contractor shall be paid under relevant bill items in the contract.

128 STORAGE OF MATERIALS

All materials shall be stored on Site in a manner approved by the Project Manager 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 Project Manager the Contractor shall submit certificates of test from the suppliers of materials and goods required in connection with the works as the Project Manager 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.

131 MATERIALS AND MANUFACTURED ARTICLES

All workmanship shall be of the best quality appropriate to each category of work. Except where otherwise stated or approved by the Project Manager, all materials used in the Works shall be of the best quality of their respective kinds as specified or described in the Specification, Drawings and Bills of Quantities and shall comply wherever possible with the current issue of the appropriate standard

published by the British Standards Institution, or other equivalent national standard proposed by the Contractor and approved by the Project Manager.

The Contractor shall use locally produced materials in preference to imported materials provided that they comply with the Specification and are available in sufficient and timely quantities.

Level Datum and Dimensions

All levels shall be referred to the National Datum and the Contractor shall obtain in writing from the Project Manager the location and value of the permanent benchmarks to be used to control the works. Before the commencement of construction work the Contractor shall establish at each site in a position to the approval of the Project Manager, a steel datum peg that shall be securely concreted in. The level of this peg shall be established and agreed with the Project Manager and all levels used in the construction of the Works shall be referred to this established datum. The correctness of this established datum shall be checked at regular intervals during the construction period and agreed with the Project Manager.

The levels of the ground and the levels and dimensions of existing features shown on the Drawings are believed, but are not guaranteed, to be correct. Wherever dimensions or levels are marked on the Drawings such dimensions or levels shall take precedence over dimensions scaled from the Drawings. Where no dimensions or levels are shown on the Drawings, instructions shall be obtained from the Project Manager.

In the event of discrepancies between the Drawings and the Specification, the Drawings shall take precedence over the Specification.

Bench Marks

The Contractor shall locate and where necessary re-establish the permanent Bench Marks shown on the Drawings and install additional permanent Bench Marks where directed by the Project Manager to facilitate the setting out and checking of the Works. Prior to commencing the Works, the Contractor shall undertake a survey, based on the same local datum as used in the original topographic survey, to confirm the elevation and horizontal position of all permanent Bench Marks and shall submit a schedule of the said co-ordinates to the Project Manager.

The Contractor shall be responsible for maintaining and regularly checking the elevation and position of all permanent Bench Marks for the duration of the Contract. Where it is found that an existing benchmark is interfering with the progress of the works, the Contractor may seek the Project Manager's approval to re-locate the Bench Mark. The Contractor shall submit to the Project Manager in writing the co-ordinates of the new benchmark.

Levels

The Contractor shall establish, construct and protect benchmarks as necessary during the period of construction and such benchmarks shall be checked periodically and whenever required. Benchmarks will be marked on the wall of a permanent structure by chiselling a line into the wall or by concrete iron pin. Painting around it as detailed by the Project Manager will then identify this mark or the pin. The Project Manager will approve the position of any such benchmark before it is established.

The levels of the benchmarks will be determined on site and approved as necessary by the Project Manager. The above levels will all be based on the Datum. The Contractor shall seek approval from the owners prior to the establishment of any benchmarks on private properties.

Materials on and Under the Site

All soil, gravel, stone, timber, or other materials obtained in the excavations, clearing of the Site of the Works and soil stripping, must not be removed from the Site without the consent of the Project Manager. The Contractor however, may use for the construction of the Works any of the materials excavated under the Contract, which the Project Manager may determine to be fit for such use and shall use such materials if directed by the Project Manager.

Restoration of Drains, Streams, Canals, etc.

Subject to any requirement of the Works whereby a permanent change is to be effected, all drains, canals, pipes, channels, water-courses or streams temporarily cut through or disturbed by the excavation of the Works are to be restored so that the water flowing in them may continue to flow in as full and free manner as it did before the disturbance.

132 OFFICE AND LABORATORY FOR THE PROJECT MANAGER WITH LABORATORY AND SURVEY EQUIPMENT AND FURNITURE

General

The Contractor shall meet all the requirements for the Resident Engineer and his staff as specified.

The Contractor is required to rent and furnish the Resident Engineer's offices, throughout the duration of the Contract. Within 4 weeks of the commencement of work on Site by the Contractor, and throughout the execution of the Works, including the Defects Correction Period. The office location shall be to approval by the Project Manager.

132.1 Resident Engineer's Office

The Contractor shall submit to the Project Manager for approval details of his proposals regarding the office furniture etc. Such approval request shall be provided before purchase.

The contractor shall provide or rent and maintain for the duration of the Contract, a furnished and equipped main office of plan area not smaller than 155 metre squares but not more than 200metre square which is equivalent of the standard Resident Engineer's office. This office shall be of weather proof construction, provided with mosquito proof and burglar proof windows and lockable doors and suitably insulated against heat and cold, all to the satisfaction of the Project Manager.

A telephone shall also be provided for the Resident Engineer's office for his exclusive use. The Contractor shall be responsible for paying all charges and fees related to the use of the telephone.

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 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.

LIST OF FURNITURE FOR ENGINEER'S OFFICE

ITEM	DESCRIPTION	No.
1	Executive office desk	4
2	Executive office chair	12
3	Conference table 10-seater	1
4	Standard office desk 3x2 lockable drawers	2
5	Standard office chairs	3
6	Office desks 3x1 lockable drawers	3
7	Office chairs	10
8	Office desks 3x1 drawers	4
10	Filing cabinets 6 drawers	8
11	Filing cabinets 4 drawers	4
12	Curtains	As applicable

All furniture and equipment bought under the Contract shall revert to the Employer. Payment for provision of the office including the furniture shall be paid against relevant item on Bill No. 1; whereby, the office will be paid by the contractor monthly by remitting an equivalent amount of rent including office consumables. Office furniture and equipment will be paid by the contractor immediately the office is secured.

In addition, the contractor is required to provide the following.

Description	Unit	Quantity
1. Kitchen Facilities; 4 burner gas cooker, cutlery & other kitchen utensils	No.	2.0
2. Desk top computer as specified by the RE including all installations. Specifications: in 8GB RAM, min 1TB ROM (HDD), minimum 2.7GHz processor speed. (All-In-One desktop)	No	4.0
3. Laptop computer as specified. Specifications: RAM 4-8 GB, Solid State Drive (SSD) ROM, Minimum Processor speed 2.4 GHz, Core i7CPU, windows 10 operating system-64bit	No	2.0

Description	Unit	Quantity
4. Electronic scientific calculator, as will be specified by the RE specifications: Two-way power, Full Dot Display, equation calculation, fraction calculation, complex number calculation, Base-n calculation, Vector calculations, metric conversions, scientific constants, logarithm log	No.	10.0
5. Colour LaserJet Printer type for A3. Functions: print, scan, copy, fax Printing technology: LASER. Printing speed: 56-60 ppm. Maximum paper size: A3. Output colour: colour Photocopier. Number of trays:2 Paper input capacity: minimum 1200 sheets	No.	1.0
6. Stapling machine size 66 or similar with 5000 staples with the following specifications:250 sheets stapling capacity, 23/6,23/24 staple use, adjustable paper guide, rubber base, rear loading and rotating anvil for different staple sizes	No.	5.0
7. Stapling machine size 50 or similar with 5000 staples with the following specifications: 140 sheets stapling capacity, rotating anvil for different staple sizes, rubber base, adjustable paper guide, loading capacity of 100 staples.	No.	1.0
8. Aluminium die casted Heavy-duty paper punch with handle lock for storage, metal guide bar & removable chip tray. Punching diameter 6.0mm.63 sheets Stapling capacity	No.	5.0
9. Ordinary metal paper punch with high strength drill with guide bar, removable tray locking handle for safety storage. Hole diameter 5.5mm	No.	1.0
10. single filing trays made of heavy ABS plastic material	No.	5.0
11. First aid kit with the following description: medium kit covering up to 15 staff, mountable, portable and with the following contents; CPR mouthpiece, thermometer piece, metal scissors, safety pins, metal forceps piece, alcohol swabs, Band-Aid piece, Sterile Cotton Balls, Sterile Eye Pads, Hypoallergenic First Aid Tape, Sterile First Aid Dressing piece, Disposal Bag piece, Pack of Tissues, Note pad piece, Pencil piece, Basic First Aid Instruction Sheet	No.	5.0
12. Fire extinguisher with the following description: Hose drum made of MS, fitted with 25mm x 30-meter braided hose pipe with shut of nozzle and clamp. Test pressure 10kg/cm ² of hose pipe. Control nozzle at the end attached to control flow and direction	No.	5.0
13. Refrigerator min. capacity 0.285m ³ high quality and energy efficient refrigerator with wire tray shelf, Can holder, Direct cool.	No.	1.0
14. Rectangular Table - 0.8m ² surface area, made of solid hardwood and veneer construction with four wooden legs	No.	5.0
15. Wooden Cupboard, 0.15m ³ , with 2 cabinets on the lower level and 3 shelves on the upper level, lockable and with swinging wooden doors	No.	5.0

134 RESIDENT ENGINEER'S LABORATORY AND SURVEY EQUIPMENT

The contractor may be instructed by the Resident Engineer under the said Clause to make payments of receipted accounts for carrying out tests in the independent and recognized laboratories and for purchase of survey equipment. The Contractor will be paid under the relevant item as listed in the Bills of Quantities. Survey equipment will be purchased based on the schedule provided below and will be quoted by the contractor as an item. Payment for the laboratory testing will be a PC Sum and indicated in bill 1.

Survey equipment would include:

Item	Description	Unit	Quantity
1.	Engineer's automatic level Wild NAK 2 or similar	no.	2
2.	Total station reading 1'' with tripod and setting on pole with Data logger and survey software to match Total Station Data logger. Include data transfer program, and plotting modes, setting out calculations and Cogo facilities	no.	1
3.	Levelling staff 4m. with levelling bubble Wild GNLE or similar	no.	4
4.	50m. steel band measuring tape	no.	2
5.	30m. linen measuring tape	no.	2
6.	3m. aluminium straight edge	no.	2
7.	1m. stainless steel straight edge	1no	1
8.	100m. steel band tape	no.	2
9.	Survey umbrella	no.	2
10.	2m ranging rod	no.	10
11.	Protractor 360	no.	2
12.	Erasing shield	no.	4
13.	Marker pens	no.	30

N/B –The contractor has obligation to provide laboratory services through establishment on site or contracting a service provider for the same. At no time will the works experience delay on account of laboratory activities. The survey equipment must be made available on site.

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 estimate of these accounts is considered to be spread in the rates inserted by the contractor.

The Contractor shall provide, install and maintain in a good state of repair, such laboratory, survey and other equipment as listed for the duration of the contract.

Such equipment shall be of approved manufacture, and shall be made available to the Project Manager for the Project Manager's exclusive use throughout the Contract, not later than three (3) weeks after the Project Manager'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 Project Manager 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 considered to be spread in the rates 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 Project Manager's staff using alternative means of communication, including delays in supervision and approval of Works by the Project Manager.

139 MISCELLANEOUS ACCOUNTS

The Contractor maybe instructed by the Project Manager to make payments of general miscellaneous accounts for such items as stationary, stores and equipment and miscellaneous supervision personnel and claims or the Project Manager may direct the Contractor to purchase or pay for the above. The Contractor will, on provision of receipts, be paid under Bill No. 1; Preliminaries and General. This bill item is a PC Sum.

140 PAYMENT OF OVERTIME FOR ENGINEER'S JUNIOR STAFF

Delete in the last line the words "shall be at the Contractor's own expense" and substitute with "including the specified percentage for administrative overheads shall be paid by the Contractor to the Project Manager".

Add the following:

- (i) If the Contractor wishes to execute permanent work outside the Project Manager's normal working hours, as stated in Clause 108 of this Specification, then the payment for the overtime for Engineer's support staff shall be reimbursed in full by the Contractor, at the rate specified by the Project Manager for his staff, to the Project Manager plus a 20 percent additional amount to cover for the Project Manager's administrative overheads.
- (ii) In addition to the support staff provided by the Contractor, the Project Manager may if needed, appoint from the following list, staff who shall also constitute part of the Project Manager's junior staff:

Designation	Number
Works Inspectors	2

Trainee Engineer	1
Secretary	1
Assistant Surveyors	1
Draughtsman/ CAD Operator	1
Lab Technicians	1
Lab Attendants	2
Chainmen	2
Others (Office Attendants, Cleaner and Labourers	4

141 MEASUREMENT AND PAYMENT

Delete Clause 141(a) entirely and substituted with:

“(a) No Preliminary Item has been allowed for under this Contract for mobilisation, insurances, guarantees, fees and associated cost. The Contractor is deemed to have included/allowed these costs in his rates when pricing the Bill of Quantities.

143 ENVIRONMENTAL PROTECTION

The Contractor shall ensure so far as is reasonably practicable and to the satisfaction of the Project Manager; 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 the construction.

- (a) After extraction of materials, all borrows pits shall be backfilled to the satisfaction of the Project Manager. In particular borrow pits near the project road shall be backfilled in such a way that no water collects in them.
- (b) Spilling of bitumen fuels oils and other pollutants shall be cleared up

144. SKILLS TRANSFER (ON THE JOB TRAINING)

As part of the Capacity building efforts to transfer skills and knowledge in the construction of infrastructure services within Elgeyo Marakwet County; local expertise within the project area will be engaged in part of training during the construction period to enhance their hands-on experience in various components e.g., Sanitation, High mast lighting, storm water drainage and roads. This will add value to the project beyond its immediate results in the terms of knowledge transfer through learning by doing. The following will form part of the expertise to be engaged:

- (i) 2No. Engineers
- (ii) 1No. Administrator
- (iii) 1No. Health and Safety Expert
- (iv) 1No. Environmentalist
- (v) 1No. Technician-Ordinary Diploma Holder
- (vi) 2No. Community Liaison
- (vii) 1No. Surveyor

SECTION 2 – MATERIALS AND TESTING OF MATERIALS

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

202 TESTING BY THE CONTRACTOR

The Contractor shall together with his Programme for Execution of Works submitted within 28 days after the order to commence works, a Quality Management System conforming to international standards, including the Work Method Statement and Quality Audit for major items of work.

The provision of the Project Manager’s laboratory and testing equipment or provided alternatives, as outlined 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 and Special Specifications.

The onus rests with the Contractor to produce work which confirms in quality and accuracy of detail to the requirements of the Specifications and drawings, and the Contractor must, at his own expense institute a quality control system to always ensure adequate supervision and positive control of the Works, and the Contractor must provide chainmen and labourers for the Project Manager to carry out checks on the Works.

The Contractor shall make his laboratory, or approve alternate thereof, accessible to the Project Manager’s Representative for cross checking the test results and inspection during material testing in the laboratory.

205 SIEVES

A standard set of sieves for general use shall consist of the following sieve sizes mm: 100-63-50-37.5-28-20-14-10-6.3-5-4-2-1-0.6-0.5-0.425-0.300-0.150-0.075 mm. The sieves from 0.425 to 0.075 mm shall be suited for wet sieving.

224 TRIALS TO CONFIRM COMPLIANCE WITH SPECIFICATIONS SIEVES

(b) Site Trials

The Contractor shall allow in his programme of works described in Clause 104 of these specifications, for constructing trial sections and carrying out tests upon them as directed by the Project Manager. 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 Project Manager. 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 equipment 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 Project Manager. 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 Project Manager 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. 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. A standard

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 Project Manager 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.

Commencement of the works shall not be permitted until this basic survey data has been provided and approved by the Project Manager for at least 200m 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 centreline 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 Project Manager.

Prior to commencement of earthworks or subgrade works, the Contractor shall take a topographical survey which shall identify all the break lines i.e., centre line, edges, drains (top and bottom) etc using a total station to enable establishment a digital terrain and submit the same to Engineer for agreement. This digital terrain model shall then be used as basis of generating cross sections and measurement for all subsequent layers, unless otherwise stated.

SECTION 4 – SITE CLEARANCE AND TOP SOIL STRIPPING

401 SITE CLEARANCE

Site Clearance shall be carried out as directed by the Project Manager following a joint condition survey.

402 REMOVAL OF TOPSOIL

Topsoil shall include up to 200mm depth of any unsuitable material encountered in existing or newly constructed roads, drains, drainage channels, and accesses.

403 REMOVAL OF STRUCTURES, FENCES AND OBSTRUCTIONS

Notwithstanding the provisions of clause 405(c) of the standard specifications, the payment for demolition shall be made under bill No. 4. However, when instructed by the Project Manager, the Contractor shall demolish or remove any structure not covered above and payment for this shall be made on day works basis.

The Contractor may be instructed to make payment for relocation of water and/or sewer lines, internet cables, electricity poles and lines or any other services to be relocated from the road corridor or waterline way leaves. The payment shall be paid on a prime cost basis from the provision amount provided.

SECTION 5 – EARTHWORKS

504 PREPARATIONS PRIOR TO FORMING EMBANKMENTS

Where benching is required, 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 500mm perpendicular to the direction of the travel and 150mm vertical unless otherwise instructed by the Project Manager.

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

505 CONSTRUCTIONS OF EMBANKMENTS

Only material approved by the Project Manager shall be used for fill in embankments.

Material with high swelling characteristics or high organic matter content and any other undesirable material shall not be used, unless specifically directed by the Project Manager. Unsuitable material shall include:

- (i) All material containing more than 5% by weight or organic matter (such as topsoil, material from swamps, mud, logs, stumps and other perishable material)
- (ii) All material with a swell of more than 3% (such as black cotton soil)
- (iii) All clay of plasticity index exceeding 50.
- (iv) All material having moisture content greater than 105% of optimum moisture content (Standard Compaction)

Subgrade: Shall mean upper 300mm of earthworks either insitu or in fill and subgrade shall be provided for as part of earthworks operation and payment shall be made as “improved subgrade”. The material for subgrade shall have a CBR of not less than 8% measured after a 4-day soak in a laboratory mix compacted to a dry density of 100% MDD (AASHTO T99), a swell of less than 1% and dry density less than 1400Kg/m³.

508 COMPACTION OF EARTHWORKS

At pipe culverts, all fill above ground level around the culverts shall be compacted to density of 100% MDD (AASHTO T.99) 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, all fill above ground level up to the underside of the subgrade shall be compacted to density of 105% MDD (AASHTO T.99). 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 Project Manager.

Where improved sub-grade material shall be required, 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.

511 BORROW PITS

The first part of the Standard Specification is amended as follows: -

Fill material which is required in addition to that provided by excavation shall be obtained provided by the Contractor but to the approval of the Project Manager and the Contractor

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 (100% MDD AASHTO T.99).

No separate payment shall be made for overhaul of earthwork volumes, and the contractor shall be deemed to have allowed elsewhere in his rates for the cost of complying with the requirements of this specification.

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

601 GENERALS

Notwithstanding any indications to the contrary in the Standard specification the Project Manager 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 subjects to the approval of the Project Manager.

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.

602 THE MATERIALS REPORT

The information given on material is for general guidance to the bidders and the Contractor fully responsible for material sourcing and handling until final finish. Bidders are advised to conduct their own investigation as the information contained therein is neither guaranteed nor warranted.

SECTION 7 – EXCAVATION AND FILLING FOR STRUCTURES

703 EXCAVATIONS OF FOUNDATIONS FOR STRUCTURES

Unless otherwise instructed by the Project Manager, 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.99) immediately before structures are constructed.

Paragraph 4, last line: - Replace "95%" with "100%".

707 BACKFILLING FOR STRUCTURES

Unless otherwise instructed by the Project Manager, all backfilling material shall be compacted to a minimum of 100% MDD (AASHTO T.99).

709 EXCAVATIONS FOR RIVER TRAINING AND NEW WATER COURSES

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 un-weathered rock approved by the Project Manager.

The stone as dressed shall be roughly cubical in shape with minimum dimensions of 150 x 150mm for normal thickness of stone pitching.

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.

In areas where stone pitching has been damaged, the Contractor shall identify such areas and notify the Project Manager 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.

The Works shall involve removal of the damaged stone pitching and reconstruction of the said areas in accordance with Clause 710 of the Standard Specifications by use of the sound salvaged material together with any necessary additional material where all such materials shall comply with Section 7 of the Standard Specifications.

Contrary to clause 713 of the standard specifications, the rates inserted for stone pitching shall allow for grouting.

711 GABIONS

Where instructed by the Project Manager 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 Project Manager 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 Project Manager, 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 the nearest County Government Road works yard.

712 RIP-RAP PROTECTION WORK

Quarry waste or similar approved material shall be used to backfill scoured and eroded side, outfall and cut-off drains. 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 Project Manager.

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 crammed with insitu material. The in-situ material immediately behind the pitching shall be compacted to minimum density of 100% MDD compaction (AASHTO T.99)

714 BACKFILL BELOW STRUCTURES

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

801 SCOPE OF SECTION

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

804 EXCAVATION FOR CULVERTS AND DRAINAGE WORKS

In the Standard Specifications, make the following amendments: -

- (a) In paragraph 6, line 3, and in paragraph 7, line 5 and in paragraph 11, line 6, delete "95%" and insert "100%".
- (b) Removal of Existing Pipe Culverts

Where instructed by the Project Manager, the Contractor shall excavate and remove all existing blocked or collapsed culvert pipes of any diameter including concrete surround, bedding, inlet and outlet structure.

The void left after removal of culvert pipes shall be widened as necessary to accommodate new concrete bedding, pipe and haunch.

The payment of this work shall be per linear metre of pipes removed, and the number of inlet/outlet structure removed

- (c) Removal of other Existing Drainage Structures

When instructed by the Project Manager, the Contractor shall demolish or remove any other structure and payment for this shall be made on day work basis.

- (d) 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 Project Manager.

805 EXCAVATIONS IN HARD MATERIAL

In the Standard Specifications, Sub-clauses 805(a) and 805 (b) delete "95%" and insert "100%".

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

In sub-clause 809(c), paragraph 2, line 4, between the words "compacted" and "and shaped" insert the words "to 100% MDD (AASHTO T.99)".

Hard material is material that 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 0.2m³ occurring in soft material shall be classified as hard material.

809 BEDDING AND LAYING OF PIPE CULVERTS

Concrete pipes shall be laid on a 150mm thick concrete bed of class 15/20 and the pipes shall be bedded on a 1:3 cement: sand mortar at least 50mm thick, 150mm wide and extending the full length of the barrel.

The rates inserted shall allow for compaction of the bottom of excavation to 100% MDD (AASHTO T.99).

810 JOINTING CONCRETE PIPES

The concrete pipes for the culverts shall have ogee joints and will be joined by 1:2 (cement: sand mortar) and provided with fillets on the outside as described in clause 810 of the Standard Specification.

812 BACKFILLING OVER PIPE CULVERTS

In the Standard Specifications, clause 812

- a) 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.

814 SUBSOIL DRAINS

In the event of excavation for repairs exposing local seepage, springs or unacceptably high-water table, the Project Manager 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 Project Manager, 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 reinstated with compacted stabilised gravel and surfaced with hot asphalt or a surface dressing as instructed by the Project Manager.

815 INVERT BLOCK DRAINS AND HALF ROUND CHANNELS

Invert Block Drains and Half Round Channels are to be constructed as shown in the drawings provided in accordance with the Standard Specifications where, directed by the Project Manager.

SECTION 9 – PASSAGE OF TRAFFIC

901 SCOPE OF THE SECTION

The Contractor shall so arrange his work to ensure the safe passage of the Traffic at all times and if necessary, construct and maintain an adequate diversion for traffic complete with all the necessary road traffic signs.

The contractor shall provide to the satisfaction of the Project Manager adequate warning signs, temporary restriction signs, advance warning signs, barriers, temporary bumps and any other device and personnel equipped with two-way radios to ensure the safe passage of traffic through the works.

When carrying out the Works the Contractor shall have full regard for the safety of all road users.

The Contractor shall also provide sign posts and maintain to the satisfaction of the Project Manager all deviations necessary to complete the works. 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 as 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.

903 MAINTENANCE OF EXISTING ROADS

The Contractor shall maintain the existing roads covered in the project using compacted natural gravel of sub-base quality in accordance with the provisions in Clause 903 of the Standard Specifications.

904 CONSTRUCTION OF DEVIATIONS

(a) General

In addition to requirement of this clause, the maximum length of deviation road shall be restricted to 1 Kms at any given time unless otherwise instructed. The Contractor shall construct and complete deviations to the satisfaction of the Project Manager 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 1 Km of the deviation road only when 80% of the permanent work has been completed on first one. The sequencing of deviation road has been shown on the drawing.

Where the old road exists near the main road, Contractor shall use this road as deviation road.

(b) Geometry

The carriageway width of the deviations shall not be less than 6m 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 class of material shall be class 2 with a maximum plasticity index of 15%. 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 to 1.4 litres/day in regular interval to minimise the effects of dust. Latest sprinkling time shall be one hour before the sunset. Payment for construction of gravel roads will be per cubic metre of the gravel measured.

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 cost of doing so shall be deemed to have been included elsewhere in his rates and no separate payment shall be made for this. To this end, the contractor shall be deemed to have inspected the site for himself and noted any locations where this may apply.

Any damage caused by passing traffic through the works shall be made good at the contractor's own cost.

907 SIGNS, BARRIERS AND LIGHTS

Contractor shall provide signs, barriers and lights as shown in the drawing in Book of Drawings at the locations where the traffic is being carried off the existing road to the deviation and back again to existing road. The Contractor shall provide ramps and carry out any other measures as instructed by the Project Manager to safely carry traffic from the road to deviation.

Contrary to what has been specified in this clause the road signs provided shall be fully reflectorized and in conformity with clause 9.1 of the "Manual for Traffic Signs in Kenya Part II

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.

912 MEASUREMENT AND PAYMENT

Delete Clause 912 of the Standard Specification and replace with the following: -

The unit of measurement shall be the kilometre, measured along the centre lines of the project road centre line and shall include for the provision, operation, maintenance and removal of all approved temporary diversions, existing roads used as diversions, and road constructed in half-width.

The tendered rate shall include full compensation for accommodating traffic and maintaining diversions, including roads constructed in half-widths and existing road used as diversions during construction and maintenance. The tendered rate shall also include full compensation for the provision of communications equipment, temporary traffic barriers and fencing required for regulating the traffic, arranging for the moving of services solving traffic problems complying with the legal requirements of

all authorities concerned, for providing temporary access to private property, and for the provision and maintenance of temporary drainage. The tendered rate shall also include full compensation for the specified general requirements and all incidental items of cost which are required under the provisions of section.

Item : Accommodating traffic, construction and maintaining diversions

Unit : Kilometre

Payment will be made in two equal instalments in respect of each section. The first instalment will be made when suitable diversions have been approved for use or when traffic is accommodated adjacent to half-width construction. The second instalment will become due when the traffic can be accommodated on the new road, all diversions or single lane workings have been obliterated or removed and all general conditions of the Contract have been complied with, all to the satisfaction of the Project Manager.

SECTION 12 – NATURAL MATERIAL SUBBASE AND BASE**1201 GENERAL**

This section includes provision of sub-base layer for the following: -

- a) Sub-base layer for carriageway, shoulder, junctions and bus bays using gravel material or other suitable material of sub-base quality;
- b) Thickness of the layer will be as shown on the Drawings and as provide in these Specifications

SECTION 14 – CEMENT TREATED MATERIALS

1403 MATERIAL REQUIREMENTS

Cement and lime

(i) Cement

Cement shall be, Portland Cement CEM 1 42.5N complying with KS EAS 18-1: 2001 - Part 1, KS 1725: 2001 manufacturing standards.

(ii) Lime

Replace “Lime shall be hydrated calcium lime or quicklime...” with “Lime shall be hydrated calcium lime and “

1409 PROTECTION AND CURING

This shall be in accordance with the provisions of Clause 1409(i) of the Standard Specification but provision shall be made to wet the surface from time to time as directed by the Project Manager.

1412 MEASUREMENT AND PAYMENT

a) Stabilizer

The provision of the stabilizer shall be measured by the tonne calculated as the specific weight of stabilizer added to the material.

b) 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 AND SURFACE DRESSING

1501A GENERAL

The surfacing is an asphaltic concrete as a wearing course. Details of the mix and application will be as approved/directed by the Project Manager.

PART B - PRIME COAT

1501B MATERIALS FOR PRIME COAT AND TACK COAT.

The surface of base layer shall be primed with a prime coat binder shall be a medium-curing cutback MC 30 unless otherwise directed by the Project Manager.

The tack coat to be applied prior to laying bituminous mixes shall consist of bitumen emulsion K1-60 unless otherwise directed by the Project Manager.

1504B SPRAYING OF PRIME COAT AND TACK COAT

The rate of spray of bituminous prime coat refers to the gross volume of the cut-back bitumen, that is to say the volume of the bitumen sprayed per m². It will generally be between 0.8-1.2 litres/square metre.

The rate of spray of the tack coat binder shall be as instructed by the Project Manager and shall generally be within the range 0.3-0.8 litres/square metre.

1502C MATERIALS FOR SURFACE DRESSING

a) Binder

The bituminous binder shall be 80/100 penetration grade bitumen and conforming to clause 211 of the Standard Specification.

b) Chippings

Chippings shall be of Class 3 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 1501C of the Standard Specification with regard to cleanliness and the dust content of chippings for surface dressing. Should it prove necessary in the Resident Engineer' 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 Resident Engineer or his representatives, lay trial sections of seal at various

rates of spray and spread as directed by the Resident 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 advise the Resident 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 Resident 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 Resident 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 cut-back added.

1505C PRE-COATED 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 MC-30 cut-back bitumen.

The amount of bituminous binder used to pre-coat chippings will be as instructed by the Resident 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 Resident Engineer. After completion of trial mixes, the Resident 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 Resident Engineer will issue revised instruction.

SECTION 16 – BITUMINOUS MIX BASES, BINDER COURSES AND WEARING COURSES

This section covers different types of bituminous mixes for base and surfacing (wearing and binder courses) and is divided into the following parts: -

Part A General

Part B Asphaltic Concrete for carriageway

PART A – GENERAL

1603A CONSTRUCTION PLANT

(a) General

The Contractor shall submit to the Resident Engineer in accordance with Section 1 of its Specification, full details of the construction plant he proposes to use and the procedures he proposes to adopt for carrying out the permanent Works.

The Resident Engineer shall have access at all times to construction plant for the purposes of inspection. The Contractor shall carry out regular calibration checks in the presence of the Resident Engineer and shall correct forthwith any faults which are found.

All construction plant used in the mixing, laying and compacting of bituminous mixes shall be of adequate rated capacity, in good working condition, and shall be acceptable to the Resident Engineer. Obsolete or worn-out plant will not be allowed on the work.

(d) Compaction Plant

The Contractor shall provide sufficient rollers of adequate size and weight to achieve the specified compaction. Prior to commencing the laying of bituminous mixes in the permanent Works the Contractor shall carry out site trials in accordance with Section 2 of this Specification to demonstrate the adequacy of his plant and to determine the optimum method of use and sequence of operation of the rollers.

It is important to achieve as high a density as possible at the time of construction and it is expected that vibrating rollers will be required to produce the best results. However, it is essential that thorough pre-construction trials are carried out to ensure that: -

- (a) The roller is set up to have the optimum amplitude and frequency of vibration for the particular material being laid
- (b) That the roller does not cause breakdown of the aggregate particles.
- (c) That the optimum compaction temperatures are established which allow compaction without causing ripple effects or other distortions of the surfacing.

1604A PREPARATION OF SURFACE

A tack coat shall be applied prior to laying the bituminous mix or between layers of the bituminous mix, in accordance with Section 15 of the Specifications.

PART B - ASPHALT CONCRETE FOR SURFACING

1601B DEFINITION

The Asphalt Concrete shall be 0/14mm binder course Type II.

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.

SECTION 17 - CONCRETE WORKS

1703 (C) FORMWORK FOR CULVERT WALLS AND 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 Project Manager 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 Project Manager.

(b) Construction Method

(i) Formworks

Formworks shall be designed to carry the maximum loads that 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 Project Manager before the concrete is placed.

If requested, the contractor shall submit to the Project Manager 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 thoroughly 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.

(ii) 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 Project Manager for approval, but in no case shall the contractor be relieved of his responsibility for the results obtained by use of these plans, etc.

(iii) **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/mm².

(c) **Measurement and Payment**

Payment shall be made according to Section 8 of the Standard Specification of Roads and Bridges Construction.

1703(D) CONCRETE WORKS (CASS 25/20) OF CULVERT WALLS AND SLABS

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 walls and slabs.

(a) **Concrete Materials**

(i) **Cement:**

Cement shall be of 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 Project Manager. All cement is subject to the Project Manager's approval, however, approval of cement by the Project Manager 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 Project Manager 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.

(b) **Aggregates**

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. The aggregates shall conform to the requirements of sections 1703 (c) and (d) while the grading of the same shall be as follows:

(i) **Grading of Fine Aggregates**

Sieve Size	Percentage by Weight Passing
10 mm	100
5 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

(ii) **Grading of Coarse Aggregates**

Amounts finer than each standard sieve percentage by weight								
Size	40	30	25	20	15	10	5	2.5
%	100	-	-	90-100	-	30-69	0-10	-

Other requirements for aggregates are as follows:

(iii) 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

(iv) 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%

(v) Water

All sources of water to be used with cement shall be approved by the Project Manager. Water shall be free from injurious quantities of oil, alkali, vegetable matter and salt as determined by the Project Manager.

(vi) 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 Project Manager the specific information or guarantees prepared by the admixture supplier.

The contractor shall not exclude the admixture from concrete proportions.

(a) Concrete class 25/20

Concrete class 25/20 shall be used for culvert walls and slabs. The requirements of Concrete class 25/20 are provided as follows unless otherwise the Project Manager 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

(d) Proportioning Concrete

The Contractor shall consult with the Project Manager 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 Project Manager 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 Project Manager.

(e) Concrete Work

(i) Batching

Batching shall be done by weight with accuracy of:

Cement : ½ percent

Aggregate : ½ percent

Water and Admixture: 1 percent.

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 Project Manager and adjusted when necessary.

(ii) Mixing and delivery

Slump of mixed concrete shall be checked and approved at an accuracy of +25mm against designated slump in these specifications.

(iii) Concrete in hot weather

No concrete shall be placed when the ambient air temperature is expected to exceed thirty three degrees Celsius (33°C) 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 supplied; such night work is subject to approval by the Project Manager.

(v) Placing

In preparation of the placing of concrete, the interior space of forms shall be cleaned and approved by the Project Manager 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 Project Manager.

The Contractor shall provide a sufficient number of vibrators to properly compact each batch immediately after it is placed in the forms.

(f) **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 Project Manager.

SECTION 20 – ROAD FURNITURE

2004 PERMANENT ROAD SIGNS

All Permanent Road Signs shall be provided as directed by the Project Manager and in compliance with the requirements of the "Manual for Traffic Signs in Kenya" Part II and Clause 2004 of the Standard Specification.

2004B EXISTING ROAD SIGNS

Where directed by the Project Manager, 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 Project Manager.

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 reflectorised hot applied thermoplastic material in accordance with Clause 219 of the Standard Specification.

The rates inserted in the Bills of Quantities for road marking shall include for prior application of approved tack coat.

2006 GUARDRAILS

Contrary to the Standard Specification, guardrail posts shall be concrete 200 mm diameter set vertically at least 1.2m into the shoulder as directed by the Project Manager. Spacer blocks shall also be made of concrete.

Beams for guardrails shall be "Armco Flexbeam" or similar obtained from a manufacturer approved by the Project Manager.

2007 KERBS

a) Vertical Joints

Vertical joints between adjacent Kerbs shall not be greater than 5 mm in width and shall be filled with a 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. The transition between flush and raised kerbs shall occur within a length of 2.0 m.

2009 RUMBLE STRIPS

Where directed by the Project Manager, the Contractor shall provide, place, trim, shape and compact to line and level asphaltic concrete rumble strips on the finished shoulders. This shall be done to the satisfaction of the Project Manager

2010 TREES

Where shown on the drawings or directed by the Project Manager, the Contractor shall plant trees in accordance with clause 2010 of the Standard Specifications

2011 MEASUREMENT AND PAYMENT

Road reserve boundary posts

Road reserve boundary posts shall be measured by the number erected

Permanent road signs

Permanent road signs shall be measured by the number of each particular size erected.

Road marking

Road markings in yellow or white material shall be measured in square metres calculated as the plan area painted.

Guardrail

Guardrail shall be measured by the metre as the length of the guardrail constructed.

Kerbs

Kerbs shall be measured by the metre as the length of kerb constructed.

2012 SERVICE DUCTS

Service ducts shall be provided in locations as directed by the Project Manager. Ducts shall be heavy duty PVC spigot and socket pipe of 3mm minimum wall thickness. Minimum cover to the top of the pipe from formation level shall be 0.6m. Pipes shall be bedded and surrounded by a 100mm minimum thickness of compacted fine granular material of 10mm maximum size. The remainder of the trench shall be backfilled with selected backfill material of subbase quality up to the top of formation level.

Measurement and payment shall be by the metre of pipe installed, and shall include all excavation, spoil, bedding and surround, backfill, transport, supply, bed, lay of PVC pipe complete with 2mm galvanised draw wire, and end sealing caps and end markers.

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 if such items of plant are 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 Tender. 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 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 gross 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 Project Manager 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. 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 the 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. KISIP 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 many other organisations. The rehabilitation of the road will involve local labour and other contractor's labour. It is a contractual requirement to carry out HIV/AIDS awareness and prevention activities during the construction period as provided in this specification.

- **Objective**

The objective is to reduce the risk of exposure to and spread of the HIV virus in the area of 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 100 employees).
- (iv) Small focus group discussions and 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, determined by participatory approaches to ensure they are appropriate desired 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:

- preventive behaviours including partner reduction, condom use, awareness and importance of treatment of sexually transmitted incidences (STIs);
- skills including negotiating safer sex, correct condom use, purchase without embarrassment; and

- referral to local health centres and services available.

Tasks to support the above activities will be to:

1. Establish the status and focus of all current and planned HIV/AIDS activities in the area to ensure complementarity and determine potential involvement in project activities.
2. Carry out a brief review of regional activities combining road construction with HIV/AIDS campaigns to determine options, best practice key issues, constraints, etc.
3. Review of Information, Education and Communication (IEC) materials available and their relevance to road construction, making recommendations for future development of IEC materials.
4. Provide education and training for site personnel, supervisors and peer educators for the scope of activities as above.
5. 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.
6. Provide mechanisms for the social marketing of condoms and distribution of materials.
7. Monitor 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). KISIP 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 employ and designate a qualified HIV/AIDS expert, to be approved by the Project Manager, 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:

- Scheduling of appropriate timing and duration for the implementation of HIV/AIDS activities as part of workplan for labourers and supervisors. Designated rest times such as lunch breaks and pay days should be excluded.

-
- Identification of suitable individuals for education from recruitment records with the implementing organisation.
 - Provision of suitable sites for communication activities and for condom distribution.
 - Monitoring of the implementation of peer educator activities.
 - Provision of support as necessary to the implementing organisation.
- **Inputs**

An organisation 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 organisation will produce the following reports to be submitted to the Contractor, Consultants, KISIP and NACC.

SECTION 28: ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMMP)

2801 MANAGEMENT PLAN PRINCIPLES

This project is geared towards enhancing social and economic benefits to the people living in the project area however; the project should also observe environmental protection requirements in accordance to the established laws and regulations to ensure sustainability. To realize this goal, acceptability by a majority of the beneficiaries and minimal effects to the physical environment will require to be integrated in the project through constant consultations, evaluations and review of the design aspects throughout the project coverage. Among the factors that need to be considered in this particular project implementation will include:

- The Contractor shall hire qualified Community Liaison Officers who will be act as an inter-phase between the contractor and community. The Community Liaison Officers will be responsible for continuous engagement of the community.
- Ensure prevention of pollutants discharge into the drainage systems and pollution of public water bodies,
- Enhance integration of environmental, social and economic functions in the project implementation.
- Consider preventive measures towards possible social and economic disruptions that may arise from the project implementation in accordance with the laid down guidelines.
- The contractors and other players in the project activities be prevailed upon to implement the EMP through a sustained supervision and continuous consultations.

2801 SPECIFIC MANAGEMENT ISSUES

Management Responsibilities

In order to implement the management plan, it is recommended that a supervisor is identified to oversee environment and management aspects during construction of the project. The supervisor would also be expected to co-ordinate and monitor environmental management during construction and provide monitoring schedules during operations.

The contractor shall be required to submit, under due consideration of the ESMMP as part of the ESIA the below listed management plans.

- Occupational health and safety plan
- Traffic management plan
- Public health and safety management plan
- The provisions for the workers grievance mechanism

- Environmental and social monitoring plan (with further detail to the outline of monitoring indicators as presented in the ESMMP) below.

Environmental Management Guidelines

Upon completion and commissioning the priority projects, it will be necessary to establish appropriate operational guidelines on environmental conservation and social linkages to enable the operations' management identify critical environmental and social issues and institute appropriate actions towards minimizing associated conflicts.

Basically, the guidelines should cover among other areas environmental management programmes, standard operation procedures, compliance monitoring schedule and environmental audit schedules as required by law. Social harmony of the facilities and associated component will be achieved through collaborations with the stakeholders and settlement executive committees at the project level.

Environmental Education and Awareness Rising

The county government field staff and the other beneficiaries will need to understand the basic environmental principles associated with the projects. In this regard, therefore, the following steps will need to be considered:

- Creation of liaisons on all matters related to environment management of the facilities once commissioned
- Encourage contribution of improvement ideas from the beneficiaries on specific issues related to the management of the facilities
- Establish initiatives that would instil a sense of ownership of the facilities and related components to all beneficiaries,

Decommissioning Process

Due to the long-term life of the intervention facilities and related components, a decommissioning audit will be undertaken at least 1 year before the process for any of the components commences, following a notice to decommission. The decommissioning process will be guided by a comprehensive decommissioning plan developed through the decommissioning audit process. However, the following features will need to be decommissioned upon completion of the works:

- Contractor's camp and installations that will need to be removed without compromising on the safety and general welfare of the immediate residents. Special care to be given to associated wastes and dust emitted in the process,
- Materials stores that will comprise fresh materials and used items. Each category will be moved safely out of site ensuring minimal or no impacts to the related environment and social setting,
- Wastes and debris holding sites will be cleared with maximum re-use of the debris either on surfacing the passageways or other grounds such as schools and church compounds.

B-2: Special Specifications for Public Lighting Works

B-2: SPECIAL SPECIFICATIONS FOR INTEGRATED SOLAR LED STREETLIGHTING WORKS

PREAMBLE TO SPECIFICATION

1. This section gives the specifications for lighting columns and brackets made from Class C galvanized steel, including lighting columns mounted on other structures, solar panels, LED lighting, batteries, controllers and other accessories.
2. The specification stipulates the minimum requirements for street lighting accessories, for use in the project and it shall be the responsibility of the supplier to ensure adequacy of the design, good engineering practice, adherence to the specification and applicable standards and regulations as well as ensuring good workmanship in the manufacture of the items.
3. The Engineer could give additional instructions to supplement the specification.
4. The specification is to be read in conjunction with the drawings which are issued with it.
5. Bills of quantities shall be the basis of all additions and omissions during the progress of works.
6. These specifications describe the basic requirements for equipment. Tenderers are requested to submit with their offers the detailed specifications **from ISO Certified solar equipment manufacturers**, drawings, catalogues, etc. for the products they intend to supply. Tenderers who submit superior facilities will be considered. **Downloads from the internet will not be accepted.**
7. Tenderers **MUST** only offer **one set** of detailed specifications per equipment. Failure to comply will render the bid non-responsive.
8. Tenderers must indicate on the specifications sheets whether the equipment offered comply with each specified requirement.
9. All the dimensions and capacities of the equipment to be supplied shall not be less than those required in these specifications. Deviations from the basic requirements, if any, shall be explained in detail in writing with the offer, with supporting data such as calculation sheets, etc. The procuring entity reserves the right to reject the products, if such deviations shall be found critical to the use and operation of the products.
10. The tenderers are requested to present information along with their offers as follows:
 - i. Shortest possible delivery period of each product.
 - ii. Information on proper representative and/or workshop for back-up service/repair and maintenance including their names and addresses.
11. All offered equipment must comply with the relevant Kenyan Standards for such equipment.

30M HIGH MAST SPECIFICATION

The High mast shall be of continuously tapered, polygonal cross-section; at least 16 sided, and shall be designed to conform to the relevant local and international standards, to give an assured performance and reliable service.

The mast height shall be 30 meters, with minimum diameters of 152mm at the top and 612mm at the bottom. Minimum plate thickness of bottom section shall be 5mm and other sections 4mm.

The mast shall be capable of safely withstanding the strong winds prevailing at site. The deflection at the top during heavy monsoon periods shall therefore be considered in the design and the mast designed in such way that the above deflection during worst periods is kept to a minimum value.

The mast shall be fabricated from special steel plates, conforming to BS-EN10-025, cut and folded to form a polygonal section as stated above and shall be telescopically jointed and fillets welded. The welding shall be in accordance with BS:5135.

A fabricated Lantern Carriage shall be provided for fixing and holding the flood light fitting and control gear boxes. The Lantern Carriage shall be of special design and shall be of steel tube construction, the tubes acting as conduits for wires, with holes fully protected by grommets. The Lantern Carriage shall be so designed and fabricated to hold the required number of flood light fittings and the control gear boxes, and also to have a perfect self-balance.

The winch shall be of completely self-sustaining type, without the need for brake shoe, springs or clutches. Each driving spindle of the winch shall be positively locked when not in use, gravity activated PAWLS. Individual drum also should be operated for fine adjustment of lantern carriage. The capacity, operating speed, safe working load of the recommended lubrication and serial number of the winch shall be clearly marked on each winch.

The head frame shall be designed as a capping unit of the mast, shall be of welded steel construction, galvanised both internally and externally after assembly. The top pulley shall be appropriate diameter, large enough to accommodate the stainless-steel wire ropes and the multi-core electric cable. The pulley block shall be made of non-corrodible material, and shall be of diecast aluminium alloy (LM-6). Pulley made of synthetic material such as plastic or PVC are not acceptable. Self-lubricating bearings and stainless-steel shaft shall be provided to facilitate smooth and maintenance free operation for a long period. The pulley assembly shall be fully protected by a canopy galvanised externally and internally.

The electrical connections from bottom to top shall made by special trailing cable. The cable shall be EPR insulated and PCP sheathed to get flexibility and endurance. Size of the cable shall be 5 core, 4 mm², copper conductor. The cable shall be of approved make. A suitable FLP socket arrangement shall be provided at the bottom section of the Mast. The trailing cable also shall have FLP plug connected at the bottom end.

Suitable provision shall be made at the base compartment of the Mast to facilitate the operation of externally mounted, electrically operated FLP power tool for raising and lowering of the lantern carriage assembly. The trailing cables at the top shall be terminated in the weather-proof junction box.

The control panel at the base shall be suitable to terminate cables as specified in SLD & cable schedule. The control panel shall be flameproof. Control Panel shall be provided with timer, Auto manual off switch, start push button. The fittings including control gear shall be supplied by High Mast supplier. The wiring from control panel up to lighting fitting shall be done by High Mast supplier. Junction box shall be provided at the top of Mast. 3 core x 2.5 mm² FRLS cable shall be used from junction box to lighting fitting.

The luminaires shall comprise 400W LED fittings and two aviation obstruction lights as required.

SOLAR STREET LIGHTING

1.1. System Description

An integrated solar photovoltaic LED street lighting system is an outdoor lighting unit comprising a PV Module, driver, cable, and storage battery, charge controller, switching module, motion sensors and an LED luminaire. The luminaire is mounted on the pole at a suitable height and angle to maximize illumination on the ground. The system should be installed in direct sunlight without any hindrance such as shading. There should not be any shadows falling on the PV modules during day time. The switching module should activate the lights at dusk and turn them off at dawn automatically.

1.2. System Components

1.2.1. PV module, Battery, and LED luminaire specifications

Item	Component	Specification
1	System	a) Input voltage \geq 240V b) Input frequency \geq 50Hz
2	PV module	a) Peak power \geq 60Wp b) Panel type: Monocrystalline c) Panel voltage: 17Vmp, 21Voc d) Dimming profile: 30% dusk to dawn, 100% on motion
3	Charge controller	a) Type: MPPT b) Power rating: 35W
4	Battery	a) Voltage: 12.8V b) Capacity: 30Ah c) Type: Lithium Ferro Phosphate d) Service: 2000 charge-discharge cycles. e) Location: inside luminaire

Item	Component	Specification
5	Light source	<ul style="list-style-type: none"> a) White LED 5700K b) Power rating: 35W c) DLOR: $\geq 90\%$ d) W-LED luminaire, dispersed beam, soothing to eyes with the use of proper optics and diffuser. e) LED Chip should be compliant to IES LM-80 (Approved Method for Measuring Lumen Maintenance of LED Light Sources and LED lumen depreciation time to L70). Test report for same should be submitted.
6	Light output	<ul style="list-style-type: none"> a) Luminous flux ≥ 6000 lumen b) Lumen efficacy ≥ 175lm/W c) Correlated Colour Temperature (CCT) ≥ 5700K d) Colour Rendering Index (CRI) ≥ 70 e) For single light level: Minimum 29 Lux when measured at a point 6m directly below the light. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred. f) For multiple light levels: The luminaire should have two levels of light to take care of different lighting needs during the night. Minimum 29 Lux when measured at a point 6m directly below the light (at High illumination level). The illumination should be uniform without dark bands or abrupt variations. Minimum 15 Lux at lower illumination level. (Higher light output will be preferred) g) The luminaire shall be tested for Electrical, Photometry and Colour parameters as per the latest IES standard for the following performance parameters: Illuminance, CCT, CRI, and Lumen efficacy. h) Require validation report using .ies file, which is generated during luminous intensity distribution test and using maintenance factor 0.8 and pole height of 6m., road width 8m and pole span 25m. The average illuminance level and uniformity should comply with requirement as per the latest IES standards, wherever applicable. i) The luminaire should be tested for all type tests as per IEC 60598-2-3 standards.
7	Temperature	<ul style="list-style-type: none"> a) Ambient temperature range: 0 to +35°C b) Ambient temperature range for charging: 0 to +45°C c) Ambient temperature range for discharging: -20 to +35°C
8	Mounting	<ul style="list-style-type: none"> a) Pole height 6m above the ground level b) Buried 1m below the finished ground c) Luminaire shall be at least 8 m above the ground level.
9	Lifespan	50,000h (L70B50)
10	Driver efficiency	$\geq 90\%$
11	Switching	In-built motion sensors
12	Ingress protection	$\geq IP65$
13	Impact resistance	$\geq IK08$
14	Radiated emission test	As per the latest version of CISPR-15

Item	Component	Specification
15	Electrostatic discharge (ESD) and radiated susceptibility test	As per IEC 61547
16	Optical cover/lens	UV stabilized polycarbonate cover
17	Warranty	Minimum 10 years
18	Manufacturing/ Compliance standards	Relevant and latest parts of IEC 61000, IEC 61347, IEC 60921, IEC 60923, IEC 60598, IEC 62717.

1.2.2. Street lighting pole specifications

Item	Component	Specification
1	Material	Class C Hot dip galvanised steel
2	Height	6m
3	Bracket	<ul style="list-style-type: none"> a) Single arm b) Where a separate bracket is fixed to a column, the assembly of the column shaft and bracket shall incorporate a mechanical locking system using stainless steel bolts, in addition to high tensile socket head securing screws, and it shall be possible to fix the bracket in any 4 x 90° positions. c) Where correctly fixed, the design of the bracket shall not allow any movement of the bracket either vertically or horizontally with respect to the column. At the point of intersection, the cross-section of the bracket shall, preferably, equal to that of the column shaft. Brackets shall blend with their columns, in material, finish and colour and shall be as short as practicable.
4	Tilt angle	Zero (0) degrees
5	Shaft	<ul style="list-style-type: none"> a) Round and tapered cross section b) Antitheft features c) Antivandal features d) Thickness: 4mm
6	Ambient temperature	<ul style="list-style-type: none"> a) Max.: +55°C for about 6 hours a day b) Min.: -10°C c) Max. yearly average: +30°C d) Max. daily average: +40°C
7	Air humidity	<ul style="list-style-type: none"> a) Max.: 82% b) Min.: 75% c) Yearly average: 80%
8	Wind velocity	<ul style="list-style-type: none"> a) Max.: 28kph b) Min.: 8kph
9	Altitude	20 – 30m
10	Performance under vehicle impact (Impact tested at kph)	<ul style="list-style-type: none"> a) Untested: Class 0 b) Tested: 100:NE:3
11	Partial load factor	B

Item	Component	Specification
	class:	
12	Deflection Class	3
13	Maximum luminaire weight	<ul style="list-style-type: none"> a) The pole may be used with luminaires weighing up to appr. 20kg. b) The manufacturer must give guarantee that the pole can support such weight, all calculations must be submitted.
14	Maximum luminaire windage	0.25m ²
15	Minimum terrain category	11
16	Galvanization	<ul style="list-style-type: none"> a) All components of street lighting poles must be hot-dip galvanized, all components must be well protected against corrosion b) Minimum thickness of zinc coatings: 100µm and c) Min density 720gm/m² on both inside and outside surfaces. d) Compliant with ISO 1461
17	Mounting	<ul style="list-style-type: none"> a) Column must have a root for planting to a depth of 1.0m b) 0.5m from the edge of the roadway c) 0.9m light overhang
18	Tests	<ul style="list-style-type: none"> a) Type test: Type test certificates to prove the general design of the poles must be submitted, the certificates for tests that have been carried out on identical equipment and detailed in the relevant IEC standard which pertains to the equipment being tested. b) Routine test: The tests shall be carried out to determine: Mechanical, impact and deformation tests. Visual inspection and dimensional checks. Any other tests given by the relevant IEC recommendation.
19	Standards	<ul style="list-style-type: none"> a) For design: BS EN 40-2, BS EN 40-3-1, BS EN 40-3-3 b) For wind actions: BS EN 1991-1-4
20	Lifetime	Minimum 25 years

B-3: Special Specifications for Water Supply and Sanitation Works

B-3: SPECIAL SPECIFICATIONS FOR WATER SUPPLY AND SANITATION WORKS

PART A

1. PIPELINE CONSTRUCTION WORKS

101. HANDLING OF PIPES AND FITTINGS

The Contractor shall exercise care in the handling of all pipes, specials, valves etc., to prevent damage to the structure surfaces and to the ends of the pipes.

102. LOADING AND UNLOADING

Normally loading and unloading of small diameter pipes and fittings can be undertaken by hand; where mechanical means are used care should be exercised to ensure that the handling methods do not damage the pipes and fittings.

103. STORAGE

The Contractor shall comply with the manufacturer's specification regarding the storage of pipes, fittings and valves. Where storage dumps are to be provided along the route of the pipeline, these will be subject to the Engineer's approval. The cost of so providing shall be borne by the Contractor and deemed to be covered by his rates in the Bill of Quantities.

104. TRANSPORT

The Contractor shall provide such transport arrangements as will effectively cater for the lengths of pipes provided and the material of the piping. Adequate support shall be provided so as to ensure that the piping and fittings are not subject to excessive movement.

105. EXAMINATION OF PIPES AND FITTINGS

The Contractor shall examine all pipes, valves, fittings and other materials to ascertain that they are in perfectly sound condition before commencing to lay the pipes, valves etc.

106. INTERFERENCE WITH FENCES, DRAINS AND OTHER SERVICES

The Contractor shall ensure the proper reinstatement of fences, drains, telephone lines, KP&L cables etc. where affected by his work. All services shall be adequately protected and propped to the satisfaction of the Engineer. The Contractor shall be liable for any damage caused to the services due to his failure to provide adequate protection.

107. METHOD OF EXCAVATION

The Contractor is deemed to have covered in his excavation rates all the work that is necessary in order to comply with the provisions of the Specifications in general and this Clause in particular.

- a) The Contractor shall excavate the pipe trenches in the line and to the depths indicated on drawings or as indicated by the Engineer. Except where otherwise indicated on the drawings or directed by the Engineer, it is intended that the trench shall be excavated to such a depth as will allow of a minimum cover of 600mm over the top of the barrel of the pipe when laid. All trenches shall be excavated in open cuttings and for trenching to uPVC piping, shall not be opened too far in advance of pipe laying.
- b) For the purpose of measurement, the width of trench shall be taken as the nominated width for the particular size of sewer, irrespective of the width of trench the Contractor may choose to excavate.

Nominated trench width for:

75mm main	0.5m
100mm main	0.6m
150mm main	0.6m
200mm main	0.6m
225mm main	0.6m
250mm main	0.6m
300mm main	0.7m
400mm main	0.8m
500mm main	0.9m
600mm main	1.0m
700mm main	1.1m
800mm main	1.2m

For two or more pipes in the same trench the nominated width shall be the distance between the centres of the outer pipes plus the internal radii of the outer pipes plus 400mm.

- c) Where the trench passes through grassland, arable land or gardens, whether enclosed or otherwise, the turf, if any, shall be carefully pared off and stacked, and the productive soil shall be carefully removed for a width of 600mm greater than the nominated trench width, or equal to the overall width of track of excavating machine, whichever is greater, and laid aside to be subsequently used in reinstating the surface of the ground after the trench has been refilled.
- d) The bottom of the trench shall be properly trimmed off, and all low places or irregularities shall be levelled up with fine material. Where rock or large stones are encountered, they shall be cut down to a depth of at least 100mm below the level at which the bottoms of the barrel of

the pipes or flanges are to be laid, and covered to a like depth with fine material, so as to form a fine and even bed for the pipes. The bottom of trenches to accommodate uPVC piping shall be hardened by tamping in gravel or broken stone in all soft spots. The bedding shall consist of soil which can be properly compacted to provide support for the pipe and to comply with Clause 409 b).

- e) Joint holes shall be excavated to suit minimum dimensions as will allow the joints to be well and properly jointed.
- f) The pipe trench shall be kept clear of water at all times as per Clause 321 of this Specification.
- g) The Contractor shall, wherever necessary, by means of timbering or otherwise, support the sides of the trench so as to make them thoroughly secure, and afford adequate support to adjoining roads, land, buildings and property, during the whole time the trench remains open and shall remove such timbering when the trench has been backfilled. The cost of such timbering or other work shall be deemed to be included in the rates for excavation. In case the Contractor is instructed by the Engineer to leave any portion of such timber in position after backfilling the trench, he will be paid for it accordingly.
- h) The clear width inside the timbering shall be at least 150mm in excess of the external diameter of the pipe being laid, in order to allow it to be freely lowered into position, in the trench without damage to the external protection.
- i) Should the excavation be taken out to a greater depth than is specified the bottom shall be made good to the correct level with Class 15/20 concrete or other material approved by the Engineer. No payment shall be made for any over excavation carried out by the Contractor nor for the cost of filling up to required levels.
- j) If a mechanical excavator is used by the Contractor, he shall indemnify the Employer against all claims for damage which in the opinion of the Engineer, may be caused by the use of this plant.
- k) The Contractor shall fix Sight Rails for use with boning rods at intervals of not more than 30 metres and temporary Bench Marks related to the Survey of Kenya Datum shall be provided at such intervals as directed by the Engineer.

108. PIPE LAYING

- a) Pipelines shall be laid in straight lines and/or smooth curves as indicated on the drawings. The vertical profile of the pipe shall be to even gradients. Any pipes not so laid shall be removed if so, directed by the Engineer, and re-laid in proper manner at the Contractor's expense.

In laying the pipes and specials care shall be taken not to damage the protective linings and the pipes shall be handled with tackle if so, directed by the Engineer.

The pipes and specials shall be checked for flaws before they are lowered into the trench. After the pipes or specials have been checked they shall be cleaned and set to proper gradient and line so that there is a continuous rise from each washout to air valve.

When laying uPVC pipes, final connection at any fixed joints shall be deferred until the majority of the pipeline has been covered with backfill.

- b) Large diameter curves to mains shall wherever possible be formed by allowing for deflection at flexible joints, not exceeding 3 degrees, or as specified by the manufacturers.
- c) In jointing of the pipes and specials the Contractor shall comply with the standards adopted for the various types of joints as specified.
- d) In laying pipes and specials with flanged joints, flanges shall be brought together and bolted with the faces absolutely parallel. A rubber jointing gasket ring 3mm thick shall be used in each flange joint and one washer with and not provided for each bolt.

The bolts shall be tightened up gradually and equally in the customary manner in order to distribute the stress evenly over the flange. If it is found necessary to deviate slightly from the normal run of the flanged piping, the deflection shall be obtained by means of a bevelled gun metal ring washer between the flanges.

- e) The Contractor shall fix the gate valves, air valves and washout pipes all in accordance with the drawings.
- f) The Contractor shall, subject to approval of the Engineer, cut pipes to such lengths as directed. Pipes should be cut off clean and square with the axis. Cuts should be made with an approved cutting device dependant on the type of pipe specified. Ends of pipes should be tapered by means approved by the Engineer if mechanical joints are to be used.
- g) Equipment for tapping off the mains under pressure may be employed in the making of service or branch connections. The Contractor is required to choose a suitable method for fixing of the ferrule to the type of pipe specified, to the Engineer's approval.

109. BACKFILLING OF TRENCH

- a) When a section of the main has been jointed, the ends shall be temporarily closed with caps, plugs or flanges to prevent ingress of foreign matter into the pipe to the satisfaction of the Engineer. The trench shall be properly backfilled and rammed for its whole length so that the soil cover to the main shall not be less than 600mm except at joint holes which shall be kept clear of all backfilling, if necessary, by the use of timbering, so that each joint is left fully exposed for the Engineer's inspection. Special care shall be exercised when using surround to A.C. and uPVC pipes which shall be free from any stones and well compacted in layers to not less than 100mm above the crown of the pipe.
- b) The Contractor's attention is drawn to the special requirements for bedding and sidefill to

uPVC pipes. Clay should not be used. Soils which are of a granular nature and provide adequate support after compaction shall be used. If unavailable from excavated material the Contractor should provide suitable material for which an item in the Bill has been included.

With flexible pipes it is important that the side fill should be firmly compacted between the pipe and the soil sides of the trench. The bedding material shall be placed in 75mm layers up to the crown of the pipe with adequate compaction and then to a minimum height of 100mm or two thirds of the pipe diameter. The progress of filling and tamping should proceed equally on either side of the pipe so as to maintain an equal pressure on both sides.

- c) Where a main is laid across a road or is in such a position as to interfere seriously with the normal use of the road, the Contractor may, with the consent of the Engineer and at his own risk, fill such holes as may be necessary. Due consideration is to be given to compaction of section of the trench across the road to prevent undue settlement. In the event of damage at this section the Contractor is required to re-excavate and repair the pipeline all at his own expense.

110. ANCHOR BLOCKS AND SUPPORTS

Concrete Class 15/20 shall be placed in anchor blocks at all changes of direction of the pipeline exceeding 6 degrees and wherever else required to withstand thrust resulting from internal water pressure e.g. at blank ends. Concrete in plinths shall be placed where specified.

111. CHAMBERS AND SURFACE BOXES

Gate valves, air valves and fire hydrants etc. shall be provided with suitable chambers or surface boxes in accordance with detailed drawings. In roads and footpaths the boxes shall have metal covers laid flush with the surface. Indicator posts to suit shall also be provided.

112. PRESSURE TESTING OF PIPELINES

- a) The Contractor shall test a section of main as long as possible subject to the maximum length of open trench approved by the Engineer. The test shall be carried out within 12 working days of the completion of such section of the main.
- b) The pipeline shall be adequately anchored during the test at stop ends or valves to prevent movement under the test pressures.
- c) The test section shall be filled with water and great care should be taken to drive out all air through air valves, ferrules etc. The test pressure is to be at least 1.5 times the nominal working pressure for the class of pipe being tested and is to be applied for at least 2 hours.
- d) The leakage from the mains and connections from each section tested shall be according to SRN 316, i.e., not exceeding 0.02 litres per millimetre of nominal bore per kilometre of pipeline per 24 hour per bar of applied pressure head.

To determine the rate of leakage, the Contractor shall furnish a suitable hydraulic test pump,

pressure gauge, connections and water meter or other appliance, for measuring the amount of water pumped. The pressure shall be raised to the amount required and specified by the Engineer, and shall be so maintained for a period of not less than two hours or whatever longer period as required by the Engineer to examine every joint to satisfy himself that they are sound. If the leakage is at a greater rate than that specified, the Contractor shall re-excavate the trench where necessary and shall re-make the joints and replace defective work until the leakage shall be reduced to the allowable amount.

- e) The Employer shall charge the Contractor the cost of any couplings required to join up tested lengths of main if, in the Engineer's opinion, greater lengths could reasonably have been tested or if failure under test, requires the pipe to be cut, or other methods of laying should have been adopted.

Water used in testing the main shall be supplied by the Contractor. The Contractor shall carry out all work which may be necessary for making temporary connections to the existing mains to obtain water for testing at his own expense.

In carrying out the test for water tightness the Employer only shall authorize the operation of all valves, but the Contractor shall provide all the necessary labour to assist in the opening and closing of the valves to the Engineer's instructions, and he shall allow in his prices for all his expenses in connection with testing on completion.

The Engineer shall be the sole judge of water tightness.

113. CLEANING AND STERILISING OF PIPELINES

- a) When a pipeline is complete and where applicable, has successfully passed the test, it shall be thoroughly washed out, using, if possible, an open end. Thereafter it shall be sterilized by being filled with a suitable solution containing not less than 20 p.p.m. of free available chlorine or such other sterilizing agent as the Engineer shall approve. After standing for 24 hours the main shall again be washed out and refilled with mains water prior to the taking of bacteriological samples. The Contractor shall provide all necessary stop-ends, fittings and chemicals for this work.
- b) Emptying and washing out of the pipes shall be done in such a manner as not to damage the trench or cause undue flooding of the vicinity, and the Contractor shall supply and use piping, specials and/or hose as may be necessary to facilitate the flow of water to the nearest drain or watercourse. Water used for washing out and sterilizing may be supplied by the Employer when a suitable supply is available but all expenses should be payable by the Contractor.

Before any section of the main is put into use, a bacteriological sample or samples will be taken by the Engineer's Representative and only on receipt of a satisfactory certificate from a Medical Research Laboratory or similar organisation will the main or section of main be

permitted to be put into supply and be considered as having been substantially completed.

Any expenditure involved in providing facilities or materials for the taking of samples shall be included in the Contractor's Bidding rates and the Engineer will specify and shall be the sole judge as to the number of samples required and the points at which they are to be taken.

The cost of the bacteriological examination will be borne by the Employer but if the sample or samples are not satisfactory, the cost of any subsequent analysis will be borne by the Contractor.

114. CLEARANCE OF SITE

The Contractor shall remove all surplus pipes, specials and other fittings from the site as directed by the Engineer. The site of works shall be levelled and all surplus excavation, debris, cut trees or bushes shall be carted to approved tip sites.

2. PIPES, FITTINGS, VALVES AND METERS

501. GENERAL

The approval in writing or otherwise by the Consultant of any material shall not in any way whatsoever relieve the Supplier from any liability or obligation under the Contract and no claim by the Supplier on account of the failure, insufficiency or unsuitability of any such materials will be entertained.

- a) All items shall be suitable for water works purposes and for use with cold water installation and operation being in a tropical climate.
- b) All items hereinafter specified shall be to such other Standard or Specification which in the opinion of the Consultant provides for a quality of material and workmanship. The Standard or Specification must be submitted to the Consultant for approval before commencement of work.
- c) All ferrous pipes and fittings shall be coated with a protective paint suitable for use in and transport through a tropical climate.
- d) The Supplier shall supply to the Purchaser a certificate stating that each item supplied has been subjected to the tests hereinafter laid down and conforms in all respects to the said Specification.
- e) The Supplier shall provide adequate protection to all piping, flanged items and valves so as to guard effectively against damage in transit and storage and ingress of foreign matter inside the valves.
- f) All pipework and fittings shall be subjected to a works hydrostatic test pressure which shall be not less than twice the maximum operating pressure
- g) The Supplier should exercise diligence to provide the best material.
- h) Where applicable, the manufacturer's Specification should accompany all offers. The name of the manufacturer must in every case be stated.
- i) Where necessary the Supplier shall provide rubber gaskets to comply with EN 1514, DIN 2693 or DIN 2697 and all other bolts, nuts, washers, etc. to undertake jointing at fittings etc

- j) Any articles required under this Contract which are found to be faulty due to a crack, flaw or any other reason or is not in accordance with the Specification stipulated will not be accepted nor will the Purchaser be liable for any charges in respect of such an article. Where any such rejected article can, in the opinion of the Consultant, be rendered usable, the Supplier may deal with it accordingly and include it in the Contract at a price to be mutually agreed. Straight pipes which have been cut will be accepted at the discretion of the Consultant, provided the length is not less than 4 metres or two thirds of the standard length whichever is the lesser and will be priced pro-rata.
- k) Wherever possible, samples of pipes and fittings shall be submitted for approval of the Consultant prior to the Supplier obtaining the total requirements.

202. UNPLASTICISED PVC (UPVC) PIPES

Unplasticised PVC piping shall be in accordance with BS EN 1452.

The maximum sustained working pressures to which the pipes and fittings will be subjected is based on water at a temperature of 20 degrees centigrade.

The Supplier shall submit full details of the pipes he intends to supply

The pipes upto and including 40mm diameter can be of a solvent weld type. The pipe shall be supplied with interchangeable sockets preformed at the factory and of such internal diameter that it takes the plain end of the pipe with the same nominal diameter.

The joint shall sustain the end thrust to which the pipe shall be subjected. The Supplier shall supply sufficient quantity of the cleaner and adhesive which shall be required to make the joints with the pipes.

The pipes of 50mm diameter and over shall consist of a grooved socket at one end of the pipe. The socket shall be designed to give a clearance fit on the outside diameter of the parent pipe. The sealing medium which shall seat in the groove shall be a rubber ring.

If the formation of the socket and groove results in the thinning of the original wall thickness of the pipe, it shall be compensated for by shrinking on to the outside of the socket area a reinforcing sleeve of the same material as the pipe. The socket and groove shall incorporate no sharp angles where the stress points are created.

The joint shall take 10% deformation of the spigot at the point where it enters the socket without leakage from the pipe when subjected to the test pressure specified for the pipe. Thermal expansion of the pipe shall be accommodated in the joint. The joint shall be capable of linear deflection up to 3 degrees.

The sealing ring shall be of first grade natural rubber and the physical properties of the mix shall meet the requirements of DIN 4060, BS2494 or EN 681.

The Supplier shall supply sufficient quantity of any lubricant or other material which shall be needed

to make the joint which shall be assembled by hand.

The Supplier shall submit full details of the type of joint offered and a full description of the method of jointing.

The fittings shall have the same type of joint as for the pipes to be used. The Supplier shall submit full details of the materials dimensions and test pressures of the fittings offered.

Precautions shall be taken to avoid damage to the pipes and fittings.

In handling and storing the pipes and fittings, every care shall be taken to avoid distortion, flattening, scoring or other damage. The pipes and fittings shall not be allowed to drop or strike objects. Pipe lifting and lowering shall be carried out by approved equipment only.

Special care shall be taken in transit, handling and storage to avoid any damage to the ends.

Pipes and fittings shall be marked at not greater than one metre intervals showing their class and diameter.

203. HIGH DENSITY POLYETHYLENE (HDPE) PIPES

HDPE Pressure Pipes and Fittings shall be manufactured using a pre-compounded blue pigmented PE100 resin, having a Minimum Required Strength (MRS) value of ≥ 10.0 MPa, at a service

Pipes:	Material : Colour:	Polyethylene PE100 (MRS100), density ≥ 0.95 kg/dm ³ Blue Black with Blue stripes Black with Blue outer coextruded layer
	Pressure Rating:	SDR 17 – PN10 SDR 11 – PN16
	Supply Lengths:	All pipe sizes up to and including OD 75 mm shall be supplied in coils of 50 or 100 meters. All pipes, OD 90mm and above shall be supplied in straight lengths not exceeding 12metres.
Fittings:	Material: Colour:	Polyethylene PE100 (MRS100), density ≥ 0.95 kg/dm ³ Black or Blue
	Type of Joint:	Electrofusion / Spigot type for Butt Fusion / Compression (for sizes 110mm and below)
	Pressure Rating:	SDR 17 – PN10 SDR 11 – PN16
Diameters:	<i>as per EN 12201-2</i>	

temperature of 20°C for a minimum design service life of 50 years.

The pipes and fittings shall be manufactured in accordance with EN 12201:2011, ISO 4427 / ISO 4437 or other acceptable International Standard.

The Pipes and Fittings shall comply with the following:

PE 100 (MRS10), $\sigma_{all} = 8.0$ MPa			PN 10.0		PN 16.0	
Outside Diameter	Tolerance on	Maximum	SDR 17		SDR 11	
(d)	OD	Ovality	Series 8		Series 5	
			Min. WT	Tolerance	Min. WT	Tolerance
(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
16	0.3	1.2	-	-	-	-
20	0.3	1.2	-	-	2	0.3
25	0.3	1.2	-	-	2.3	0.4
32	0.3	1.3	2	0.3	3	0.4
40	0.4	1.4	2.4	0.4	3.7	0.5
50	0.4	1.4	3	0.4	4.6	0.6
63	0.4	1.5	3.8	0.5	5.8	0.7
75	0.5	1.6	4.5	0.6	6.8	0.8
90	0.6	1.8	5.4	0.7	8.2	1
110	0.7	2.2	6.6	0.8	10	1.1
125	0.8	2.5	7.4	0.9	11.4	1.3
140	0.9	2.8	8.3	1	12.7	1.4
160	1	3.2	9.5	1.1	14.6	1.6
180	1.1	3.6	10.7	1.2	16.4	1.8
200	1.2	4	11.9	1.3	18.2	2
225	1.4	4.5	13.4	1.5	20.5	2.2
250	1.5	5	14.8	1.6	22.7	2.4
280	1.7	9.8	16.6	1.8	25.4	2.7
315	1.9	11.1	18.7	2	28.6	3
355	2.2	12.5	21.1	2.3	32.2	3.4
400	2.4	14	23.7	2.5	36.3	3.8
450	2.7	15.6	26.7	2.8	40.9	4.2
500	3	17.5	29.7	3.1	45.4	4.7
560	3.4	19.6	33.2	3.5	50.8	5.2
630	3.8	22.1	37.4	3.9	57.2	5.9
710	6.4	24.9	42.1	4.4	64.5	6.6
800	7.2	28	47.4	4.9	72.6	7.4

Performance Characteristics

The pipes shall have the following basic minimum performance characteristics:

Parameter	Unit	Value
Average Density as per ISO 1183	Gm/cm ³	≥ 0.95
Melt Flow Index MFI 190°C / 50N as per ISO 1133	Gm/10 min.	0.4-0.55
Minimum Tensile Strength	N/mm ²	25
Elongation at Break	%	≥ 600%
E-Modulus (Modulus of Elasticity)	N/mm ²	1200
Minimum Radius of Curvature at 20°C		25 x OD
Linear Coefficient of Thermal Expansion (VDE 0304)	°K ⁻¹	1.3 x 10 ⁻⁴

Marking and Identification

Pipes shall be clearly and indelibly marked to show the following:

- Name of Manufacturer / Brand
- Nominal Diameter x Minimum Wall Thickness
- Material Classification (i.e., PE100)
- Standard Dimension Ratio and Pressure Rating (SDR17 PN10 or SDR11 PN16)
- Reference Standard of Manufacture (e.g., EN 12201)
- Date of Manufacture

Transportation, Storage and Laying of Pipes and Fittings

Before transporting HDPE pressure pipes the loading surface of the vehicle must be cleaned and free from projecting nails, screws or other sharp objects. The bottom layer of all pipes must as far as possible be in contact with the loading surface throughout their entire length and not project beyond it. The pipes must be secured from slipping and shall not be pulled over sharp edges when loading and offloading. Pipes shall not be dragged along the ground.

Pipes, fittings and coils shall be stored in such a way that they are completely protected from direct sunlight. When covered, they must be well ventilated to avoid accumulation of heat and resultant deformation. Transparent coverings shall not be used. The storage location shall be flat and shall, for pipes, support the pipes throughout their length. Stones and sharp objects shall not be present. Pipes shall not be stacked to a height exceeding 1m. The pipes must be secured at the sides to prevent them from rolling. Contact with harmful materials shall be avoided. As far as possible, coils shall be stored in a horizontal position. The area shall be free of stones and sharp objects. If stored upright they must be secured to avoid tilting.

Prior to laying in trench, the bed of the trench must provide support throughout the entire length of the pipe. The pipe shall not be laid directly on cohesive, rocky or stoney soil. Such material shall be over excavated to a depth of not less than 0.1m and shall be removed and replaced by non-cohesive soil or a special pipe support. This shall initially be recompact and then the surface loosened on the day of and prior to laying.

Pipes supplied in coils and of up to 63mm diameter may be unrolled with the coil in the vertical position. For larger diameters an unwinding device shall be used. A turnstile can be used with the coil laid in a horizontal position on it or with the coil mounted vertically on a slow-moving lorry. The pipe shall never be removed from a coil in a spiral manner as this may cause kinking. Should kinking nevertheless occur the Contractor shall cut the pipe on either side of the kink, prepare the ends, and then use an approved joint after laying. All costs of dealing with kinking shall be to the Contractor's expense. A minimum bending radius of 35 x the diameter shall be observed.

Joining Methods

A. Butt Fusion:

The pipe shall be joined by the butt fusion procedure outlined in ASTM F 2620. All fusion

joints shall be made in compliance with the pipe or fitting manufacturer's recommendations. Fusion joints shall be made by qualified fusion technicians.

B. Saddle Fusion:

Saddle fusion shall be done in accordance with ASTM F 2620 or TR- 41 or the fitting manufacturer's recommendations. Saddle fusion joints shall be made by qualified fusion technicians. Qualification of the fusion technician shall be demonstrated by evidence of fusion training within the past year on the equipment to be utilized on this project. [Saddle fusion is used to fuse branch saddles, tapping tees, and other HDPE constructs onto the wall of the main pipe] (ASTM F905).

C. Socket Fusion:

Moulded socket fusion fittings are only to be used for joining of HDPE pipe from 1/2 inch to 2" in size. Socket fusion shall be done in accordance with ASTM F 2620 or the fitting manufacturer's recommendations. Socket fusion is the process of fusing pipe to pipe, or pipe to fitting by the use of a male and female end that are heated simultaneously, and pressed together so the outside wall of the male end is fused to the inside wall of the female end. Qualification of the fusion technician shall be demonstrated by evidence of socket fusion training within the past year on the equipment to be utilized on this project. [*Socket fusion is not widely used, and the specifier may decide to prohibit its use*]

D. Electrofusion:

Electrofusion joining shall be done in accordance with the manufacturers recommended procedure. Other sources of electrofusion joining information are ASTM F 1290. The process of electrofusion requires an electric source, a transformer, commonly called an electrofusion box that has wire leads, a method to read electronically (by laser) or otherwise input the barcode of the fitting, and a fitting that is compatible with the type of electrofusion box used. The electrofusion box must be capable of reading and storing the input parameters and the fusion results for later download to a record file. Qualification of the fusion technician shall be demonstrated by evidence of electrofusion training within the past year on the equipment to be utilized for this project.

E. Mechanical:

- Mechanical connection of HDPE to auxiliary equipment such as valves, pumps, and fittings shall use mechanical joint adapters and other devices in conformance with AWWA Manual of Practice M55, Chapter 6.
- Mechanical connections on small pipe under 3" are available to connect HDPE pipe to other HDPE pipe, or fittings, or to a transition to another material. The use of stab-fit style couplings is allowed, along with the use of metallic couplings of brass and other materials. All mechanical

and compression fittings shall be recommended by the manufacturer for potable water use. When a compression type or mechanical type of coupling is used, the use of a rigid tubular insert stiffener inside the end of the pipe is recommended.

- Mechanical couplings that wrap around the pipe and act as saddles are made by several manufacturers specifically for HDPE pipe. All such saddles, tapping saddles, couplings, clamps etc. shall be recommended by the manufacturer as being designed for use with HDPE pipe at the pressure class listed in this section.
- Unless specified by the fitting manufacturer, a restraint harness or concrete anchor is recommended with mechanical couplings to prevent pullout.
- Mechanical coupling shall be made by qualified technicians. Qualification of the field technician shall be demonstrated by evidence of mechanical coupling training within the past year. This training shall be on the equipment and pipe components to be utilized for this project

F. Joint Recording: The critical parameters of each fusion joint, as required by the manufacturer and these specifications, shall be recorded either manually or by an electronic data logging device. All fusion joint data shall be included in the Fusion Technician's joint report.

Testing

- a. Hydrostatic leakage testing is recommended and shall comply with ASTM F 2164, ASTM F 1412, AWWA Manual of Practice M55 Chapter 9.
- a. If the test section fails this test, the Contractor shall repair or replace all defective materials and/or workmanship at no additional cost to the Owner.
- b. Pneumatic (compressed air) leakage testing of HDPE pressure piping is prohibited for safety reasons.

Cleaning and Disinfecting

- c. Cleaning and disinfecting of potable water systems shall be in accordance with AWWA C651 and AWWA Manual of Practice M55 Chapter 10.
- d. After installation and pressure testing, new water mains should be disinfected according to AWWA C651.
- e. The disinfection chemicals should be limited to less than 12% active chlorine. The duration of the disinfection should not exceed 24 hours.
- f. Upon completion, the system should be thoroughly flushed with fresh water, and retested to verify the disinfectant chlorine level has been reduced to potable drinking water concentrations in all service water tubing and branch lateral pipes.

204. POLYPROPYLENE PIPES

Propylene co-polymer pressure pipe shall comply with the relevant provisions of BS 4991 and DIN standards and, where it is to be in contact with potable water, shall be Series 1.

Polypropylene pipes shall be available in diameters from 12mm to 1400mm and shall be suitable for working use at temperatures up to 90°C, and withstand short-term use at a maximum 110°C.

205. STEEL PIPES AND SPECIALS

All piping shall be plain ended unless otherwise specified and suitable for use with flexible mechanical couplings. The grade of steel used shall comply with the requirements of BS EN 14164.

The pipes shall be welded or seamless and shall conform to BS EN 10216.

All the pipes shall be internally protected with epoxy coatings for internals and externals of steel pipes in accordance with AWWA C210. External protection to be as specified in DIN 30671, EN 10309, AWWA C213 or NFA 49-706.

All joints shall be of the flexible mechanical type and shall be supplied complete with all bolts, nuts, washers and joint rings as may be required. All metal parts of joints shall be adequately protected with rust-proof paint. The joints shall be protected from corrosion by wrapping with Denso paste and tape or by some similar approved material.

All fittings and specials shall be of such dimensions as will conform / fit with the piping supplied.

Flanged adaptors shall be pieces suitable for connecting a flanged gate valve etc. to the type of piping supplied and shall be supplied complete with all bolts, nuts, washers and joint rings.

The spigot ends of all Tees shall be suitable for connection to the pipework supplied using the aforementioned flexible mechanical joints.

All flanges on specials shall conform to NP 16 or NP 25, as specified in the Price Schedules in accordance with BS EN 1092, unless otherwise detailed.

All flanged joints shall be protected from corrosion by wrapping with Denso paste and tape or some similar approved material.

206. G.R.P. PIPES AND SPECIALS

Glass Reinforced Plasting piping shall be in accordance with SRN 317.

207. GALVANISED PIPES AND SPECIALS

All piping shall conform to SRN 823 and SRN 903 for "Medium" Piping. The pipes shall be screwed and socketted, coupled or flanged.

All specials shall be of such dimensions as will mate with the piping supplied. Screw down stopvalves shall conform to SRN 826. Barrel nipples shall conform to SRN 823 and all other specials shall conform to SRN 824.

All pipes supplied shall be certified by the manufacturer to have been tested in accordance with the relevant Standard Specification.

208. DUCTILE IRON AND CAST IRON PIPES AND SPECIALS

All cast iron piping and fittings shall conform to the requirements of SRN 200.

Ductile iron pipes and fittings shall comply with SRN 202. Where required the pipes shall be protected as specified by the manufacturer of the pipes and shall be used as recommended by the manufacturer of the pipe.

Where the requirements include for the supply of flexible couplings the Contractor shall submit for approval by the Engineer full details of the type of joint offered and a full description of the method of jointing prior to arranging for the delivery of goods on site.

All flexible couplings shall be protected from corrosion by wrapping with Denso paste and tape or by some similar approved material.

The quality of metal used for the manufacture of the pipes shall be of good quality grey cast iron and subject to the various quality control tests as specified in the relevant Standards.

All piping and fittings shall be coated internally with cement mortar lining to SRN 211. Cement mortar lining shall not contain any constituents soluble in water nor any ingredient which could impart any taste or odour whatsoever to the water after sterilization and washing out of the mains. External protection to be as specified in SRN 258.

The flanges of straight pipes shall be at right angles to axis of the pipe and the faces of the flanges shall be parallel and machine finished.

The faces of the flanges of fittings shall be at right angles to the directional axis. The bolt holes shall be concentric with the bore and located symmetrically off the centre line.

In flanged pipework the holes in one flange shall be located in line with those in the other. All flanges shall be drilled to SRN 207, unless otherwise detailed.

The weights of the pipe and fittings shall comply with the Specification in the relevant Standard.

209. CONCRETE PIPES AND SPECIALS

Concrete pipes and specials shall comply with the requirements of SRN 840. They shall carry the relevant Standards Institution registration certification trade mark, or test certificates shall be furnished by the manufacturers.

210. CONCRETE POROUS PIPES

Concrete porous pipes shall comply with the requirements of SRN 410: Concrete Porous Pipes for Under-drainage.

211. FLANGED JOINTS

Where specifically called for or deemed appropriate, flanged joints shall be utilised. They shall conform to DIN Standards 2500, 2501, 2519, 2576, 2627, 2566, 2655-56, 2673, 2526, 2527, BS EN 1092, BS

1560 or ISO 7005: 1988., drilled to NP10 except where otherwise indicated in Price Schedules, with gaskets made of reinforced elastomer rubber to DIN Standards 2693, 2697 or EN 1514 and minimum thickness of 3mm.

All flanges on fittings and pipework where flanged connections are required must comply with the requirements of DIN Standards 2500, 2501, 2519, 2576, 2627-38, 2566, 2655-56, 2673, 2526, 2527, BS EN 1092, BS 1560 or ISO 7005: 1988 and drilled to NP 16, unless otherwise specified.

Inspection gaskets for flanged joints shall be rubber reinforced with cotton, 3mm thick and shall be in accordance with DIN Standards 2693, 2697 or EN 1514. Bolts, washers and nuts for flanged joints shall be of mild steel complying with ISO 898/1, ISO 898/2.

212. FLEXIBLE JOINTS

All flexible couplings (Viking Johnson or other approved type) shall be supplied and shall be coated with fusion bonded epoxy layer 350 microns thick, complete with rubber gaskets, bolts, nuts and washers. All couplings shall be coated with red oxide primer and bituminous composition suitable for use with potable water.

Flexible couplings shall be of a mechanical type coupling consisting of a centre sleeve, two end ring flanges, two wedge shaped sealing rings of grade T Nitrile rubber, and with galvanized nuts bolts. The main components shall be made from malleable cast iron to ASTM A 47-77 for larger diameters. If specifically called for, couplings shall be provided with a suitably sized screw plugged hole in the sleeve to allow for the introduction of molten bitumen for additional internal protection. The manufacturer shall then include the necessary removable internal backing-up rings of rubber composition and shall further include for all materials for in-situ jointing and protecting both for remedial works and for internal and external protection at such joints. After jointing, the exposed part of the bolt shall be provided with a tight-fitting polythene protection cap.

213. GATE VALVES

Gate valves shall comply with the requirements of BS 5163, AWWA C203-78, DIN 3230 Part 1-3, DIN 3352 Part 1-4.

The gate valves shall be suitable for use in pipelines and for the operating pressure to a head of 160 metres or 250 metres of water (NP 16) or NP 25.

Unless otherwise specified, gate valves of nominal diameters up to and including DN 300 shall be made of epoxy coated cast ductile iron in accordance with BS EN 1074. The epoxy coating shall be not less than 150 microns thickness. The gate shall be completely rubber encapsulated, the gate valve being of pocket less type with a straight through port.

The gate valves shall be double flanged. The dimensions and drilling of flanges shall be in accordance with BS EN 1092. Flanges shall be machined flat. Flanges shall be NP 16 / NP 25 complying with BS

EN 1092, unless otherwise indicated Price Schedules.

Spindles of the gate valves shall be provided with cast iron caps conforming to the requirements as specified under “Valve Caps” in DIN 3230, DIN 3352, BS 5163 or AWWA C203-78, or hand wheels if so specified.

Unless otherwise specified the face to face dimensions of gate valves with integral flanged ends shall be in accordance with BS 5155 basic series 14 (short) or basic series 15 (long) as indicated in the Price Schedules.

Where specified, valves for replacement washouts shall be in accordance with specification Clause 202 except that the valve bodies shall be of epoxy coated ductile iron and the flanges shall be undrilled. Face to face dimensions for these valves shall be to BS 5155 basic series 14 (short).

The spindles of the gate valves shall be of the non-rising type, except where specifically indicated otherwise and screwed so as to close the valves when rotated in a clockwise direction. The direction of closing shall be clearly cast on the valve cap or hand-wheel. Where specified, valves for replacement washouts shall be in accordance with specification Clause 202 except that the valve bodies shall be of epoxy coated ductile iron and the flanges shall be undrilled. Face to face dimensions for these valves shall be to BS 5155 basic series 14 (short).

The gate valves shall be subject to “Closed End Tests” in accordance with the procedure set out in BS 5163, AWWA C203-78, DIN 3230 Part 1-3, DIN 3352 Part 1-4.

The gate valves shall be suitable for opening and closing against an unbalanced head by manual operation.

The gate shall be of ductile iron fully rubber encapsulated, the gate sealing in the body being ensured by compressing of the rubber.

The gate valves shall be works cleaned and shot-blasted in accordance with BS 2640. They shall be coated internally and externally with fusion bounded powder epoxy or equivalent suitable for potable water and to a minimum thickness of 150 microns. The body, the bonnet and the gate of the valve shall be made of ductile iron to BS EN 1563 OR BS EN 1564, the gate being encapsulated with elastomer EPDM, nitrile or equivalent.

214. AIR VALVES

The Supplier shall provide air valves to suit the site on which the main is located and the maximum water pressure specified. The body and cover of air valves shall comply with BS EN 1074.

The body, cover, splash cowl and joint support ring of the air valve shall be of mechanite cast iron with flanges drilled to BS EN 1092.

The internal screwed isolating valve shall have the valve and seating of gun metal, operating screws of bronze, nuts of gun metal, and glands and cap of mechanite.

The large orifice valve shall have a vulcanite covered ball closing on a moulded dextine seat ring. The

bush may be in gun metal.

The double orifice type of air valve shall comprise a small and large orifice unit with common connection to the main and screw-down isolating valve to permit inspection of the valve. The spindle of the isolating valve shall be screwed so as to close the valve when rotated in a clockwise direction and be provided with a Spindle Cap to dimensions as specified in DIN 3230, DIN 3352, BS 5163 or AWWA C203-78.

Design of the air valves shall be such that the balls do not blow shut under any working or test conditions when large volumes of air are being released.

215. CHECK VALVES (DIRECTIONAL VALVES)

Check valves shall be suitable for waterworks purposes and shall be manufactured to comply with the general requirements of BS EN 12334. They shall be double flanged type, non-slamming and recoilless on flow reversal. Valves of DN 700 and larger shall be of the multi-disc type or tilting disc type. The valves shall have a high grade cast iron body and cover to BS EN 1561 Grade 220/260 with gun metal nickel bronze alloy door seating. The hinge pin shall be of stainless steel carried on non-corrodible bearings.

The body and cover material of the valves shall be made of carbon steel conforming to ASTM A216, Grade WCB. The hinge pin material shall conform to ASTM A479, the disc carrier material shall conform to ASTM A217, the seat material shall conform to ASTM A106 and the disc material shall conform to ASTM A216.

216. CONSUMER WATER METERS

General

Domestic water meters for house connection shall comply with BS 5728, KS 06-248 1, 2 and ISO 4064/2 & 2 /Add.1. In addition, it shall comply with the EEC Council Directive No. 75/33/EEC.

The domestic water meters shall be suitable for both Vertical and Horizontal installation and shall be of approved rotary piston volumetric type - Class C. The meter shall provide the specified flow accuracy when installed as detailed here below.

The domestic meters shall be supplied as a complete kit comprising the following items:

- Meter, Semi-positive rotary (grooved) piston volumetric type, calibrated in cubic metres;
- Meters are to be corrosion proof copper alloy or polymer plastic where specified;
- The outer body casing shall be of the split case type. The outer casing may consist of two parts which are screwed together and a watertight seal between the two.
- Isolating/disconnection valve;
- Union sockets;
- DN 15 BSP threaded inlet and outlet tail pieces complete with unions on each end, suitable for connection to galvanised iron pipe;
- Built-in strainer

- Built-in non return valve to prevent meter reversal
- “small dial”

The meter shall be complete as a package for instant connection and use. The domestic meters shall have threaded connections.

Performance

The maximum flowrate (Q_{max}) is the highest flowrate at which the meter can function over limited periods without damage, and without exceeding the maximum permissible errors (+/-2%) and the maximum permissible value for loss of pressure (1 bar).

The nominal flowrate (Q_n) is equal to half the maximum flowrate, Q_{max} . It is expressed in cubic metres per hour and is issued to designate the meter.

At the nominal flowrate (Q_n) the meter should be able to function in normal use, i.e. in continuous and intermittent operating conditions, without exceeding the maximum permissible errors (+/-2%).

The minimum flowrate (Q_{min}) is the flowrate above which the meter must not exceed the maximum permissible errors (+/-5%), and is fixed as a function of Q_n .

The transitional flowrate (Q_t) is the flowrate which divides the upper and lower regions of the flow range and the rate of the maximum permissible error is +/-2%.

Performance Parameter		Nominal Diameter (mm)			
		15	20	25	40
Nominal Flow Rate - Q_n	m ³ /h	1.5	2.5	3.5	10
Maximum Flow Rate..... Q_{max}	m ³ /h	3	5	7	20
Minimum Flow Rate..... Q_{min}	l/h	15	25	35	100
Transitional Flow Rate..... Q_t	l/h	22.5	37.5	52.5	150

Meteorological Classes

The meters performance specification shall be to ISO 4064/1 or BS 5728/1 Part 1, Class C or to equivalent internationally recognized Standard according to the value of Q_{min} and Q_t as shown in the following table:

Class	Q_n =Lessthan15m ³ /h	Q_n =15m ³ /hormore
Class C		
Value of: Q_{min}	0.01 Q_n	0.006 Q_n
Value of: Q_t	0.015 Q_n	0.015 Q_n

The meters must be able to retain their accuracy when installed in either horizontal, vertical or inclined planes.

Contractor shall provide certificate of the meteorological class of the meters offered.

Sizes

For each meter size designated the corresponding fixed set of dimensions must correspond to BS 5728, ISO 7858/1:1985 and no deviations from this shall be accepted. The lengths of water meters shall not exceed the following:

Parameter		Nominal Diameter (mm)			
		15	20	25	40
Length	mm	165	165	199	300

Tightness, Pressure and Temperature Resistance

The water meter shall permanently sustain (without leakage, malfunctioning or permanent deformation) a minimum working pressure of 10 bar (DN 15 mm) or 16 bar (DN 20 mm) and be suitable for water temperatures up to 50 degree Celsius.

Headloss

Characteristic curves of head losses plotted against the rate of flow from the minimum flow rate shall be provided by the Tenderer. The meters shall show a loss of head not exceeding 1 Bar at Q_{max} and 0.25 bar at Q_n in accordance with ISO 7858/1:1985 and ISO 4064/1.

Materials

The materials used in the construction shall be designed to withstand raw and treated (potable) water and operate for at least 5 years without normal need for maintenance or repair and without the maximum error exceeding the specified limits.

Tenderer shall specify the optimum pH and the water quality for which the meters have been designed. They must be constructed throughout of materials which are resistant to internal and external corrosion and if necessary be protected by some suitable surface treatment. All materials of the water meter which are in contact with the water flowing through the water meter shall be non-toxic and non-tainting. Water temperature variations within the working range shall not adversely affect the materials used in the construction of the water meter.

The outer body casing shall be of the split case type. The outer casing may consist of two parts which are screwed together and a watertight seal between the two. The meter body casing must be made from materials with a life expectancy under normal use in excess of 20 years.

The water meter shall be made with materials appropriate to each specific use. The body of domestic meters (DN15 - DN25) shall be manufactured from copper alloy or polymer.

The measuring element shall be of high grade polymer to ensure minimum wear and a high degree of reliability.

Counter

The indicator shall provide for reliable and unambiguous direct reading of the volume of water measured in cubic metres or in cubic meters and litres.

The indications of volume shall be by any of the two types as follows:

Type 1 By a row of inline consecutive digits in one or more apertures (drum counters);
or

Type 2 A combination of drum counters for whole units of cubic meters and pointers on

circular scales for fractions of cubic meters.

Drum counters shall be black for indication of a cubic metre and its multiples shall be red for indication of fractions of a cubic metre. Visible movements of the digits shall be upwards and the actual or apparent height of the digits on the drums shall be not less than 4 mm. The advance of a digital unit shall be completed while the next lower valued digit is within the last tenth of its travel. The drums showing digits of lowest value shall move continuously in Type 1, and may move continuously in Type 2. Indicators with pointers (Type 2) shall rotate in a clockwise direction. The value of each division on the scales shall be expressed in multiples or sub-multiples of ten. Each scale shall be graduated in cubic meters or accompanied by a multiplying factor (x0.01, x0.1, x10, x100) according to the value of the scale. The symbol m³ shall appear on the dial. The gear unit and the counter shall be combined and completely sealed.

The number drums shall be contained in a non-toxic fluid for lubrication and protection. The counter shall be placed in a window in the meter body and be placed so as to allow for ease of meter reading. Counter window shall be of minimum 7mm thickness. Black numbers on white shall denote cubic metres and white numbers on red shall denote litres. The counter shall reset to zero at a reading of not less than 10,000 m³.

The indicator shall, as minimum requirement, record the following values:

Size of Meter(DN)	Minimum Registration (m ³)	Maximum Registration Before Se 1 Re- Set (m ³)
15mm	0.001	10,000
20mm to 40mm	0.001	100,000

Protection

A suitable in-built strainer (0.75 mm aperture and 2.844 mm² mesh area) shall protect the measuring mechanism and an in-built non return valve shall prevent meter reversal.

Marking

Each water meter shall be marked on the casing with the following information:

- Direction of flow of water on both sides of the meter
- Maximum flow rate (3m³/hr)
- Individual Serial number (engraved)
- Manufacturer's name
- Country of Origin
- Year of manufacture
- WSP's name (max 10 letters)

Sealing

Water meters shall be provided with a means of sealing so that after sealing, both before and after the water meter has been properly installed, there shall be no possibility of dismantling or altering the water

meter or its adjustment device without visibly damaging the seal. The meters shall be sealed subsequent to manufacture and before delivery to the purchaser.

The preferred method of sealing is by a corrosive resistant wire inserted through 2.5 mm diameter holes in the halves of the body, and secured by a circular metal seal impressed by a device which provides a unique imprint on the seal.

Tenderer's shall provide details of the sealing wire type with proof of corrosive resistant and method proposed.

Pre-Shipment Testing

A representative sample of the meters shall undergo Pre-shipment testing at the manufacturers premise as directed by the Engineer

Packing

Packing shall be made of strong wooden crates, and inside such crate, each meter shall be packed in its own carton box.

Workmanship

The meters shall be guaranteed against defects in materials and workmanship for a minimum period of one year from date of delivery. Parts to replace those in which a defect may develop within such period shall be supplied without charge, piece for piece, upon the return of such defective parts to the supplier thereof or upon proof of such defects.

Meters should be designed for easy disassembly and re-assembly without the use of special tools or equipment and should be easy to maintain and repair. Meters designed to resist vandalism will be preferred.

217. ELECTROMAGNETIC FLOW METERS

Electromagnetic flowmeters shall be sized and installed in accordance with the manufacturer's recommendations as approved by the Engineer, and in accordance to BS 5792 and BS 6739.

The flow meters shall be supplied with a verifiable calibration certificate. Electromagnetic flow meters shall be selected and sized to give a maximum velocity of between 1 and 3m/sec. The minimum velocity achieving the stated accuracy shall be not more than 0.1m/sec.

Electromagnetic flow meters shall be of new technology microprocessor based electronic water flow meter and be capable of monitoring instantaneous and cumulative flows and flow rate in both forward and reverse flow direction. The flow meter shall have no moving parts to ensure that there is no damage from particulate matter, e.g. stones, weed, etc., nor cause any restriction in the flow path and be capable of setting adjustments without the need to stop the flow. Each metering system shall comply with BS 5792 and comprise a flow sensor mounted in the pipework line and a signal converter, wither integrally mounted or remotely located preferably within the main control panel.

The meter shall be suitable for 85 to 265 Volt AC, 40 to 400 Hz supply without the need for link setting

or voltage selection and shall be supplied with an uninterrupted power supply (UPS) inclusive of voltage protector. In addition, automatic battery backup must be included to ensure no loss of metering during AC power loss periods.

Alternatively, the meter shall be suitable for operation from two internal 3.6V Lithium batteries which provide an uninterrupted operating life of five years. It shall be possible to change the batteries in the field.

The accuracy of $\pm 0.25\%$ for AC meters and $\pm 0.5\%$ for battery meters shall be achieved. The meters shall be suitable for maximum working temperature to 70°C at pressure up to at least 16 bars, The electronics of the E/M bulk water meter should be water tight in submerged condition of 10 m water head.

The meters shall have GSM- equipped transmitters capable of operating in 850/ 900/ 1800/ 1900 Quad Band Ranges. The meters should have USB-Type Data output port with a USB connector cable supplied together with the meter for data downloads.

The manufacturer shall also supply a detailed list of all parts comprising the proposed meter, duly labelled in English and numbered together with the indicative unit prices for each separate component. This is to enable normal usage and cost of the spares to be taken into consideration when assessing the cost of each meter which will be factored in the selection of the meter to be used in the project.

The warranty offered for each component should be explicitly indicated.

218. ELECTRO-FUSION JOINTING MACHINE

The fusion jointing machine shall be suitable for carrying out electro- fusion welding for HDPE pipes and fittings up to 110mm diameter. The welding process is controlled and regulated with energy output compensation to account for variations in ambient temperatures.

The Unit should be complete with all accessories and shall have the following minimum general specifications;

- An internal memory with a capacity of at least 350 jointing records
- Support for USB data transfer. A USB connector cable should be supplied together with the jointing machine
- The Unit Display should be scratch resistant and dust proof, easily readable with an adjustable contrast function and give relevant information (in English) such as;
- Recognition of fitting type, dimension and manufacturer
- Resistance of connected fitting
- Primary voltage and frequency
- Actual running and final fusion duration
- Ambient temperature, appropriate cooling time etc.
- Minimum operating range of ambient temperature of between -10°C and $+45^{\circ}\text{C}$

- Two pairs of 4mm and 4.7mm angle adapter clips
- The complete control unit must not exceed a maximum weight of 25 kilograms including all standard primary and secondary cables
- The unit should have the relevant software and system accessories necessary for data processing and transmission
- Recognition support for different manufacturer products
- The unit should have a minimum of IP 54 Protection rating
- The unit should be supplied with a detailed operation manual written in English with clear step wise operating instructions, troubleshooting procedures, error codes and other relevant information

Site demonstration and training of the Water Company Staff on use of the equipment should be carried out.

219. BUTT-WELDED FUSION JOINTING MACHINE

The fusion jointing machine shall be self-aligning, suitable for welding under-pressure pipes for water, gas and other fluids up to 250mm diameter. The machine body shall be able to assume two working positions; inclined or horizontal and have a supporting frame, four clamps and two hydraulic cylinders with fast non-drip coupling connections.

The machine shall have the possibility to choose the best configuration for the working conditions by adjusting only 4 screws on the machine frame. Fast-locking adapters shall speed up the welding preparation time without using any additional equipment. The automatic detaching of the heating plate from the pipes / fittings shall be applicable on every welding configuration. This shall enable two rollers to be lodged very quickly on the sides of the machine body, allowing lifting of the welded pipes to make them roll and prepare a new weld.

The fusion machine shall include a Teflon-coated (PTFE) heating plate with a built-in independent thermometer, to check the working temperature, and a high-precision electrical thermo regulator ($\pm 1^{\circ}\text{C}$) with digital display and regulating buttons. This system shall include Led indicators to check if the machine is working normally (live tension and working temperature), contingent probe's failures and/or temperature anomalies.

The machine shall include an extractable electric milling cutter to face the heads of the pipes and/or fittings. It includes a safety micro-switch and a thermal circuit breaker. The machine shall include an electro-hydraulic gear case protected from crashes and atmospheric corrosion by a plastic box. The gear case shall consist of a control lever, to open and close the clamps, maximum pressure and discharge valves (useful also for the "Dual Pressure" welding process), hydraulic connection hoses with non-drip

fast couplings and timer (to check the warming and welding time). The machine shall be pre-set for the connection of the electronic controller.

A milling cutter / heating plate support which shall include a high-temperature-proof bag shall be included in the components of the fusion machine as it shall be required to protect the heating element from being scratched.

PART B: DESCRIPTION OF MATERIALS AND WORKMANSHIP**B-2 EXCAVATIONS****B-2.1 Examine the Site**

The Contractor is assumed to have examined the Site carefully and ascertained for himself its nature and the kind of materials to be excavated.

B-2.2 Excavations

Excavations shall be to the widths and depths indicated on the Drawings or to such lesser or greater depths as The Project Manager may deem necessary and so instruct the Contractor in order to obtain satisfactory foundations.

Any difference in the quantity of work actually executed under such instructions and that provided in the Bills of Quantities shall be measured and valued by the Project Manager as a Variation under the relevant Conditions of Contract.

If, however, the Contractor excavates to any greater depths or widths than are shown on the Drawings or directed, then the Contractor shall, at his own expense, satisfactorily fill in such extra depth and width with concrete similar to that described for foundations.

B-2.3 Bottoms of Excavations to Receive Foundations

The Contractor shall report to The Project Manager when secure bottoms to the excavations have been obtained. Any concrete or other work executed before the excavations have been inspected and approved shall, if so directed, be removed and new work substituted after the excavations have been approved, all at the Contractor's expense.

The surface of the bottoms to excavations to receive foundations shall be levelled or graded to falls as approved by The Project Manager.

B-2.4 Side of Excavations

Sides of excavations shall be maintained vertical by means approved by The Project Manager, and the Contractor shall also allow for keeping same free from fallen materials in his rates for excavations. The Contractor shall also allow for keeping excavations free from, water and mud by baling, pumping or otherwise, in his rates for excavations.

B-2.5 Rock

Excavation in rock shall exclude all material, which can be removed by hand and does not necessarily require the use of compressors or other mechanical equipment although the Contractor may use such equipment to loosen the material for ease of its removal. All top soils, black cotton and other clay soils, murrum (laterite), stone and other fill and all similar materials will NOT be classified as rock.

Rock has been measured hereafter as extra over excavation for excavating in soft or hard rock.

Soft rock shall be deemed to mean any material which cannot reasonably be removed without the use of mechanical plant such as rippers, compressors, tractors, but which does not require drilling, wedging or blasting. Local tuffs, highly-consolidated laterite, weathered lavas, boulders or out crops of harder rock not exceeding one cubic metre in volume, soft building stone and similar material shall be classified as soft rock.

Hard rock shall be classified as material which is massive and geologically homogeneous and which requires the use of drilling, wedging or blasting for its removal such as black trap or similar material.

The Project Manager's decision shall be final with regard to the classification of excavated materials.

B-2.6 Starting Level

Unless otherwise described the starting level of all excavations has been measured from the level remaining after completion of reduced level excavation. However, the Contractor's prices should include for carrying out the excavation work in any alternative sequence that he may require.

B-2.7 Blasting

No blasting will be permitted without the prior approval of Local Authorities and The Project Manager.

B-2.8 Cart Away

All surplus excavated materials where so directed and all rubbish are to be removed from the Site and the Contractor is to find his own dump and shall pay all charges.

B-2.9 Borrow Pits

No borrow pits will be allowed to be opened on the Site.

B-2.10 Filling Obtained From The Excavators

Filling obtained from surplus excavated materials will only be incorporated if suitable material arises and is to be free from all weeds, roots, vegetable soil or other unstable materials and is to be filled in layers each of not more than 250 mm finished thickness. Each layer to be well wetted and consolidated as described hereafter.

B-2.11 HARDCORE FILLING

Hardcore for designs in areas with high water or with high rock formation, etc., filling shall be good hard stone ballast, broken bricks or quarry waste to the approval of The Project Manager broken to pass not greater than a 150 mm ring to be 75% of the finished thickness of the layers being compacted, whichever is the lesser. Hardcore shall be free from all weeds, roots, vegetable soil, clay, black cotton soil or other unstable materials.

It shall be well graded with smaller stones and fine material shall be added to each layer to give gradation of material as necessary to obtain a solid compact mass after rolling. Hardcore filling is to be laid in layers each of a consolidated thickness not exceeding 250 mm. Each layer shall be compacted by at least 8 passes of a 10 tonne smooth-wheeled roller or a 2 tonne-vibrating roller until all movement ceases. Sufficient water is to be added to obtain maximum compaction to The Project Manager's approval. To each layer a 25 mm thick layer of sand complying with the specification for fine aggregate for concrete shall be spread over the surface and forced into the hardcore by the use of a vibrating roller weighing not less than 2 tonnes; this operation should be carried out when the materials are dry and repeated whilst the sand is well watered. Should all the sand be absorbed, The Project Manager may require a further layer to be applied and the process repeated.

The top surface of the hardcore shall be levelled or graded to falls as required, and shall then be blinded with a layer of similar material broken to 25 mm gauge and finished with a 10 ton smooth-wheeled roller. The surface so obtained shall be to The Project Manager's approval.

B-2.12 Materials Found In Excavations

No sand, aggregate, murrum or other material found in the excavations is to be used in the Works without the written permission of The Project Manager.

B-2.13 RATES FOR EXCAVATIONS

The rates for excavation, including excavation in rock, **MUST INCLUDE** for trimming, leveling and preparing bottoms and all faced to receive concrete, etc., and for any extra excavation required for planking and strutting.

Prices shall include for excavating in any material encountered unless specifically otherwise described, handling, etc., of extra excavation required for formwork or planking and strutting, circular work, grubbing up any old drains, roots, etc., that may be encountered, for trimming sides and levelling and ramming bottoms, forming steppings and trimming excavation or filling for embankments and batters as required.

In his prices for the item "Allow for keeping the whole of the excavations free from water" the Contractor shall allow and make provision for keeping the whole of the Works thoroughly drained and clear of water below the lowest level of any part of them so long as may be required and if considered necessary by The Project Manager, continuously day and night by petrol or hand pumps or other mechanical appliances, pipes, chutes, dams, manholes, sumps, diversions or any other means necessary for that purpose.

Water pumped from the trenches shall not be allowed to run down the road channels but shall be conveyed to the nearest surface water sewer, ditch or river through troughs, chutes or pipes.

B-2.14 Rates for Disposal

Rates for disposal of excavated material are to include for the selection of spoil as it arises and for all double handling and re-excavation from spoil heaps not specifically ordered by The Project Manager.

B-2.15 Diothene Sheeting

Diothene sheeting shall be 500 gauge or 1000 gauge as shown, and as produced by Plastics Africa Limited, or other equal and approved. Joints in sheeting shall be treble folded with 150 mm fold and taped at 300 mm intervals with 50 mm wide black plastic adhesive tape as manufactured by Cellotape Limited. The sheeting shall not be stretched but shall be laid loose with sufficient wrinkles to permit shrinkage up to 15%.

B-2.16 Cutting Down Trees

The Contractor must consult The Project Manager before cutting down or pruning any trees or shrubs encountered on the Site.

B-3 CONCRETE WORK**B-3.1 Code of Practice**

All workmanship, materials, tests and performances in connection with the reinforced concrete work are to be in conformity with the latest edition of the British Standard Code of Practice (C.P. 8110 for "The Structural Use of Concrete) where not inconsistent with these Preambles.

B-3.2 Supervision

A competent person approved by The Project Manager shall be employed by the Contractor whose duty it will be to supervise all stages in the preparation and placing of the concrete. All cubes shall be made and Site tests carried out under his direct supervision, in consultation with The Project Manager.

B-3.3 Contractor's Plant, Equipment and Construction Procedures

Not less than 30 days prior to the installation of the Contractor's plant and equipment for processing, handling, transporting, storing and proportioning, ingredients, and for mixing, transporting and placing concrete, the Contractor shall submit drawings for approval by The Project Manager, showing proposed general plant arrangements, together with a general description of the equipment he proposes to use.

After completion of installation, the operation of the plant and equipment shall be subject to the approval of The Project Manager.

Where these Preambles, the Bills of Quantities or the Drawings require specific procedures to be followed, such requirements are not to be construed as prohibiting use by the Contractor of alternative procedures if it can be demonstrated to the satisfaction of The Project Manager that equal results will be obtained by the use of such alternatives.

Approval of plant and equipment or their operation, or of any construction procedure, shall not operate to waive or modify any provision or requirements contained in these Preambles governing the quality of the materials or of the finished work.

B-3.4 Tolerances

On all setting out dimensions of 5 metres and over a maximum non-accumulative tolerance of plus or minus 5 millimetres will be allowed. On all setting out dimensions under 5 metres a maximum non-accumulative tolerance of plus or minus 3 millimetres will be allowed. On the cross-sectional dimensions of structural members, unless otherwise required by the Drawings, a maximum tolerance of plus or minus 3 millimetres will be permitted.

The Contractor shall be responsible for the cost of all corrective measures required by The Project Manager to rectify work which is not constructed within the tolerances set out above.

B-3.6 Materials Generally

All materials which have been damaged, contaminated or have deteriorated or do not comply in any way with the requirements of these Preambles shall be rejected and shall be removed immediately from the Site at the Contractor's expense. No materials shall be stored without The Project Manager's prior approval.

The sources of supply for all materials used for concrete work shall be approved by The Project Manager before these materials are delivered on the Site. All materials shall comply with the requirement of the latest appropriate British Standard unless otherwise agreed with The Project Manager, whose approval shall be obtained in writing.

The suppliers of materials shall give The Project Manager access to their premises when directed for the purpose of obtaining samples of the materials for testing.

B-3.7 Samples

Samples of materials shall be submitted as soon as possible after the contract is let. No deliveries in bulk shall be made until the samples are approved by The Project Manager. All condemned materials shall be removed from the Site within 24 hours.

Every facility shall be provided to enable The Project Manager to obtain samples and carry out tests on the materials and construction. If these tests show that any of the materials or construction do not comply with the requirements of this

Specification, the Contractor will be responsible for the costs of the tests and the replacement of defective materials and/or construction.

Samples of all materials proposed to be used shall be submitted to The Project Manager and shall be tested, where required, by an approved materials laboratory and receive his approval prior to being delivered in bulk upon the Works.

B-3.8 Cement

Cement, unless otherwise specified, shall be Portland cement of a brand approved by The Project Manager and shall comply with the requirement of B.S. 12 with the exceptions that it may contain reactive volcanic ash (of not more than 10% of the total weight) and the quantity of insoluble residue permitted in B.S. 12 may be exceeded. A manufacturer's Certificate of Test in accordance with B.S. 12 shall be supplied for each consignment delivered to the Site.

Should the Contractor require using cement of the rapid hardening variety, he shall obtain the approval of The Project Manager and also obtain any instructions regarding modifications to these Preambles caused thereby. Any additional cost that may be caused by the use of rapid hardening cement shall be at the Contractor's expense.

Cement may be delivered to the Site either in bags or in bulk.

If delivered in bags, each bag shall be properly sealed and marked with the manufacturer's name and on the Site is to be stored in weatherproof shed of adequate dimensions with a raised floor. Each consignment shall be kept separate and marked so that it may be used in the sequence in which it is received. Any bag found to contain cement, which has set or partly set, shall be completely discarded and not used in the Works. Bags shall not be stored more than 1,500 mm in height.

If delivered in bulk the cement shall be stored in a weatherproof silo either provided by the cement supplier or by the Contractor, but in either case the silo shall be to the approval of The Project Manager.

B-3.9 Aggregates

The aggregates shall conform to the requirements of B.S. 882 and the sources and types of all aggregates are to be approved in all respects by The Project Manager before work commences.

The grading of aggregates shall be one within the limits set out in B.S. 882 and as later specified and the grading, once approved, shall be adhered to throughout the Works and not varied without the approval of The Project Manager. Fine aggregate shall be clean, coarse, siliceous sand of good sharp, hard quality and shall be free from lumps of stone, earth, loam, dust, salt, organic matter and any other deleterious substances. It shall be graded within the limits of Zone 1 or 2 of Table 2 of B.S. 882.

Coarse aggregate shall be good, hard, clean approved black trap or similar stone, free from dust, and decomposed stone, clay, earthy matter, foreign substances or friable thin elongated or laminated pieces. It shall be graded within the limits of Table 1 of B.S. 882 for its respective nominal size.

If in the opinion of The Project Manager the aggregate meets with the above requirements but is dirty or adulterated in any manner it shall be screened and/or washed with clean water if he so directs at the Contractor's expense.

Aggregates shall be delivered to the Site in their prescribed sizes or grading and shall be stock-piled on paved areas or boarded platforms in separate units to avoid intermixing. On no account shall aggregates be stockpiled on the ground.

B-3.10 Water

The water used for mixing concrete shall be from an approved source, clean, fresh and free from harmful matter and comply with the requirements of B.S. 3148.

B-3.11 Ready Mixed Concrete

Ready-mixed concrete may only be used with the prior permission of The Project Manager, subject to special additional conditions laid down by The Project Manager.

B-3.12 Concrete Mixes

Concrete mixes have been described either by the volumetric proportions or by the 28-day cube strength.

B-3.13 Concrete Strengths

Concrete mixes shall have the following minimum strengths as given by Works Cube Tests:-

Notation Grade/Class	Minimum Crushing Strength at 28 Days N/mm ²
A or 30	30
B or 25	25.5
C or 20	21
D or 15	15.5

The average strength obtained from cube tests shall be 10% higher than the minimum strengths shown above.

Works Cube Tests will not be required for Grade E blinding concrete which shall comprise 1:4:8 by volume.

Volumetric mixes shall comprise the following:

Mix		Fine Aggregate Cement/Kg	Course Aggregate CM	Equivalent CM Grade
1:1:2	50	0.03	0.07	A
1:1:5	50	0.05	0.10	B
1:2:4	50	0.07	0.14	C
1:3:6	50	0.10	0.20	D
1:4:8	50	0.13	0.26	E

B-3.14 Measured Proportions of Concrete**Cement**

The quantity of cement shall be measured by weight. Where delivered in bags, each batch of concrete is to use one or more whole bags of cement.

Aggregates

Concrete aggregates shall be measured by weight in a weigh batching machine. Weigh batching machines shall be of an approved type and shall be properly maintained and checked for accuracy at regular intervals.

B-3.15 Concrete Grades A, B, C & D

The weights of fine and coarse aggregate to be used in concrete Grades A to D shall be limited in accordance with the table below. The proportions of fine to coarse aggregate and cement which the Contractor proposes to use for each of the mixes specified shall first be approved by The Project Manager. The Contractor will then be required to prepare Preliminary Test cubes and have these cubes tested as described for Work Cube Tests. The test results should be submitted to The Project Manager in sufficient time for further tests to be carried out should they prove unsatisfactory. Cube strengths in the preliminary tests must show crushing strengths at least 25% higher than the strengths specified for Works Cube Tests.

If the Contractor is unable to produce specified cube strengths, he will be required at his own cost to increase the cement content of the mix until satisfactory results are produced.

The Project Manager may require at any time during the Contract the proportions of fine to coarse aggregate to be altered in order to produce a mix of greater strength or improved workability and providing that the total proportions of aggregate to cement remain unchanged, no claim for additional cost will be considered.

B-3.16 Minimum Cement Content

Concrete Grade	Minimum Cement Content by weight to combined total weight of Aggregate
Grade A	1 to 4.5
Grade B	1 to 5.5
Grade C	1 to 7
Grade D	1 to 7

B-3.17 Waterproof Concrete

Where waterproof concrete is specified, "SealopruF Integral Waterproofing Compound" and "Sealoplaz Concrete Plasticiser" as manufactured by Sealocrete Group Sales Ltd., Atlantic Works, Hythe Works, Hythe Road, London NW10 5RD, England, are to be added to the mixing water strictly in accordance with the manufacturer's instructions and at the rate of 0.50 litres and 0.25 litres respectively twice 50 Kg. bag of cement to which the aggregates have already been added and mixed. Not more than 25 litres of water per 50 Kg. bag of cement are to be used unless otherwise approved by The Project Manager.

B-3.18 Expansion Jointing

Expansion joint filler shall be "Flexcell" as manufactured by Expandite Ltd., or "Resilex" as manufactured by Evomastics Ltd., or other equal and approved.

B-3.19 Joint Sealer

Sealers shall be either hot or cold applied. Hot applied sealers shall comply with B.S. 2499. Cold mastics shall be applied by gun and where more than 12 mm deep shall include filling with loose packing yarn to within 2mm from the outer face. All joint sealers are to be approved by The Project Manager prior to their use.

B-3.20 Water Bar

Water bar shall be PVC water bar as manufactured by Expandite Ltd., or other approved type and shall be provided in the positions indicated on the Drawings.

Joints shall be heat welded in accordance with the manufacturer's instructions and where the water bar is to be fixed vertically, metal clips as manufactured by the supplier of the water bar or of other approved design shall be provided to suspend the water bar from the reinforcement.

Where waterproof concrete is used the Contractor shall adhere strictly to the position and type of construction joints as detailed on the Drawings. Any deviation from this procedure or the provision of additional construction joints will require the prior approval of The Project Manager and any additional water bar so required will be at the Contractor's expense.

Formwork shall be designed with sufficient timber formers and blocking pieces to support the water bar and to ensure that it is not displaced during concreting. In the case of horizontal joints in vertical walling and similar members the formwork shall be so constructed as to permit the starter or up stand of concrete surrounding the lower half of the water bar to be poured in the same operation as the slab or other concrete from which it springs. Formwork to walls or similar members where the water bar is positioned at the base of the lift shall have sufficient openings not less than 300mm square at approximately 200mm above the level of the water bar to permit checking that the water bar is correctly positioned and not displaced during concreting.

No concreting will be permitted to portions where up stand starters form integral parts until the formwork to the starter has been fixed and approved.

B-3.21 Testing Equipment

The Contractor shall provide the following equipment for carrying out control tests on the Site:

- (a) Straight edges 3 metres and 1 metre long for testing the accuracy of the finished concrete;
- (b) A glass graduated cylinder for use in the silt test for organic impurities in the sand;
- (c) Slump test apparatus;
- (d) Four 150 mm steel cube moulds with base plates and tamping rods to B.S. 1881.

B-3.22 Works Cube Tests

Works cubes are to be made at intervals as required by The Project Manager in accordance with C.P. 114, and the Contractor shall provide a continuous record of the concrete work. The cubes shall be made in approved 150 mm moulds in strict accordance with the Code of Practice.

Three cubes shall be made on each occasion.

Each cube shall be marked with a distinguishing number (numbers) to run consecutively and the date and a record shall be kept on Site giving the following particulars:-

- (a) Cube No.

- (b) Date Made.
- (c) Location in work.
- (d) 7-day Test:
Date
Strength
- (e) 28-day Test
Date
Strength

Cubes shall be forwarded, carriage paid, to an approved Testing Authority, in time to be tested two at 7 days and the remaining one at the discretion of The Project Manager. No cube shall be dispatched within 3 days of casting.

Copies of all Works Cube Tests shall be forwarded to The Project Manager and one shall be retained on the Site.

If the strengths required above are not attained, and maintained throughout the carrying out of the Contract, the Contractor will be required to increase the proportion of cement and/or substitute better aggregates so as to give concrete which does comply with the requirements of the Contract. The Contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by Works Cube Tests.

B-3.23 Mixing and Placing Of Concrete

The concrete shall be mixed only in approved power-driven mixers of a type and capacity suitable for the work, and in any event not smaller than 0.40/0.28 cu.m. capacity.

The mixer shall be equipped with an accurate water-measuring device. All materials shall be thoroughly mixed dry before the water is added and the mixing of each batch shall continue for a period of not less than two minutes after the water has been added and until there is a uniform distribution of the materials and the mass is uniform in colour.

The entire contents of the mixed drum shall be discharged before recharging. The volume of mixed materials shall not exceed the rated capacity of the mixer.

Whenever the mixer is started, 10% extra cement shall be added to the first batch and no extra payment will be made on this account.

As a check on concrete consistency slump tests may be carried out and shall be in accordance with B.S. 1881. The Contractor shall provide the necessary apparatus and carry out such tests as are required. The slump of the concrete made with the specified water content, using dry materials, shall be determined and the water to be added under wet conditions shall be so reduced as to give approximately the same slump.

The concrete shall be mixed as near to the place where it is required as is practicable, and only as much as is required for a specified section of the work shall be mixed at one time, such sections being commenced and finished in one operation without delay. All concrete must be efficiently handled and used in the works within twenty (20) minutes of mixing. It shall be discharged from the mixer direct either into receptacles or barrows and shall be distributed by approved means, which do not cause separation or otherwise impair the quality of the concrete. Approved mechanical means of handling will be encouraged, but the use of chutes for placing concrete is subject to prior approval of The Project Manager.

Concrete shall be placed from a height not exceeding 1,500 mm directly into its permanent position and shall not be worked along the shutters to that position. Unless otherwise approved, concrete shall be placed in a single operation to the full thickness of slabs, beams, and similar members, and shall be placed in horizontal layers not exceeding 1,500 mm deep in walls and similar members.

Concrete in columns may be placed to a height of 4 metres with careful placing and vibration and satisfactory results. Where the height of the column exceeds 4 metres suitable openings must be left in the shutters so that maximum lift is not exceeded.

Concrete shall be placed continuously until completion of the part of the work between construction joints as specified hereinafter or of a part of approved extent. At the completion of a specified or approved part a construction joint of the form and in the positions hereinafter specified shall be made.

If stopping of concreting be unavoidable elsewhere, a construction joint shall be made where the work is stopped. A record of all such joints must be made by the Contractor and a copy supplied to The Project Manager.

Any accumulation of set concrete on the reinforcement shall be removed by wire brushing before further concrete is place.

The Contractor shall provide runways for concreting to the satisfaction of The Project Manager. Under no circumstances will the runways be allowed to rest on the reinforcement.

Care shall be taken that the concrete is not disturbed or subjected to vibrations and shocks during the setting period.

Mixing machines, platforms and barrows shall be clean before commencing mixing and be cleaned on every cessation of work.

Where concrete is laid on hardcore or other absorbent materials, the base shall be suitable and sufficiently wetted before the concrete is deposited.

B-3.24 Compaction

B-3.24.1 Compaction of Concrete

At all times during which concrete is being placed the Contractor shall provide adequate trained and experienced labour to ensure that the concrete is compacted in the forms to the satisfaction of The Project Manager.

Concrete shall not be placed at a rate greater than will permit satisfactory compaction not to a depth greater than 400 mm before it is compacted.

During and immediately after placing, the concrete shall be thoroughly compacted by means of continuous tamping, spading, slicing and vibration. Vibration is required for all concrete of Classes 40, 35, 25 and 20.

Care shall be taken to fill every part of the forms, to work the concrete under and around the reinforcement without displacing it and to avoid disturbing recently placed concrete, which has begun to set.

Any water accumulating on the surface of newly placed concrete shall be removed and no further concrete shall be placed there on until such water is removed.

Internal vibrations shall be a frequency of not less than 7,000 cycles per minute and shall have a rotating eccentric weight of at least 0.50 Kg., with an eccentricity of not more than 12 mm. Such vibrations shall visibly affect the concrete within a radius of 250 mm from the vibrator.

Internal vibrators shall not be inserted between layers of reinforcement less than one and one half times the diameter of the vibrators apart. Contact between vibrators and reinforcement and vibrators and formwork shall be avoided.

Internal vibrators shall be inserted vertically into the concrete wherever possible at not more than 500 mm centres and shall constantly be moved from place to place. No internal vibrator shall be permitted to remain in any one position for more than ten seconds and it shall be withdrawn very slowly from the concrete.

In consolidating each layer of concrete the vibrating head shall be allowed to penetrate and re-vibrate the concrete in the upper portion of the underlying layer.

In the area where newly placed concrete in each layer joins previously placed concrete more than usual vibration shall be performed, the vibrator penetrating deeply at close intervals along these contacts. Layers of concrete shall not be placed until layers previously placed have been vibrated thoroughly as specified.

Vibrators shall not be used to move concrete from place to place in the formwork.

At least one internal vibrator shall be operated for every 1.5 cubic meters of concrete placed per hour and at least one spare vibrator shall be maintained on Site in case breakdown during concreting operations.

External formwork vibrators shall be on the high frequency low amplitude type applied with the principal direction of vibration in the horizontal plane. They shall be attached directly to the forms at not more than 1,200 metres.

In addition to internal and external vibration the upper surface of suspended floor slabs shall be levelled by tamping or vibrating to receive finished. Vibrating elements shall be of the low frequency high amplitude type operating at a speed of not less than 3,000 r.p.m.

B-3.24.2 Compaction of Fill Material

Compaction of fill material

Fill material in area of fill shall be compacted in layers as shown in the drawings to a stable condition as soon as practicable after deposition and in a manner appropriate to the location and to the material to be compacted.

All fill materials be used, including non-granular material, shall be of a quality acceptable by The Project Manager. All material shall be in a thawed state when placing and compacting, and be free from rocks, large lumps, wood, or other unsuitable material.

Permission from The Project Manager shall be obtained before the next layer is deposited on each layer of compacted fill material. (if applicable)

Fill material shall be compacted to obtain a relative compaction of at least 95% MOD. AASHTO throughout unless otherwise stated in the Contract.

Compaction of fill material adjacent to structure and utilities

Fill material shall be compacted in such a manner that structure or utilities are not disturbed or damaged.

Care must be taken into consideration for the type of Compactor to be used. It is recommended that for this contract all fill materials to be compacted with a foot compactor/ plate compactor.

B-3.25 Construction Joints

Construction joints shall be permitted only at the positions pre-determined on the Drawings or as instructed on the Site by The Project Manager. In general they shall be perpendicular to the lines of principal stress and shall be located at points of minimum shear, viz., vertically at, or near, mid-spans of slabs, ribs and beams.

Suspended concrete slabs are generally to be cast using alternate bay construction in bays not exceeding 20 metres in length. No two adjacent bays are to be cast within a minimum period of 48 hours of each other. The joints between adjacent bays are to be in positions agreed with The Project Manager.

Under no circumstances shall concrete be allowed to tail off, but it shall be deposited against stopping-off boards.

Before placing new concrete against concrete already hardened, the face of the old concrete shall be thoroughly hacked, roughened and cleaned, and laitance and loose material removed there from, and immediately before placing the new concrete the surface shall be saturated with water and covered with a coat of mortar at least 25 mm in thickness composed of cement and fine aggregate in the proportions used in the concrete.

B-3.26 CURING AND PROTECTION

Care must be taken that no concrete is allowed to become prematurely dry and the fresh concrete must be carefully protected within two hours of placing from rain, sun and wind by means of hessian sacking, polythene sheeting, or other approved means.

This protective layer and the concrete itself must be kept continuously wet for at least seven days after the concrete has been placed. The Contractor will be required to provide complete coverage of all fresh concrete for a period of 7 days. Hessian or polythene sheeting shall be in the maximum widths obtainable and shall be secured against wind. The Contractor will not be permitted to use old cement bags, hessian or other material in small pieces.

Concrete in foundations and other underground work shall be protected from admixture with falling earth during and after placing.

Loading of any kind must not be allowed on the concrete until the concrete is sufficiently matured, and in no case shall traffic or loading be of such magnitude as to cause deflection or other movement in the formwork or damage to the concrete members. Where directed by The Project Manager props may be required to be left in position under slabs and other members for greater period than those specified hereafter.

B-3.27 Faulty Concrete

Any concrete which fails to comply with these Preambles, or which shows signs of setting before it is placed shall be taken out and removed from the Site. Where concrete is found to be defective after it has set, the concrete shall be cut out and replaced in accordance with The Project Manager's instructions. On no account shall any faulty, honeycombed, or otherwise defective concrete be repaired or patched until The Project Manager has made an inspection and issued instructions for

the repair. The whole of the cost whatsoever, which may be occasioned by the need to remove faulty concrete, shall be borne by the Contractor.

B-3.28 Rod Reinforcement

The steel reinforcement shall comply with the latest requirements of the following British Standards:

Hot rolled bars for the reinforcement of concrete to B.S. 4449 metric units)

Cold worked steel for the reinforcement of concrete to B.S. 4461 (metric units)

The Contractor will be required to submit a test certificate of the rollings. Reinforcement shall be stored on racks above ground level. All reinforcement shall be free from loose mill scale or rust, grease, paint or other substances likely to reduce the bond between the steel and concrete.

B-3.29 Fabric Reinforcement

To be electrically cross-welded steel wire mesh reinforcement to B.S.4483, 1969 and of the size and weight specified.

B-3.30 Fixing Rod Reinforcement

Reinforcement shall be accurately bent to the shapes and dimensions shown on the Drawings and Schedules and in accordance with B.S. 4466 (1969). Reinforcement must be cut and bent cold and no welded joints will be permitted unless so detailed.

Reinforcement shall be accurately placed in position as shown on the Drawings, and before and during concreting, shall be secured against displacement by using No. 18 S.W.G. annealed binding wire or suitable clips at intersections, and shall be supported by concrete or metal supports, spacers or metal hangers to ensure the correct position and cover.

No concreting shall be commenced until The Project Manager has inspected the reinforcement in position and until his approval has been obtained and the Contractor shall give two clear days' notice of his intention to concrete.

The Contractor is responsible for maintaining the reinforcement in its correct position, according to the Drawings, before and during concreting. During concreting a competent steel fixer must be in attendance to adjust and correct the position of any reinforcement which may be displaced. The vibrators are not to come into contact with the reinforcement.

B-3.31 Position and Correctness of Reinforcement

Irrespective of whether any inspection and/or approval of the fixing of the reinforcement has been carried out as above, it shall be the Contractor's sole responsibility to ensure that the reinforcement complies with the details on the Drawings or Schedules and is fixed exactly in the positions shown therein and in the positions to give the prescribed cover. The contractor will be held entirely responsible for any failure or defect in any portion of the reinforced concrete structure and including any consequent delay, claims, third party claims, etc., where it is shown that the reinforcement has been incorrectly positioned or is incorrect in size or quantity with respect to the detailed Drawings or Schedules.

B-3.32 Spacer Blocks

Spacer blocks of approved size and shape made of concrete similar to that used in the surrounding construction and fixed to the reinforcement of formwork by No.18 S.W.G. wires set into the spacer

blocks or other approved means shall be provided where necessary to ensure that the requisite cover is obtained. Where hollow concrete block construction is used, spacer blocks are to be provided as shown on the Drawings. These will consist of concrete blocks as described above made to fit the width of the rib less 3 mm tolerance and with single or double grooves (depending on the number of reinforcement bars used per rib) in the top surface with wire ties at each groove.

B-3.33 Concrete Cover to Reinforcement

Unless otherwise directed, the concrete cover to rod reinforcement over main bars in any face shall be:-

Foundations against each face	75 mm
Foundations against blinding	50 mm
Columns	40 mm
Beams	25 mm
Slabs	15 mm

B-3.34 Fixing Fabric Reinforcement

The fabric shall be free from scale, rust, grease or other substance likely to reduce the bond between the steel and the concrete and shall be laid with minimum 30 mm laps and bound with No. 18 S.W.G. annealed iron wire.

B-3.35 Projecting Reinforcement

Where reinforcement projects from a concreted section of the structure and this reinforcement is expected to remain exposed for some time, it is to be coated with a cement grout to prevent rust staining on the finished concrete. This grout is to be brushed off the reinforcement prior to the continuation of concreting.

B-3.36 Fixtures

No openings, chases, holes or other voids shall be formed in the concrete without the prior approval of The Project Manager.

B-3.37 Chases, Holes, Etc. In Concrete

The Contractor shall be responsible for the co-ordination with the Electrical and other Sub-Contractors for incorporation, pipes, fixing blocks, chases, holes and the like in concrete members as required and must ensure that adequate notice is given to such Sub-Contractors informing them when concrete members incorporating the above are to be poured. The Contractor shall submit full details of these items to The Project Manager for approval before the work is put in hand. All fixing blocks, chases, holes, etc., to be left in the concrete shall be accurately set out and cast with the concrete.

B-3.38 Position of Electrical Conduit

Unless otherwise instructed by The Project Manager all electrical conduit to be positioned within the reinforced concrete shall be fixed inside the steel cages of beams and columns and between the top and bottom steel layers in slabs and similar members.

The proposed position of all electrical conduits 25 mm and over in diameter which are to be enclosed in the concrete shall be shown accurately on a plan to be submitted to The Project Manager, whose approval shall be obtained before any such conduit is placed.

B-3.39 Formwork

The method and system of formwork which the Contractor proposes to use shall be approved by The Project Manager before construction commences. Formwork shall be substantially and rigidly constructed of timber or steel or precast concrete or other approved material.

All timber for formwork shall be good, sound, clean, sawn well-seasoned timber, free from warps and loose knots and of scantlings sufficiently strong for their purpose.

B-3.40 Construction of Formwork

All formwork shall be of sufficient thickness and with joints close enough to prevent undue leakage of liquid from the concrete and fixed to proper alignment, level and plumb and supported on sufficiently strong bearers, shores, braces, plates, etc. All formwork shall be properly held together by bolts or other fastenings to prevent displacement, vibration or movement by the weight of materials, men and plant on the same and so wedged and clamped as to permit of easing and removal of the formwork without jarring the concrete. Where formwork is supported on previously constructed portions of the reinforced concrete structural frame, the Contractor shall by consultation with The Project Manager ensure that the supporting concrete structure is capable of carrying the load and/or sufficiently propped from lower floors or portions of the frame to permit the load to be temporarily carried during construction.

Soffits shall be erected with an upward camber of 5 mm for each 5 metres of horizontal span or as directed by The Project Manager.

Great care shall be taken to make and maintain all joints in the formwork as tight as possible, to prevent the leakage of grout during vibration. All faulty joints shall be caulked to The Project Manager's approval before concreting.

The formwork shall be sufficiently rigid to ensure that no distortion or bulging occurs under the effects of vibration. If at any time the formwork is insufficiently rigid or in any way defective the Contractor shall strengthen or improve such formwork as directed by The Project Manager.

The Contractor's attention is drawn to the various surface textures and applied finishes required and the faces of formwork next to the concrete must be of such material and construction and be sufficiently true to provide a concrete surface which will in each particular case permit the specified surface treatment or applied finish.

All surfaces which will be in contact with concrete shall be oiled or greased to prevent adhesion of mortar. Oil or grease shall be of a non-staining mineral type applied as a thin film before the reinforcement is placed. Surplus moisture shall be removed from the forms prior to placing of the concrete.

Temporary openings shall be provided at the base of columns, wall and beam forms and at any other points where necessary to facilitate cleaning and inspection immediately before the pouring of concrete. Before the concrete is placed the shuttering shall be trued-up and any water accumulated therein shall be removed. All sawdust, chips, nails and other debris shall be washed out or otherwise removed from within the formwork. The reinforcement shall then be inspected for accuracy of fixing. Immediately before placing the concrete the formwork shall be well wetted and inspection openings shall be closed. The erection, easing, striking and removing of all formwork must be done under the personal supervision of a competent foreman, and any damage occurring through faulty formwork or its incorrect removal shall be made good by the Contractor at his own expense.

After removal of formwork, all projections, fins, etc., on the concrete surface shall be chipped off, and made good to the requirements of The Project Manager. Any voids or honeycombing shall be treated as described in "Faulty Concrete".

B-3.41 Stripping Formwork

All formwork shall be removed without undue vibration or shock and without damage to the concrete. No formwork shall be removed without the prior consent of The Project Manager and the minimum period that shall elapse between the placing of the concrete and the striking of the formwork will be as follows:-

Beam sides, wall and columns (unloaded)	2 days
Slab soffits (props left under)	3 days
Beam soffits (props left under)	7 days
Removal of props (partly subject to	7days

Concrete cube strength being satisfactory) to:-

Slabs	10 days
Beams	14 days
Cantilevered beams and slabs	28 days

If the Contractor wishes to take advantage of the shorter stripping times permitted for beam and slab soffits when props are left in place, he must so design his formwork that sufficient props as agreed with The Project Manager can remain in their original positions without being moved in any way until expiry of the minimum time for removal of props. Stripping and re-propping will not be permitted.

The above times may be reduced in certain circumstances, at the discretion of The Project Manager, provided an approved method is adopted at the Contractor's expense to ensure that the required concrete strength is attained before the forms are stripped.

Solid strips in composite slabs shall be considered as beams. The tops of retaining walls shall be adequately supported with stout raking props at intervals required by The Project Manager. These props are not to be removed until 7 days after casting of the floor slab over.

B-3.42 Supporting Props to Wall and Beam Soffits

Where directed by The Project Manager supporting props to wall and beam soffits are to be left in position until completion of the whole of the reinforced concrete structure.

The props are to be to the approval of The Project Manager and the Contractor must submit the suggested method of propping to The Project Manager prior to removal of formwork to the relevant surfaces.

B-3.43 Notes Concerning Pricing

The Contractor must allow for all costs incurred during the progress of the contract for complying with the provisions concerning the preparation and use of graded mixes.

Prices for plain or reinforced concrete shall include for mixing, hoisting, depositing, compacting, curing and protection all the various levels required throughout the building, and shall also include for forming or hacking a satisfactory key for all faces receiving asphalt and plaster work. Prices for slabs shall include for forming construction joints at bay edges, including all necessary temporary formwork and supplying records of such joints to The Project Manager.

Prices for steel rod reinforcement shall include for cutting to lengths and all labour in bending and cranking, forming hooked ends, handling, hoisting and fixing in position and for providing all necessary tying wire, spacer blocks and supports. Prices for fabric reinforcement shall include for all straight cutting and waste, handling, hoisting and fixing in position, providing all necessary tying wire, and supports and all extra material in laps.

The prices for formwork shall include for extra material at joints, extra labour and waste for narrow widths, small quantities, overlaps, passing at angles, straight cutting and waste, splayed edges, notchings, etc., and for fixing at the various levels including battens, struts, and supports and for bolting, wedging, easing, striking and removal. Prices for linear items such as boxings shall include for angles and ends.

Prices of all precast concrete shall include for all moulds, finishing as described, handling, reinforcement, hoisting and fixing at the required levels and for casting or cutting to the exact lengths required and any waste resulting from such cutting.

Prices for expansion joints shall include for cutting to size and all temporary supports and prices for expansion joint sealers shall include for all temporary battens or fillets required to form the necessary grooves.

Prices for hollow concrete block suspended construction must be "all inclusive" to include for concrete hollow tiles, in-situ concrete ribs, concrete topping, concrete filling to open ends of hollow concrete tiles and solid concrete bearings and beams.

The Contractor is to allow in his prices for carrying out all tests as specified in this Section apart from work cube tests for which a provisional item is included in the Preliminaries section of the Bills of Quantities.

The price for wrought formwork shall include for fair face finish either by rubbing down or by smooth lining, all as described in the Preambles.

B-4 WALLING**B-4.1 Concrete Blocks**

All hollow or solid concrete blocks for general use shall comply with B.S. 2028, Type 'A' and with C.P. 111: Part 2, of minimum crushing strength of 3.5 Newtons per square millimetre, and must be obtained from and approved manufacturer, equal to samples deposited with and approved by The Project Manager.

Concrete block walling described, as load bearing shall have a minimum crushing strength of 7.0 Newtons per square millimetre.

All concrete blocks must be cured for a minimum period of four weeks before use and all testing of blocks is to be carried out by an approved Materials Testing Laboratory.

B-4.2 Wall Reinforcements

All walling of thickness 150 mm and less shall be reinforced with either hoop iron 25 mm wide, brick force mesh or similar reinforcement centrally in every alternate joint (vertically for the full length of the walls, lapped and crimped 300 mm at running joints and full width of wall at angles and intersections.

B-4.3 Wall Ties

Gauge hoop iron ties 25 mm wide and 450 mm long to be provided for every alternate course at all connections between block walls and reinforcement concrete columns or walls. One end to be cast into concrete and other end bent and built into mortar joint of walling.

B-4.4 Chasing

Chasing in load-bearing walling of electrical conduit, pipes, etc., is to be kept to a minimum size of cut and positions and runs of chases are to be approved by The Project Manager before any cutting is commenced. Horizontal runs will not be permitted.

B-4.5 Cement

The cement shall be as described in "Concrete Work".

B-4.6 Sand

The sand for mortars shall be as described in "Concrete Work", except that it shall be fine sand.

B-4.7 Lime

The lime for plastering shall comply with B.S. 890, Class 'A' for non-hydraulic lime and shall be as rich as obtainable and to approval. It must be freshly burnt and shall be slaked at least one month before being used by drenching with water, well broken up and mixed and the wet mixture shall be passed through a sieve of sixty-four meshes to the square inch. Lime putty shall consist of freshly slaked lime as above described, saturated with water until semi-fluid and passed through a fine sieve; it shall then be allowed to stand until superfluous water has evaporated and it has become of the

consistency of thick paste, in no case for a shorter period than one month before being used, during which it must be kept damp and clean and no portion of it allowed to become dry.

Alternatively, hydrated lime with 70% average calcium oxide content may be used and it must be protected from damp until required for use. It shall be soaked to a putty at least 24 hours before use.

B-4.8 Mortars

Cement mortar shall consist of one part of Portland cement, to three parts of sand by volume.

The cement/lime mortar shall consist of one part of Portland cement, one part of lime and six parts of sand by volume.

The ingredients of mortar shall be measured in proper gauge boxes on a boarded platform, the ingredients being thoroughly mixed dry, and again whilst adding water. In the case of cement/lime mortar the sand and lime shall be mixed first and then the cement added.

All mortar is to be thoroughly mixed to a uniform consistency with only sufficient water to obtain a plastic condition suitable for trowelling. No mortar that has commenced to set is to be used or remixed for use.

B-4.9 Setting Out

The Contractor shall provide proper setting out rods and set out on the same all work showing openings, heights, sills and lintels and shall build the various walls and piers to the thickness, widths and heights shown upon the Drawings. No part of the walling shall be carried up more than one metre higher at one time than any other part and in such cases the jointing shall be made in long steps so as to prevent cracks arising and all walls shall be levelled round at floor and wall heads.

B-4.10 Bonding Walling

All blocks shall be properly bonded together and in such a manner that no vertical joint in any one course shall be within 100 mm of a similar joint in the courses immediately above and below. Alternative courses of walling at all angles and intersections shall be carried through the full thickness of the adjoining walls. All perpends, reveals, quoins and other angles and joints of the walls, etc., shall be built strictly true and square.

B-4.11 Laying and Jointing

All bricks and blocks are to be well wetted before laying and tops of walls where left off shall be well wetted before commencing building. All joints are to be 10 mm thick and flush up and grouted in solid as the work proceeds.

All exposed faces of walls for plastering are to be left rough and the joints raked out while mortar is green to form adequate key.

All other faces shall be cleaned down on completion with a wire brush or as necessary and mortar droppings, smear marks, etc., removed and rates must include for this.

B-4.12 Putlog Holes

All putlog holes shall be carefully, properly and completely filled up on completion of walling and before plastering is commenced.

B-4.13 Fair Face

Walling described as fair faced shall be built with selected blocks and pointed with neat flush joints. Stone walling shall be fine chisel dressed.

B-4.14 Bricks

All bricks shall be obtained from an approved supplier of sizes as required and shall be hard, sound, square, well-burnt, uniform in shape and free from cracks, stones and other defects. Samples of bricks shall be deposited with and be approved by The Project Manager before being used and all subsequent bricks used in the Works shall be equal to the approved sample.

B-4.15 Damp-Proof Courses

Damp-proof courses shall be bituminous felt to B.S. 743 weighing 7 lbs. per square yard, free from tears and holes, and be laid with 150 mm minimum laps on and including a leveling screed of cement mortar.

B-4.16 Prices to Include

The rates for walling shall include for all reinforcement, all straight cutting, bonding, plumbing angles, forming reveals, pinning up to underside of concrete soffits and cutting up to sides of columns and building in ends of lintels and sills.

B-4.17 Brick Work

Brickwork shall be built to a gauge of 4 courses to 340 mm of wall height including 10 mm bed joints. Facing walls shall be built in stretcher bond and be tied to the block works or concrete-backing walls with 10 gauge galvanized wire wall ties 500 mm girth, formed to a figure 8 and twisted together at the lap. Three wall ties per square metre are to be used, wall ties for concrete backing walls shall be cast into the concrete including all temporary fixing to formwork.

Facing walls shall be pointed as the work proceeds. External walls shall have recessed joints and internal walls shall have flushed joints. Facing walls shall be kept perfectly clean and no rubbing down of clockwork will be allowed.

B-4.18 Fair Face

Walling described as fair faced shall be built with selected bricks and pointed with neat recessed joints.

B-5 ROOFING**B-5.1 Preparation of Surfaces**

All surfaces to receive roofing shall be clean, dry, free from fins or projections and loose materials, and with cracks or voids filled with cement mortar.

B-5.2 Lightweight Roof Screeds

Roof screeds will be executed to the approval of the Specialist Roofing Sub-Contractor and will consist of Cement, sand and pumice (1:3:7) finished with 6 mm layer of cement and sand (1:4) topping. Screeds shall not be laid in areas exceeding ten square metres during any period of 24 hours. As bays are formed batten strips must be used to retain the exposed edge of the screed. Screeds shall be finished to falls and currents to receive roofing.

B-5.3 Galvanised Corrugated Steel Sheeting

The roof sheeting shall be of the gauge specified and comply with B.S 3083. The roof sheeting shall be laid and fixed as shown on relevant construction drawings.

B-5.5 Galvanised It4 Long Trough Steel Sheets

Where specified, the roof sheeting and fittings shall be 24 gauge IT4 roofing sheets. The roof sheeting shall be laid and fixed with approved roofing nails to timber purlins as shown on relevant construction drawings. .

B-5.7 Protection

All roof surfaces shall be kept clean and protected and handed over watertight at completion.

B-6 METALWORK**B-6.1 All Materials**

All materials shall be of the best quality, free from defects. The materials in all stages of transportation, handling and piling shall be kept clean and damage from breaking, bending and distortion prevented.

B-6.2 Structural Steelwork

Materials and workmanship shall conform to the requirements of B.S. 449..

B-6.3 Nails, Screws and Bolts

The Project Manager shall of best quality mild steel of lengths and weights approve nails, screws and bolts. Nails shall be to B.S. 916.

Bolts shall project at least two threads through nuts and all bolts passing through timber shall have washers under heads and nuts.

B-6.4 Workmanship

All work shall be carried out in the most workman-like manner and strictly as directed by The Project Manager.

Welding shall be neatly cleaned off and units shall be prefabricated in the workshop wherever possible, the minimum of site welding being employed.

All screwed work shall have full internal and external threads and holes shall have been cleaned off. Counter sinking must be concentric.

B-6.5 Rainwater Goods

Prices shall include for building in, casting in or cutting mortices for fastenings, all making good, jointing, short lengths and all extra joints in the case of fittings.

B-6.6 Quality of Materials and Workmanship

The quality and workmanship of materials used in this Contract shall conform to the requirements of the following British Standards:-

B.S. 15	Mild steel for general structural purposes
B.S. 449	The use of structural steel in building.
B.S. 4 p.2	Hot Rolled Hollow Sections.
B.S. 994	Cold Rolled Steel Sections.
B.S. 938 B.S. 1775.	General requirements for the metal Arc welding of structural steel tubes to

B.S. 1856	General requirements for the Metal Arc Welding of Mild Steel.
B.S. 639	Covered Electrodes for the Metal Arc Welding of Mild Steel.

Materials may be required at any time to be tested in accordance with the British Standards listed above.

The cost of successful tests will be borne by the Client, but the Sub-Contractor shall supply at his own expense test specimens when required. The cost of tests, which do not comply with the Standard, will be borne by the Sub-Contractor.

B-6.7 Painting

All steel is to be wire brushed and any loose scale, dirt or grease shall be removed before any painting is commenced. One coat of red oxide primer Type A to B.S. 2523 shall be applied at the shop.

Any damage to the priming paint shall be made good to The Project Manager's satisfaction.

B-7 PLASTERWORK AND OTHER FINISHINGS**B-7.1 Cement**

The cement shall be as previously described in "Concrete Work".

B-7.2 Sand

The sand shall be as described for fine aggregate but that for plastering shall be light in colour and well graded to a suitable fineness in accordance with the nature of the work in order to obtain the finish as directed.

B-7.3 Lime

The lime for plastering shall comply with B.S. 890 Class "a" for non-hydraulic lime and shall be as rich as obtainable and to approval. It must be freshly burnt and shall be slaked as least one month before being used by drenching with water, well broken up and mixed and the wet mixture shall be passed through a sieve of sixty-four meshes to the square inch. Lime putty shall consist of freshly slaked lime as above described, saturated with water until semi-fluid and passed through a fine sieve; it shall then be allowed to stand until superfluous water has evaporated and it has become of the consistency of thick paste, in no case for a shorter period than one month before being used, during which it must be kept damp and clean and no portion of it allowed to become dry.

Alternatively, hydrated lime with 70% average calcium oxide content may be used and it must be protected from damp until required for use. It shall be soaked to putty at least 24 hours before use.

B-7.4 Lime Plaster

Lime plaster shall consist of a backing coat in cement, lime and sand (1:2:9) and a finishing coat of lime putty skim with 10% cement added.

STANDARD REFERENCE NUMBERS

1. INTRODUCTION

The Engineer has agreed to use a method of modifying the text of Engineering specifications by referring to a Standard Specification Reference Number (SRN) instead of a National Standard and then providing a tabulated comparison between British and German Standards, cross-referenced further where appropriate to an International Standard (ISO), an International Electro-technical Standard (IEC), to an American Waterworks Standard (AWWA) or other appropriate National Standards.

2. GENERAL CLAUSE ON STANDARD SPECIFICATION

A general introductory clause to be inserted into general specification documents has been prepared. It is quoted below to assist in the preparation of Future Specification Volumes.

Standards

The Contractor shall observe these Specifications and shall carry out all work in a skilled and workmanlike manner in keeping with modern methods of mechanical and construction Engineering.

In addition, the Contractor shall conform with all conditions currently in force with regard to the execution of construction work and shall follow all instructions issued by the competent Authorities, the Employer and the Engineer.

Where Standard Specifications are referred to in the Text of the Specifications this is done by reference to a Standard Specification Reference Number (SRN). A table of comparison is annexed to this Specification where the SRN is cross-referenced to Standard Specifications issued by the International Standards Organization (ISO) and to National Standard Specification that will be accepted in their English version by the Engineer as providing for the quality of workmanship etc. required.

The Bidder shall at his discretion base his Bid on one or other of the National Standard Specifications indicated in that table save that where a relevant Standard Specification issued by the ISO exists at the date of Bid, such an International Standard should as a minimum be complied with. As the National Standards referred to in the table of comparison may expand on or strengthen further the requirements of ISO, Bidders choosing not to comply with one of the National Standards indicated may either indicate an alternative National Standard with which they shall comply or provide with their Bid a full and detailed description of the Standards they propose to attain.

Where a Bidder offers a particular item to a National Standard not specified in the table of comparison he shall comply with the requirements of the Instructions to Bidders in this respect and shall enclose a copy in English of the alternative National Standard offered with his Bid. Alternative National Standards or Bidder's own detailed description of the Standards they propose shall be subject to the approval of the Engineer.

3. LIST OF NATIONAL SPECIFICATION CROSS REFERENCED

The list has been sub-divided into sections as follows: -

<u>SRN No.</u>	<u>Specification</u>
001-099	Electrical and Mechanical
100-199	Concrete
200-299	Metallic Pipes and Fittings
300-399	Plastic Pipes and Fittings
400-499	Other Pipes and Fittings
500-599	Valve, Meters, Hydrants and Other Specials
600-649	Testing Methods and Equipment
650-699	Site Work Codes of Practice
700-749	Drawing Practice, Standard Symbols, etc.
750-799	Glossary
800-899	Building Materials (exclu. In-situ Concrete)
900-999	Miscellaneous

3.1 CONCRETE

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
100	METHOD FOR SPECIFYING CONCRETE	1045	TBL. 1	5328	TBL. 3	KS 02-594	
101	STANDARD OF MATERIAL & WORK - GENERAL	See	VOB	8110		VOB 2	
102	STANDARDS OF MATERIAL, WATER RETAINING STRUCTURES		SUB. NO.	8007			
103	ORDINARY PORTLAND CEMENT	1164	1	12		KS 02-1262 & KS 02-	
104	SULPHATE RESISTANT CEMENT	1164	1;CL. 4	4027			
105	MORTAR CUBES - COMPRESSIVE STRENGTH	1164	1;CL. 4	12	METHOD 2		
106	CEMENT - TEST FOR SOUNDNESS		4	12	CL.7.3	ISO 3893	
107	SAMPLING AND TESTING OF AGGREGATES	4226	1-4	812	1, 2, 3	BS EN 1097-3 BS EN 932-1	BS 812 Part 1 Replaced by BS 882 Part 2 Replaced by BS EN 1097-3
107	SAMPLING AND TESTING OF AGGREGATES (CONT.)	1045		812	101-119		
108	FINE AGGREGATE FOR CONCRETE - GENERAL	4226	1-4	882	CL.4.1		
		1045					
109	FINE AGGREGATE FOR CONCRETE - GRADING	4226	1-4	882	TBL.2		
110	COARSE AGGREGATES FOR CONCRETE - GENERAL	4226		882	CL.4.1		
110	COARSE AGGREGATES FOR CONCRETE - GENERAL (CONT.)	1045					
111	COARSE AGGREGATES FOR CONCRETE - GRADING	4226		882	TBL.2		
111	COARSE AGGREGATES FOR CONCRETE - GRADING (CONT.)	1045					
112	COARSE AGGREGATES FOR CONCRETE - SHRINKAGE & ABSORPTION	4226		812	2	ISO 6783 BS EN 1367	BS 812 Part 120 Replaced by BS EN
112	COARSE AGGREGATES FOR CONCRETE - SHRINKAGE & ABSORPTION (CONT.)	1045					
113	COARSE AGGREGATES FOR CONCRETE - FLAKINESS	4226		812	105.1		
113	COARSE AGGREGATES FOR CONCRETE - FLAKINESS (CONT.)	1045					
114	WATER FOR MAKING CONCRETE	4226		3148			
114	WATER FOR MAKING CONCRETE (CONT. 1)	4030					
114	WATER FOR MAKING CONCRETE (CONT. 2)						
115	CONCRETE MIX DESIGN - GENERAL			5328			
115	CONCRETE MIX DESIGN - GENERAL (CONT.)	1084	1				
116	TRIAL MIXES - CUBES	1048		1881	108		
117	SAMPLING & TESTING OF CONCRETE	1048		1881	5, 114, 121, 122	ISO 1920, 4012, 4108, 4013	
118	CONCRETE BATCH MIXER			1305			BS 1305 Obsolete
119	CONCRETE BATCH TYPE MIXERS	459		3963			BS 3963 Obsolete
120	STRUCTURAL USE OF R/C IN BUILDING	1045		8110	1		
121	CONCRETE TRUCK-MOUNTED MIXERS	1084	3	4251	Withdrawn		BS 4251 Withdrawn
122	BITUMEN RUBBER JOINT SEALING COMPOUND			2499	TYPE A1		
123	POLYSULPHIDE JOINT SEALING COMPOUND			4254			BS 4254 Obsolete
124	WATERPROOF BUILDING PAPERS			1521	(CLASS B)		
125	IMPACT TESTING OF MILD STEEL	488	3	7613 7668	Grade NDL CL.B		BS 4360 Withdrawn. Replaced by BS 7613, BS 7668, BS EN 10029 Parts 1 to 3 of BS EN 10113, BS EN 10155 - BS
126	STEEL R/F HOT-ROLLED STEEL BARS	488	1-3	4449			
127	STEEL R/F COLD TWISTED	488	1-3	4449			
128	STEEL R/F STEEL FABRIC	488	4-5	4483			
129	BAR REINFORCEMENT AND BENDING			4466			
130	SAND FOR INTERNAL PLASTERING	4226		1199			

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
131	PLYWOOD SHUTTERING	68791		6566	1-8		BS 6566 Withdrawn. Replaced by various BS EN standards on the
131	PLYWOOD SHUTTERING (CONT.)	68792					
132	CONCRETE COMPACTION	4235	1,2				
133	CONCRETE - SITE QUALITY CONTROL	1084	1				
134	DESIGN OF CONCRETE MIXES	52171		See HMSO		HMSO RD NOTE	
135	SAND FOR MORTAR	4226		1200			
SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
136	SAND FOR RENDERING	4226		1199			
137	HOT APPLIED JOINT SEALER			2499			
138	WATER STOPS AND WATER BARS	7865	1, 2	8007			
139	TESTING CONCRETE STATIC MODULES (COMPARISON ELASTICITY)			1881	121		
140	TESTING CONCRETE - WATER ABSORPTION			1881	122		
141	TESTING CON-SAMPLING, TESTING FRESH CONCRETE, ETC.	1048		1881	101-110 & 113	KS 02-595 : 1-8	
142	PRECAST CONCRETE COMPONENTS (COPING UNITS)			5642/2	2		
143	STRUCTURAL USE OF CONCRETE DESIGN & CONSTRUCTION			8110	1		
144	STRUCTURAL USE OF CONCRETE - SPECIAL CIRC.						
145	IN-SITU CONCRETE DIAPHRAGM WALLS	4126					
146	TEST SIEVES FOR AGGREGATES			410			
147	LIGHT WEIGHT AGGREGATES FOR CONCRETE	4226	2, 3	3797	2		BS 3797 Partly Replaced by
148	SUPERSULPHATED CEMENT			4248 (4550)			BS 4248 Partly Replaced by
149	CONCRETE ADMIXTURES			5075			
150	GRADUATE MEASURING CYLINDER			604		ISO 4788	
151	COLD REDUCED STEEL WIRE FOR THE REINFORCEMENT OF CONCRETE			4482			
152	FUSION BONDED EPOXY COATED CARBON STEEL BARS FOR THE REINFORCEMENT OF CONCRETE			7295	1 & 2		Part 1: Coated bars Part 2: Coatings

3.2 METALLIC PIPES AND FITTINGS

SRN	SUBJECT	DIN	PAR	BSS	PAR	OTHER	REMARKS
200	GREYCAST IRON PRESSURE PIPES AND FITTINGS			1211		ISO 13; ISO 49	BS 1211 Obsolete Partially replaced by BS 4772
200	GREY IRON PIPES AND FITTINGS (CONT)			4622		ISO 13	BS 4622 Obsolete
201	CAST IRON FLANGED PIPES & FITTINGS			2035		ASME/ANSI B16.1 -	BS 2035 Obsolete Partially replaced by BS 4772
202	DUCTILE IRON PIPES & FITTINGS (WATER)					ISO 2531, EN 545	
202	DUCTILE IRON PIPES & FITTINGS (SEWERAGE)					EN 598	
202	DUCTILE IRON PIPES & FITTINGS					EN 969	
203	STEEL TUBES WITH PLAIN OR THREADED ENDS			1387		ISO 65	
203	STEEL TUBES WITH THREADED ENDS (CONT)	2440					
203	STEEL TUBES WITH THREADED ENDS (CONT)	2441					
203	STEEL TUBES WITH THREADED ENDS (CONT)	2442					
203	STEEL TUBES WITH THREADED ENDS- THREADS	76	2	21		ISO 7/1:1982; ISO 7/2:1982	
204	WROUGHT STEEL PIPE FITTINGS TO SSRN 203			1740	1	ISO 4145	
204	TH. STEEL PIPE FITTINGS TO SSRN 203	2980					
204	TH. STEEL PIPE FITTINGS TO SSRN 203- LONG THREAD	2981					
204	TH. STEEL PIPE FITTINGS TO SSRN 203- NIPPLES	2982					
204	TH. STEEL PIPE FITTINGS TO SSRN 203- BENDS	2983					
204	TH. STEEL PIPE FITTINGS TO SSRN 203- TEES ETC.	2987	1, 2				
204	W. STEEL PIPE FITT. TO SSRN 203- BUSHINGS	2990					
204	W. STEEL PIPE FITT. TO SSRN 203- PLUGS	2991					
204	TH. STEEL PIPE FITTINGS TO SSRN 203- SOCKETS	2986				ISO 7-2:1982	
204	W. STEEL PIPE FITT. TO SSRN 203- RED'NG SOCKETS	2988					
205	COPPER TUBES FOR WATER					EN 1057, ISO 8493 (TESTS)	
205	COPPER TUBES FOR WATER (CONT)	1754	3				
205	COPPER TUBES FOR WATER (CONT)	1755	3				
206	COPPER TUBES - GENERAL PURPOSE			2871	2	ISO 196:1978	
206	COPPER TUBES - GENERAL PURPOSE (CONT)	1754	1,2				
206	COPPER TUBES - GENERAL PURPOSE (CONT)	1755	1,2				
207	FLANGES FOR FERROUS PIPES - STEEL BY PN	2500		4504	3-3.1	ISO 7005-1:1992	BS 4504 Part 3: Sections 3.2 (1989) Withdrawn. Replaced by BS EN 1092-2 (1997)
207	FLANGES FOR FERROUS PIPES - STEEL BY CLASS	2501	1	1560	3-3.1	ISO 7005:1988; ANSI B 16.5	
207	FLANGES FOR FERROUS PIPES - C.I. BY CLASS	2519	1	1560	3-3.2	ISO 7005-2	
207	FLANGES FOR FERROUS PIPES - C.I. BY PN				2	EN 1092, ISO 2531:1991; ISO 7005-2:1988	
207	FLANGES FOR FERROUS PIPES- SLIP ON FOR WELDING	2576					
207	FLANGES FOR FERROUS PIPES- WELDING NECK	2627-38					
207	FLANGES FOR FERROUS PIPES- SCREWED	2566					

SRN	SUBJECT	DIN	PAR	BSS	PAR	OTHER	REMARKS
207	FLANGES FOR FERROUS PIPES- LAPPED- PLAIN COLLAR	2655-56					
207	FLANGES FOR FERROUS PIPES- LOOSE- WELDING NECK	2673					
207	FLANGES FOR FERROUS PIPES- CONTACT SURFACE	2526					
207	FLANGES FOR FERROUS PIPES PLAIN	2527					
208	GASKET DIMENSIONS TO SSRN 207 (a) & (d)				1	EN 1514	
208	GASKET DIMENSIONS TO SSRN 207 (a) & (d) (CONT)				2	EN 1514	
208	GASKET DIMENSIONS TO SSRN 207 (a) & (d) (CONT)				3	EN 1514	
208	GASKET DIMENSIONS TO SSRN 207 (a) & (d) (CONT)				4	EN 1514	
208	GASKETS-FOR GROOVED FLANGES	2693					
208	GASKETS-GROOVED O-RINGS	2697					
209	C.I. PIPE FITTINGS, MALLEABLE, SCREWED					ISO 49:1994	
210	STEEL PIPES & FITTINGS - GENERAL			534			
210	STEEL PIPES - WATER-GENERAL	2460		534		EN 10224, AWWA C200- 97, NFA 49-150 JIS G 3460-88	
210	STEEL PIPES & FITTINGS - DESIGN	2413	1, 2	8010 2.1		AWWA M11	
210	STEEL PIPES & FITTINGS - WELDING JOINTS	2559	1, 2, 3	8010 2.1		AWWA M11 ASTM A333/ A333M-99	
211	CEMENT MORTAR LINING - D.I. PIPES			EN 545		EN 545, AWWA C.104A, C602-	
211	CEMENT MORTAR LINING - D.I. PIPES	2614					
211	CEMENT MORTAR LINING - D.I. PIPES (CONT)					DVGW W343 ISO 4179:1985 ISO 6600:1980,	
212	CEMENT MORTAR LINING - STEEL PIPES	2614		534		AWWA C 205 NFA 49- 701DVGW W343/W346	
212	CEMENT MORTAR LINING - STEEL PIPES (CONT)	2614				AWWA C 602-95 ISO / DIS 8324	
213	S. PIPES & TUBES-MATERIAL, PROP., TESTS	1629		3600		AWWA C200-97	
213	CARBON STEEL PIPES AND TUBES			3601		ISO 2604/2 /3 /6	
213	STEEL PIPES AND TUBES- SPECIAL REQUIREMENTS	1626					
213	STEEL PIPES AND TUBES-SEAMLESS	2448					
213	STEEL PIPES AND TUBES-WELDED	2458					
214	BITUMEN PROTECTION TO IRON AND STEEL - HOT			4147		(BS 4147 type I, grade 'd')	
214	BITUMEN PROTECTION TO IRON AND STEEL- COLD			3416		(BS 3416 type II)	
214	BITUMEN PROTECTION TO STEEL PIPES ETC.	30673	Type E4				
214	BITUMEN PROTECTION TO DUCTILE IRON PIPES	30674	4				
215	EXT. PROTECTION - IRON & STEEL- EPOXY C.			none		AWWA C210-97	
216	STEEL FITTINGS - REINFORCING			none		AWWA C208-59 AWWA M11	
216	STEEL FITTINGS - DIMENSIONS			534		AWWA C208-59 AWWA M11	
217	D.I. PIPES & FITT.-SCREWED GLAND JOINTS					See SSRN 219	
218	D.I. PIPES & FITT.-BOLTED GLAND					See SSRN 219	
219	D.I. PIPES & FITT.-S & S JOINTS			8010	2-2.1		
219	D.I. PIPES & FITT.-S & S JOINTS (CONT)					EN 545	
219	D.I. PIPES & FITT.-S & S JOINTS (CONT)	28603					

SRN	SUBJECT	DIN	PAR	BSS	PAR	OTHER	REMARKS
219	PIPELINES ON LAND; DESIGN, CONSTRUCTION AND INSTALLATION; STEEL FOR OIL			8010	2.8		
220	D.I. PIPES-ZINC COATING & PROT. SHEATHS	30674	3	none			
221	IRON AND STEEL PIPES-ENAMEL-HOT APPLIED			7873		AWWA C203-97	
221	STEEL FLANGED PIPES & FITTINGS- ENAMELLED	2873					
222	ELASTOMERIC JOINTS RINGS- REQUIREMENTS			2494			Partly replaced by BS 7874 and BS EN 681-1
222	ELASTOMERIC JOINTS RINGS- VULCANISED				1	EN 681	
222	ELASTOMERIC JOINTS RINGS- DRAINS & SEWERS	4060					
223	PIPE THREADS-TUBES & FITT. (WATERTIGHT)	See ISO DIN		21		ISO 7/1:1982; ISO 7/2:1982	
224	CAST IRON S & S PIPES AND FITTINGS			78	2		BS 78 Withdrawn, Replaced by BS 4622 Part 2 Obsolescent, Partially replaced by BS 4772
225	STEEL PIPES-HOT DIP GALVANISING					EN 10240	
226	CARBON STEEL FITTINGS - BUTT- WELDING-GENERAL	2609		1965	1		BS 1965 Part 2 Withdrawn
226	STEEL FITTINGS - BUTT-WELDING-	2615	1, 2				
226	STEEL FITTINGS - BUTT- WELDING- REDUCERS	2616	1, 2				
226	STEEL FITTINGS - BUTT-WELDING-	2617					
227	POLYTHENE SLEEVING FOR STEEL PIPES	none		none		ISO 8180:1985	
227	POLYTHENE SLEEVING FOR D. I	30674	5				
228	ST. PIPES-DIMENSION & MASSES- PRESS. PURPOSE	2413	1, 2	3600			
228	S. PIPES-DIMENSION & MASSES- PRESS. (CONT)	2460					
229	STAINLESS STEEL TUBES AND WIRES			1554			
229	STAINLESS STEEL TUBES AND WIRES (CONT)			4825	1	ISO 2037:1980	
229	STAINLESS STEEL TUBES AND WIRES (CONT)			6362		ISO 7598	
229	STAINLESS STEEL TUBES AND WIRES (CONT)	17457					
229	STAINLESS STEEL TUBES AND WIRES (CONT)	17440					
230	STEEL PIPES FOR WATER FLEXIBLE SOCKET & SPIGOT	2460		CP2010-2		EN 10224, ISO 559	
230	STEEL PIPES FOR WATER FLEXIBLE SOCKET & SPIGOT	2460		CP2010-2		EN 10224, AWWA C200-	
231	FERROUS P. DEFINITION OF NOMINAL PRESSURE			none		ISO 7268:1983	
232	STEEL PIPELINES - TAPE COATING SYSTEMS	30672	1	none		AWWA C214-95	
233	BURSTING DISCS & DEVICES			2915		ISO 6718:1991	
234	STEEL PIPES FOR PETROLUUM AND GAS INDUSTRY	17172				EN 10208-2, API 5L	
235	FITTINGS TO STAINLESS STEEL TUBES			4825	2	ISO 2851:1973	
				4825	3	ISO 2852:1974	
				4825	4	ISO 2853:1976	
				4825	5		
236	FITTINGS TO BRASS TUBES			2051	1		
237	RUBBER GASKET MATERIAL JOINTS FOR PIPELINES			2494		ISO 4633; ISO 6447; ISO 6448	
238	STORAGE OF VULCANISED RUBBER			none		ISO 2230:1973	
239	BITUMINOUS VARNISH TO DUCTILE IRON PIPES			none		ISO 8179-2:1995	
240	FOUNDING - SPHEROIDAL GRAPHITE CAST IRON					EN 1563	

SRN	SUBJECT	DIN	PAR	BSS	PAR	OTHER	REMARKS
240	FOUNDING - AUSTEMPERED DUCTILE IRON CASTINGS					EN 1564	
241	FUSION BONDED EPOXY COATINGS FOR STEEL PIPES	30671		none		EN 10309 AWWA C213 NFA 49-706	
241	FUSION BONDED EPOXY LININGS FOR STEEL PIPES					AWWA C213	
242	FLEXIBLE BOLTED SLEEVE			534		AWWA C219	
243	FLEXIBLE GROOVED AND SHOULDERED COUPLINGS					AWWA C606	
244	SPHERICAL JOINTS FOR WELDING, STEEL PIPES			534		UNI 6363	
245	BIT. SEAL COAT'GS ON D.I. PIPE CEM. MOR. LINING			7892			
246	POLYMERIC FILM PROT. SLEEV'G FOR IRON PIPES	30674	5	6076		EN 534	
247	HOT ENAMEL COATING TO IRON & STEEL PIPES			7873			
248	EXTERNAL ZINC COATINGS ON D.I.	2444		none		ISO 8179-1:1995	
249	BOLTS & NUTS FOR PIPELINES	2507		none			
250	STEEL PIPELINES - THERMOSET PLASTIC COATINGS	30671		BGC/CW6		AWWA C213, NFA 49-706	
251	STEEL PIPES - POLYPROPYLENE COATING	30678		none		EN 10286, NFA 49-711	
252	STEEL TUBES - ELECTROMAGNETIC TESTING -				1	EN 10246	
253	TWO & THREE LAYER POLYTHENE COATINGS FOR STEEL PIPES	30670		534		AWWA C215, NFA 49-704, NFA	
254	LIQUID EPOXY COATINGS FOR STEEL PIPES					AWWA C210	
255	LIQUID EPOXY LININGS FOR STEEL PIPES					AWWA C210, NFA	
256	LIQUID POLYURETHANE COATINGS FOR STEEL PIPES	30671				AWWA C222	
257	LIQUID POLYURETHANE LININGS FOR STEEL PIPES					AWWA C222, NFA	
258	EXTRUDED POLYTHENE COATINGS FOR D.I. PIPES	30674	1	EN 545		EN 545	
259	CEMENT MORTAR COATINGS FOR D.I. PIPES	30674	2				
260	LIQUID EPOXY COATINGS FOR D.I.			EN 545		EN 545	
261	FUSION BONDED EPOXY COATINGS & LININGS FOR D.I.					AWWA C116	
262	LIQUID POLYURETHANE COATINGS FOR D.I. PIPES			EN 545		EN 545	
263	LIQUID POLYURETHANE LININGS FOR D.I. PIPES			EN 545		EN 545	
264	TWO LAYER EPOXY-NYLON COATINGS & LININGS FOR STEEL					EN 10310, AWWA	

3.3 PLASTIC PIPES AND FITTINGS

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
300	uPVC PIPES FOR COLD WATER	19532		3505		ISO 2505, 3114, 3606	
300	uPVC PIPES FOR COLD WATER (CONT. 1)	8062				ISO 3472, 3472, 3473, 3474	
300	uPVC PIPES FOR COLD WATER					ISO 161/1	
300	uPVC PIPES FOR COLD WATER					KEBS 06-149:2	
301	JOINTS AND FITTINGS FOR uPVC PRESSURE PIPES	8063	1, 12	4346	1-3	ISO 2035, 2044	
301	JOINTS AND FITTINGS FOR uPVC PRESSURE PIPES	16450				ISO 2045, 2048, 2536	
301	JOINTS AND FITTINGS FOR uPVC PRESSURE PIPES	16451					
302	uPVC PIPELINES - LAYING AND	16928		See CP		CP 312	
303	uPVC PIPELINES - PRESSURE	4279	1, 7				
304	uPVC PIPELINES - ADHESIVES FOR JOINTING	16970					
305	uPVC PIPES - GENERAL	8061		3505			
305	uPVC PIPES - GENERAL (CONT. 1)	8062		3506			
305	uPVC PIPES - GENERAL (CONT. 2)	19532					
306	uPVC PIPES - PRESSURE TESTS TO DESTRUCTION			4728		ISO 1167	Obsolescent (but still remains current) Replaced by BS EN 921 and partially replaced by BS EN 2782 Part II method 1127P - 1997 but remains current
307	HDPE PIPES, JOINTS, FITTINGS	16963	1-3	3284 (6572)			Obsolescent - Partially replaced by BS
308	RUBBER RINGS FOR MECHANICAL JOINTS			2494			
309	uPVC UNDERGROUND DRAIN PIPES & FITTINGS			4660			Partially replaced by BS EN 1401-1
310	uPVC PIPES IMPACT TEST 20 DEGREES CENTIGRADE			3505		ISO 3127	
311	uPVC PIPES SHORT TERM HYDROSTATIC TEST			3505			
312	uPVC PIPES LONG TERM HYDROSTATIC TEST			3505			
313	uPVC PIPES INTERNAL PRESSURE ENDURANCE TEST	8061					
314	uPVC WATER ABSORPTION TEST	8061				ISO 2508	
315	uPVC PIPES - VARIOUS OTHER TESTS					ISO 2505, 3114, 3472, 3473, 3474	
316	PIPES - RATE OF LEAKAGE			8010:2			
317	G.R.P. PIPES			6464			
318	PLASTICS PIPES AND FITTINGS FOR USE AS SUB SOIL FIELD DRAINS			4962			
318	POLYPROPYLENE WASTE PIPE AND FITTINGS (EXTERNAL DIAMETER 34.6MM,			5254			
319	THERMOPLASTICS WASTE PIPE AND FITTINGS			5255			
320	GLASS REINFORCED PLASTICS (GRP) PIPES, JOINTS AND FITTINGS FOR USE FOR WATER			5480			
321	UNPLASTICIZED PVC PIPE AND FITTINGS FOR GRAVITY SEWERS			5481			
322	PLASTICS PIPEWORK (THERMOPLASTICS MATERIALS)			5955	6		Part 6: Installation of unplasticized PVC pipework for gravity drains and sewers
323	BLUE POLYETHYLENE PIPES UP TO NOMINAL SIZE 63 FOR BELOW GROUND USE FOR POTABLE			6572			
324	BLACK POLYETHYLENE PIPES UP TO NOMINAL SIZE 63 FOR ABOVE GROUND USE FOR COLD			6730			

3.4 OTHER PIPES AND FITTINGS

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
402	A/C SEWER PIPES, JOINTS, FITTINGS			3656		ISO 881 BS EN 588-1	BS 3656 Withdrawn Replaced by BS EN 588-1
402	A/C SEWER PIPES, JOINTS, FITTINGS (CONT. 1)						
402	A/C SEWER PIPES, JOINTS, FITTINGS (CONT. 2)	19850	1, 2				
403	A/C PIPES FOR THRUST BORING					ISO 4488	
404	A/C PIPES - GUIDE FOR LAYING			5927		ISO 4482	
405	A/C PIPES - FIELD PRESSURE	4279	1, 6, 9, 10	5886		ISO 4483	
406	PIPE SUPPORTS	See DVGW		3974	1	DVGW 310 PT. 2	
407	UNREINFORCED CONCRETE PIPES (OGEE)	4032		5911	3		
408	PRESTRESSED CONCRETE PRESSURE PIPES	4035		4625			
409	PRECAST CONCRETE PIPES - DRAINS & SEWERS	4032		5911	1, 3		
409	PRECAST CONCRETE PIPES - DRAINS & SEWERS (CONT.)	4035					
410	CONCRETE POROUS PIPES - UNDER DRAINS			5911	114		
411	NON-PRESSURE DUCTILE IRON PIPES ETC.					ISO 7186	
412	RUBBER AND PLASTIC HOSES AND ASSEMBLIES					ISO 7751	
413	CONCRETE CYLINDRICAL PIPES & FITTINGS METRIC			5911	1-3	AWWA C602-83	BS 5911 Part I: 1981 Withdrawn Replaced by BS 5911 Part 100: 1988 BS 5911 Part 200: 1989 BS 5911 Part 200: 1994
414	CLAY PIPES (SEWERAGE)			65			
415	TESTING OF JOINTED PIPES AND MANHOLES			2005			BS 2005 - Obsolescent
416	CONCRETE PRESSURE PIPES INCLUDING JOINTS AND					BS EN 639	

3.5 VALVES, METERS, HYDRANTS

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
501	DOUBLE FLANGED C.I. GATE VALVES (WATER)			5163		AWWA C203-78	
501	DOUBLE FLANGED C.I. GATE VALVES (WATER) (CONT. 1)	3230	1-3				
501	DOUBLE FLANGED C.I. GATE VALVES (WATER) (CONT. 2)						
501	DOUBLE FLANGED C.I. GATE VALVES (WATER) (CONT. 3)	3352	1, 4				
502	C.I. GATE VALVES - GENERAL			5150			
502	C.I. GATE VALVES - GENERAL	3352	1, 4				
503	C.I. (PARALLEL SLIDE) GATE VALVES - GENERAL			5151			
504	C.I. GLOBE VALVES - GENERAL	3356	1-5	5152			
505	C.I. CHECK VALVES - GENERAL	3202		5153		AWWA C508-82	
505	C.I. CHECK VALVES - GENERAL (CONT.)	See DVGW		6282	1, 4	DVGW-W376	
506	C.I. AND STEEL BUTTERFLY VALVES - GENERAL	3354	1-4	5155		BS EN 593: 1998	BS 5155 Withdrawn Replaced by BS EN 593: 1998
507	BOURDON TYPE PRESSURE GAUGES			1780		BS EN 837: 1998	BS 1780 Withdrawn Replaced by BS EN 837-1: 1998
508	FLOAT OPERATED VALVES N.D.			1212	1, 2, 3		
509	FIRE HYDRANTS	3221	1, 2	750			
510	WATER METERS	19648	1-3	5728	1, 2	ISO 4064-1	BS 5728 Part 1 Withdrawn Replaced by BS 5728: Part 7
510	WATER METERS (CONT.)					KS 06-248 1, 2	
511	COPPER ALLOY GATE, CHECK, ETC. VALVES	3352	11				
511	COPPER ALLOY GATE, CHECK, ETC. VALVES (CONT.)			5154			
512	FIRE HOSE COUPLINGS &	14244		336			
513	SURFACE BOXES			5834	2, 3		
513	SURFACE BOXES (CONT. 1)						
513	SURFACE BOXES (CONT. 2)						
513	SURFACE BOXES (CONT. 3)						
513	SURFACE BOXES (CONT. 4)						
514	METALLIC BALL VALVES	3357	1-7				DIN 3357 Part 6, 7 Withdrawn
515	uPVC VALVES	3441	2				
517	FIRE HYDRANT SYSTEMS FOR BUILDINGS			5041	1-5		
518	BUTTERFLY VALVES			5155			
519	DIAPHRAGM VALVES			5156			
520	CAST IRON PLUG VALVES			5158			
521	UNDERGROUND STOPVALVES FOR WATER SERVICES			5433			

3.6 TESTING METHODS AND EQUIPMENT

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
600	NON-DESTRUCTIVE TESTING OF WELDS (TUBES)	8564	1	3889 (6072)	1, 2A	AP15LS	BS 3889 Partially Replaced by 6072
600	NON-DESTRUCTIVE TESTING OF WELDS (TUBES) (CONT.)	50120	1, 2	6072			
601	SOILS FOR CIVIL ENGINEERING PURPOSE -	18196		1377			
602	TESTING OF PIPELINE FOR WATER (INTERNAL)	4279	1-7, 9, 10				
603	TESTING OF CEMENT	See EDIN		4550	1, 2, 3	BS EN 196-7 EDIN EN75, 112, 114, 15	BS 4550 Part 1 & Part 2 Withdrawn Replaced by BS EN 196-7: 1992
604	MATERIAL TESTING DOCUMENTATION					ISO 404, EURONORM	
605	MEASUREMENT OF WATER FLOW (WATER METERS)					ISO 4064/3	
606	DRINKING WATER QUALITY					KS 05-459:5	
607	RECOMMENDATIONS AND CLASSIFICATION FOR			3882			

608	METHODS OF TESTING MORTARS, SCREEDS AND			4551			
609	STRUCTURAL FIXINGS IN CONCRETE AND MASONRY			5080	1 & 2		Part 1: Method of test for tensile loading Part 2: Method for determination of resistance to loading in shear
610	SIZE OF HARDWOODS AND METHODS OF MEASUREMENT			5450			
611	RECOMMENDATIONS FOR TESTING OF AGGREGATES			5835	1		Part 1: Compatibility test for graded aggregates

3.7 SITE WORK CODES OF PRACTICE

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
650	SITE INVESTIGATIONS	18196		5930			
650	SITE INVESTIGATIONS (CONT.)	18307					
651	WATER SUPPLY	2000	See BS	BS 6007		CP 310	CP 310 Withdrawn Replaced by BS 6007
651	WATER SUPPLY (CONT. 1)	2425	3, 5	BS 8301		CP 301	CP 301 Withdrawn Replaced by BS 8301
651	WATER SUPPLY (CONT. 2)	4046					
651	WATER SUPPLY (CONT. 3)	19630					
652	BUILDING DRAINAGE	1986	2-4	BS 8301		CP 301	CP 301 Withdrawn Replaced by BS 8301
653	WATER PIPELINE CONSTRUCTION	19630					
654	TRENCHING FOR PIPELINES	4124					
655	SEWAGE PIPELINE CONSTRUCTION						
656	WALLING (BRICK & BLOCK MASONRY)	18330	See BS	5390 5628		CP 121	CP 121 Withdrawn Replaced by BS 5390 and BS 5628 Part 3
657	USE OF STRUCTURAL STEEL IN BUILDING	18203	1, 2	449 BS 5950	2	GB 7101-91 SABS 1431	BS 449 Parts 1 and 2 Withdrawn Part 2: Addendum No. 1 (1975) Replaced by BS 5950 Part 5
658	SEWERAGE			8005		BS EN 1610	
659	SMALL SEWAGE TREATMENT WORKS AND CESSPOOLS			6297			
660	TEST PUMPING OF WATER WELLS			6316			
661	METHODS OF MEASUREMENT OF LIQUID FLOW IN OPEN CHANNEL			3680	1-10	BS ISO 748 BS ISO 1100-2 ISO TR 8363	BS 3680 Part 3A Withdrawn Replaced by BS ISO 748: 1997 BS 3680 Part 3C Withdrawn Replaced by BS ISO 1100-2 BS 3680 Part 3G Withdrawn Replaced by ISO TR 8363 BS 3680 Parts 3J, 8F, 8G Withdrawn
662	MEASUREMENT OF FLOW IN CLOSED CONDUITS (BY CURRENT METERS OR PITOT)					ISO 7194	
663	CONSTRUCTION AND DEMOLITION OF CONCRETE					ANSI A10, 9-1983	
664	DRAINAGE OF ROOFS AND PAVED AREAS			6367			
665	FOUNDATIONS			8004		CP 2004	CP 2004 Withdrawn Replaced by BS 8004
666	STRUCTURAL USE OF TIMBER			5268		CP 112, 2	CP 112, 2 Withdrawn Replaced by BS 5268 Part 2 BS 5268 Part 3
667	RETAINING WALLS	4085					
668	WATERPROOFING OF BUILDINGS & STRUCTURES	18195	1-4				
669	WATER QUALITY - SAMPLING					ISO 5667/2/3	
670	WELDING PROCEDURES - APPROVAL TESTING			4870	1	BS EN 288-3 BS EN 288-4	BS 4870 Part 1 Withdrawn Replaced by BS EN 288-3 BS 4870 Part 2 Withdrawn Replaced by BS EN 288-4
671	WELDING - APPROVAL TESTING			4871	1	BS EN 287-1 BS EN 287-2	BS 4871 Part 1 Withdrawn Replaced by BS EN 287-1 BS 4871 Part 2 Withdrawn Replaced by BS EN 287-2
672	LOGGING OF ROCK CORES					LOGGING OF ROCK CORES FOR ENGINEERING PURPOSES, GEOL. SOC. OF LONDON	
673	TEST FOR STABILISED SOILS			1924			
674	DRAIN AND SEWER SYSTEMS OUTSIDE BUILDINGS				1, 2 & 3	BS EN 752	Part 1: Generalities and definitions Part 2: Performance requirements Part 3: Planning
675	CONSTRUCTION AND TESTING OF DRAINS AND IDENTIFICATION OF PIPELINES AND SERVICES					BS EN 1610	
676	IDENTIFICATION OF PIPELINES AND SERVICES			1710			
677	WELDING OF STEEL PIPELINES ON LAND AND OFFSHORE			4515			

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
678	PERFORMANCE REQUIREMENTS FOR JOINTS AND COMPRESSION FITTINGS FOR USE WITH			5114			
679	STRUCTURAL USE OF TIMBER			5268	2, 3 & 5		Part 2: Permissible stress design, materials and workmanship Part 3: Trussed rafter roof Part 5: Preservative treatment of structural timber
680	STAIRS, LADDERS AND WALKWAYS			5395	1, 2 & 3		Part 1: Design of straight stairs Part 2: Design of helical and spiral stairs Part 3: Design of industrial type stairs, permanent ladder and
681	INTERNAL PLASTERING			5492			
682	GUIDE TO ACCURACY IN BUILDING			5606			
683	SAFE USE OF EXPLOSIVES IN THE CONSTRUCTION			5607			
683	USE OF MASONRY			5628	3		Part 3: Materials and components, design and
684	EARTHWORKS			6031			
685	PAINTING OF BUILDINGS			6150			
686	LOADING FOR BUILDINGS			6399	1		Part 1: Dead and imposed loads
687	GUIDE TO INSTALLATION AND USE OF VALVES			6683			
688	DESIGN, INSTALLATION, TESTING AND MAINTENANCE OF SERVICES SUPPLYING WATER FOR DOMESTIC USE WITHIN BUILDINGS			6700			
689	GUIDE FOR STRUCTURAL DESIGN OF PAVEMENTS CONSTRUCTED WITH CLAY OR CONCRETE BLOCK			7533			
690	SEWERAGE			8005	1		Part 1: Guide to new sewerage construction
691	PROTECTION OF STRUCTURES AGAINST WATER FROM THE			8102			
692	DESIGN AND INSTALLATION OF DAMP- PROOF COURSES IN THE MASONRY CONSTRUCTION			8215			
693	CODE OF PRACTICE FOR BUILT-UP FELT ROOFING			8217			

3.8 DRAWING PRACTICE, STANDARD SYMBOLS ETC.

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
700	IDENTIFICATION OF PIPELINE ACCORDING TO FLUID	2403					
701	GRAPHICAL SYMBOLS FOR GENERAL ENGINEERING -	2406		1553	1		
701	GRAPHICAL SYMBOLS FOR GENERAL ENGINEERING - PIPING SYSTEMS (CONT.)	2429	1				
702	PROJECT NETWORK TECHNIQUES			4335			
703	DRAWING OFFICE PRACTICE - ARCHITECTS			1192	1-4		BS 1192 Part 2 Obsolescent
704	CONSTRUCTION DRAWING			1192	1-4		BS 1192 Part 2 Obsolescent
705	ENGINEERING DRAWING PRACTICE			308	1	ISO 128, 2162, 2203	
706	DRAWING PRACTICE FOR ENGINEERING DRAWINGS			5070	1-3	BS EN 61082	BS 5070 Part 1 Partially Replaced by BS EN 61082-1 BS 5070 Part 2 Withdrawn Replaced by BS EN 61082-2
707	BUILDING AND CIVIL ENGINEERING TERMS			6100	1-6		
708	WATER SUPPLY - MAPS AND PLANS	2425	3, 5				
709	CARTOGRAPHIC REPRESENTATION OF CLIMATE	50019	1				
750	CONCRETE (INC. R/F) - GLOSSARY			6100	6.2, 6.3		
751	VALVES - GLOSSARY						

752	IRON AND STEEL - GLOSSARY FOR PIPES			6562	1-2		
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3.9 BUILDING MATERIALS

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
801	LIME FOR MORTAR	1060	1, 2, 3	890	CL.B		DIN 1060 Part 2 & 3 Withdrawn
802	QUARRY TILES FOR SILLS			6431		BS EN ISO 10545-2, 3, 4, & 6	BS 6431 Parts 10, 11, 12 & 14 Replaced by B S EN ISO 10545-2, BS EN ISO 10545-3 BS EN ISO 10545-4 BS EN ISO 10545-6
803	DAMP-PROOF COURSE (BITUMINOUS FELT)			743 (6398: BS 6398, BS 6515 and BS			BS 743 Partially Replaced by
804	CONCRETE BLOCKS			6398		KENYA M.O.W. ST.	
804	CONCRETE BLOCKS (CONT.)			6073	1, 2		BS 6073 Partially Replaced by BS EN 772-2
805	HOLLOW CLAY PARTITION BLOCKS	278		3921			BS 3921 Partially Replaced by BS EN 772-3 & 7
806	BRICK WALLING	105	1-5	3921			BS Partially Replaced by BS EN 772-3 & 7
806	BRICK WALLING (CONT.)	106	1, 2				
807	ASBESTOS ROOF SLATES AND SHEETING			690	3, 4		BS 690 Part 3 & 4 Withdrawn Replaced by BS EN 494 and 492 respectively
808	FIXING BOLTS & SCREENS FOR ROOFING						
809	INSULATION BOARD AND HARD BOARD			1142	1, 2, 3	ISO 766/7/9, 818/19, 2695, 3340, 3546, 3729	BS 1142 Partially Replaced by BS EN 120, 310, 316-323, 324: 1 & 2.
809	INSULATION BOARD AND HARD BOARD (CONT.)						
810	BLOCKBOARD	68705	1, 3	3444		ISO 1096, 97, 98, 2074, 2426-30	DIN 68705 Part 1 Withdrawn
811	PLYWOOD (TROPICAL HARDWOOD)	4078		6566	1-8	ISO 1096, 1097	BS 6566 Replaced by various BS EN Standards on the same subject
811	PLYWOOD (TROPICAL HARDWOOD) (CONT.)	68705	1, 5			ISO 1098	DIN 68705 Part 1 Withdrawn
812	SEALING OF EXT. WALL JOINTS	18540	SH. 1, 2, 3				
813	CHIPBOARD	68761	4	5669			BS 5669 Part 1 Partially Replaced by BS EN 120, 309, 310, 311, 312, Parts 1-6 and 317 BS 5669 Part 4 Partially Replaced by BS EN 634-2 & BS EN 1328 BS 5669 Part 5 Withdrawn Replaced by BS 7916
813	CHIPBOARD (CONT. 1)	68763					
813	CHIPBOARD (CONT. 2)	68764					
814	LAMINATED PLASTIC SHEETING	16922		3794		BS EN 438	BS 3794 Withdrawn Replaced by BS EN 438 Parts 1 & 2
814	LAMINATED PLASTIC SHEETING (CONT. 1)						
814	LAMINATED PLASTIC SHEETING (CONT. 2)						
815	WOOD WOOL SLABS	1101		1105			BS 1105 Obsolete
815	WOOD WOOL SLABS (CONT. 1)	1102					
816	QUALITY OF TIMBER	68141		1186	2		
817	MATERIAL FOR FLUSH DOORS	68706		459			BS 459 Part 3 Withdrawn
817	MATERIAL FOR FLUSH DOORS	18101					
817	MATERIAL FOR FLUSH DOORS						
818	WATERPROOF ADHESIVE	53255		1203	TYPE MR		
819	STRUCTURAL STEEL & METALWORK			4360 7316 7668		ISO 630, 6891 BS EN 10029: 1-3 BS EN 10113 BS EN 10155 BS EN 10210-1	BS 4360 Withdrawn - Replaced by BS 7316, BS 7668, BS EN 10029 Parts 1 to 3 BS EN 10113, BS EN 10155 and BS EN 10210-1
819	STRUCTURAL STEEL & METALWORK (CONT. 1)					JIS G30101-87	

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
820	SPLIT RING TIMBER CONNECTORS			1579			
821	METAL WINDOWS			6510			
822	GLASS FOR GLAZING	1249	1	952	1		
822	GLASS FOR GLAZING (CONT.)	18301					
823	GALVANISED M.S. TUBING (MILD STEEL)	2440		1387		ISO 65, 7/1, 7/2	
823	GALVANISED M.S. TUBING (MILD STEEL) (CONT. 1)	2441		21			
823	GALVANISED M.S. TUBING (MILD STEEL) (CONT. 2)	2442					
823	GALVANISED M.S. TUBING (MILD STEEL) (CONT. 3)	2999	1				
824	FITTINGS TO M.S. TUBING MILD STEEL	2460		1256, 143			
824	FITTINGS TO M.S. TUBING MILD STEEL			143		BS EN 10242	
824	FITTINGS TO M.S. TUBING MILD STEEL (CONT. 2)			1740	1		
825	POLYTHENE TUBING FOR COLD WATER SERVICES	19533		2782		ISO 161-1 BS ISO 4065 BS ISO 11922-1	
825	POLYTHENE TUBING FOR COLD WATER SERVICES (CONT. 1)	8072		6572 6730			
825	POLYTHENE TUBING FOR COLD WATER SERVICES (CONT. 2)	8073					
825	POLYTHENE TUBING FOR COLD WATER SERVICES (CONT. 3)	8075					
825	POLYTHENE TUBING FOR COLD WATER SERVICES (CONT. 4)	8074					
826	BRASSWORK & FITTINGS FOR TAPS & STOP VALVES			1010	2		
827	BALL VALVES FOR CISTERNS			1212	3		
828	PLASTIC FLOATS FOR BALL VALVES			2456			
829	CAST IRON SOIL, WASTE & VENT PIPES			416			
829	CAST IRON SOIL, WASTE & VENT PIPES (CONT. 1)						
829	CAST IRON SOIL, WASTE & VENT PIPES (CONT. 2)						
829	CAST IRON SOIL, WASTE & VENT PIPES (CONT. 3)	19522	1, 2				
830	GALVANISED MILD STEEL COLD WATER TANKS			417	2 CL.A		
831	ENAMELLED CAST IRON BATH			1189			
831	ENAMELLED CAST IRON BATH						
831	ENAMELLED CAST IRON BATH	4774					
832	PILLAR TAPS	7572		1010	2		
833	GLAZED VITREOUS CHINA W.C. PAN	1387		5503			
833	GLAZED VITREOUS CHINA W.C. PAN (CONT.)	1381					
834	HINGED PLASTIC SEAT TO W.C. PAN			1254			
835	GLAZED VITREOUS CHINA LAVATORY BASIN	4462		1188			
835	GLAZED VITREOUS CHINA LAVATORY BASIN (CONT.)			5506	2		
836	STAINLESS STEEL SINK	4465		1244	2		
837	BRASS "S" AND "P" TRAPS			1184			BS 1184 Obsolescent
839	A/C DRAIN PIPES AND FITTINGS	19831		3656		BS EN 588-1	BS 3656 Withdrawn Replaced by BS EN 588-1
839	A/C DRAIN PIPES AND FITTINGS (CONT. 1)	19841					
839	A/C DRAIN PIPES AND FITTINGS (CONT. 2)	19850	1, 2				
840	CONCRETE DRAIN PIPES	See 409		2870			
841	PITCH FIBRE DRAIN PIPES			2760			BS 2760 Withdrawn
842	CAST IRON DRAIN PIPES	19500		437		ISO 6594	
842	CAST IRON DRAIN PIPES (CONT. 1)	19501					
842	CAST IRON DRAIN PIPES (CONT. 2)	19502					
842	CAST IRON DRAIN PIPES (CONT. 3)	19503					
842	CAST IRON DRAIN PIPES (CONT. 4)	19504					
842	CAST IRON DRAIN PIPES (CONT. 5)	19505					
842	CAST IRON DRAIN PIPES (CONT. 6)	19506					
842	CAST IRON DRAIN PIPES (CONT. 7)	19507					
842	CAST IRON DRAIN PIPES (CONT. 8)	19508					

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
842	CAST IRON DRAIN PIPES (CONT. 9)	19509					
842	CAST IRON DRAIN PIPES (CONT. 10)	195010					
842	CAST IRON DRAIN PIPES (CONT. 11)	195011					
842	CAST IRON DRAIN PIPES (CONT. 12)	195014					
842	CAST IRON DRAIN PIPES (CONT. 13)	195019					
842	CAST IRON DRAIN PIPES (CONT. 14)	19521					
843	JOINTING COMPOUND FOR C.I. DRAIN PIPES			BS 6956	1, 5, 6, 7		
844	C.I. S & S FITTINGS FOR DRAINS	19519		437			
845	STEP-IRONS TO MANHOLES & SEPTIC TANKS	1211	1	1247			
845	STEP-IRONS TO MANHOLES & SEPTIC TANKS (CONT. 1)	1212	1				
845	STEP-IRONS TO MANHOLES & SEPTIC TANKS (CONT. 2)	1213					
845	STEP-IRONS TO MANHOLES & SEPTIC TANKS (CONT. 3)	4281					
846	C.I. MANHOLE COVERS AND FRAMES	1229		497	1	BS EN 124	BS 497 Withdrawn Replaced by BS EN 124
846	C.I. MANHOLE COVERS AND FRAMES (CONT. 1)	4271	1, 3				
846	C.I. MANHOLE COVERS AND FRAMES	19593	1, 2, 3				
846	C.I. MANHOLE COVERS AND FRAMES (CONT. 3)	19594	1, 2				
846	C.I. MANHOLE COVERS AND FRAMES (CONT. 4)	19596					
846	C.I. MANHOLE COVERS AND FRAMES (CONT. 5)	19597					
847	STEEL LADDERS FOR PERMANENT ACCESS	3620		4211			
848	HANDRAILING	24533		6180			
849	GALVANISED CHAIN LINK FENCING	11991		1722	1		
850	OPEN MESH STEEL FLOORING			4592	1		
851	MASTIC ASPHALT FOR ROOFING			6925			
852	ALUMINIUM FOR LOUVRE WINDOWS			1470		BS EN 485 BS EN 515 BS EN 573	BS 1470 Withdrawn Replaced by BS EN 485 Parts 1-4, BS EN 515, BS EN 573 Parts
853	FIXING ACCESSORIES FOR BUILDING PURPOSES			1494	1		BS 1494 Part 2 Withdrawn
854	PRECAST CONCRETE MANHOLES	4034		5911	2, 3		BS 5911 Part 1 Withdrawn Replaced by BS 5911 Part 100 (1988) Bs 5911 Part 200 (1989) and BS 5911 Part 200 (1994)
855	PRECAST CONCRETE KERBS & CHANNELS	483		7263	1		
856	WATERPROOF BUILDING PAPERS	4122		1521			
856	WATERPROOF BUILDING PAPERS (CONT. 1)	52126					
856	WATERPROOF BUILDING PAPERS (CONT. 2)	52127					
856	WATERPROOF BUILDING PAPERS (CONT. 3)	52128					
856	WATERPROOF BUILDING PAPERS (CONT. 4)	52129					
856	WATERPROOF BUILDING PAPERS (CONT. 5)	52130					
857	METAL TIES FOR CAVITY WALL			1243			
858	A/C BUILDING PRODUCTS (TESTS)	274	1-4	4624			
859	PRECAST CONCRETE FLAGSTONES	485		7263	1		
861	LINTELS - PREFABRICATED			5977	2		
862	uPVC SOIL AND VENT PIPES, FITTINGS, ETC.	1187		4514			
863	STRUCTURAL STEEL IN BUILDINGS			449 (5950)	2		BS 449 Part 2 Withdrawn Replaced by BS 5950 Part 5
864	PROTECTIVE BARRIERS IN AND ABOUT BUILDINGS			6180			
866	BITUMENS FOR BUILDING & CIVIL ENGINEERING			3690	1, 3		
867	SOLAR WATER HEATERS					AS 2813-85	

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
868	FLOORING - INITIAL TREATMENT			6263	2		
869	RIGID FLAT SHEET BUILDING MATERIALS						
870	BUILDING STONE			1438			
871	CAST STONE			1217			
872	WOOD PRESERVATIVES - CREOSOTE			144			
873	WASTE TRAPS - PLASTIC			3943			
874	COPPER FLOATS FOR FLOAT OPERATED VALVES			1968			
875	VITREOUS CHINA SANITARY			3402			
876	PAINTS - LEAD BASED			2523 (5082, 5358)			BS 2523 Obsolescent, Partially Replaced by BS 5082 and BS 5358
877	READY MIXED OIL-BASED PRIMING PAINTS			2521/4 (See 2523)			
878	READY MIXED OIL-BASED UNDERCOATING AND FINISHING						
879	COLD POURED SEALING MATERIALS FOR CONCRETE			5212			
880	GULLY TOPS AND MANHOLE TOPS FOR VEHICULAR PEDESTRIAN AREAS. DESIGN REQUIREMENTS, TYPE TESTING,					BS EN 124	
881	STRUCTURAL TIMBER. STRENGTH CLASSES			338			
882	CLAY ROOFING TILES AND FITTINGS			402	1		Part 1: Specification for plain tiles and fittings
883	BITUMEN ROAD EMULSIONS (ANIONIC AND CATIONIC)			434	1		Part 1: Bitumen road emulsions
884	DRESSED NATURAL STONE KERBS, CHANNELS,			435			
885	CONCRETE ROOFING TILES AND FITTINGS. PRODUCT					BS EN 490	
886	AIR BRICKS AND GRATINGS FOR WALL VENTILATION			493			
887	EAVES GUTTERS AND FITTINGS MADE OF PVC-C					BS EN 607	
888	EAVES GUTTERS AND RAINWATER DOWN-PIPES OF					BS EN 612	
889	PLYWOOD					BS EN 635	
890	TIMBER IN JOINERY					BS EN 942	
891	PRESSED STEEL GUTTERS, RAINWATER PIPES, FITTINGS AND			1091			
892	WC FLUSHING CISTERNS (INCLUDING DUAL FLUSH CISTERNS AND FLUSH PIPES)			1125			
893	NAILS			1202	1, 2 & 3		Part 1: Steel nails Part 2: Copper nails Part 3: Aluminium nails
893	FIXING ACCESSORIES FOR BUILDING PURPOSES			1494	1		Part 1 Fixings for sheet, roof and wall coverings
894	AUTOMATIC FLUSHING CISTERNS FOR URINALS			1876			
895	WASTES (EXCLUDING SKELETON SINK WASTES) AND BATH			3380			
896	LIGHTWEIGHT AGGREGATES FOR MASONRY UNITS AND STRUCTURAL CONCRETE			3797			
897	TERRAZO TILES			4131			
898	WELDABLE STRUCTURAL STEELS			4360			
899.1	UNPLASTICIZED POLYVINYL CHLORIDE (PVC-U) RAINWATER GOODS AND ACCESSORIES			4576			
899.2	INDUSTRIAL TYPE METAL FLOORING, WALKWAYS AND STAIRS TREADS			4592	1, 2, 3 & 4		Part 1: Open bar gratings Part 2: Expanded metal grating panels Part 3: Cold formed planks Part 4: Glass reinforced plastics open bar gratings
899.3	READY-MIX BUILDING MORTARS			4721			
899.4	INTERNAL AND EXTERNAL WOOD DOORSETS, DOOR LEAVES AND			4787	1		Part 1: Dimensional requirements

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
899.5	HOT-ROLLED STRUCTURAL STEEL SECTIONS			4848	2 & 4		Part 2: Hot-finished hollow sections Part 4: Equal and unequal angles
899.6	URINALS			4880	1		Part 1: Stainless steel slab urinals
899.7	MORTAR ADMIXTURES			4887	1 & 2		Part 1: Air-entraining (plasticizing) admixtures Part 2: Set retarding admixtures
899.8	SOFTWOOD GRADES FOR STRUCTURAL USE			4978			
899.9	COATED MACADAM FOR ROADS AND OTHER PAVED AREAS			4987	1 & 2		Part 1: Constituent materials and mixtures Part 2: Transport, laying and compaction
899.10	WATER-BORNE PRIMING PAINTS FOR WOODWORK			5082			
899.11	MASONRY CEMENT			5224			
899.12	EXTERNAL RENDERINGS			5262			
899.13	SOLVENT-BORNE PRIMING PAINTS FOR WOODWORK			5358			
899.14	WALL AND FLOOR TILING			5385	1, 2, 3, 4 & 5		Part 1: Design and installation of internal ceramic wall tiling and mosaics in normal conditions Part 2: Design and installation of external ceramic wall tiling and mosaics (including terra cotta and faience tiles) Part 3: Design and installation of ceramic floor tiles and mosaics Part 4: Tiling and mosaics in specific conditions Part 5: Design and installation of
899.15	STONE MASONRY			5390			
899.16	SPECIFICATION FOR LOW-RESISTANCE SINGLE TAPS AND COMBINATION TAP ASSEMBLIES			5412			
	SUITABLE FOR OPERATION AT PN 10 MAX. AND A MINIMUM FLOW PRESSURE OF 0.01 MPa (0.1 BAR)						
899.17	VITREOUS CHINA WASHDOWN WC PANS WITH HORIZONTAL OUTLET			5503	1 & 2		Part 1: Connecting dimensions Part 2: Materials, quality, performance and dimensions other
899.18	VITREOUS CHINA BOWL URINALS (RIMLESS TYPE)			5520			
899.19	PRESERVATION OF TIMBER			5589			
899.20	PLASTIC CONNECTORS FOR USE WITH HORIZONTAL OUTLET VITREOUS CHINA WC PANS			5627			
899.21	STILES, BRIDLE GATES AND KISSING GATES			5709			
899.22	GLAZING FOR BUILDINGS			6262			
899.23	MANUFACTURE OF GLUED STRUCTURAL COMPONENTS FOR TIMBER AND WOOD BASED PANEL			6446			
899.24	POLYETHYLENE DAMP-PROOF COURSES FOR			6515			
899.25	INSTALLATION OF CHMICAL DAMP- PROOF COURSES			6576			
899.26	PORTLAND PULVERIZED-FUEL ASH CEMENTS			6588			
899.27	PRECAST CONCRETE PAVING			6717	1		Part 1: Paving blocks
899.28	EXTERIOR WOOD COATING SYSTEMS			6952	1		Part 1: Guide to classification and selection
899.29	PRECAST CONCRETE FLAGS, KERBS, CHANNELS, EDGINGS AND			7263	1 & 2		Part 1: Specification Part 2: Code of practice for laying
899.30	IN-SITU FLOORINGS			8204	2		Part 2: Concrete wearing surfaces

3.10 ELECTRICAL / MECHANICAL

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
001	FRACTIONAL HORSE-POWER MOTORS (DIMENSIONS)	42021		2048	1		
002	CURRENT TRANSFORMERS			7626		IEC 60185	
003	VOLTAGE TRANSFORMERS			7625		IEC 60186/186A	
004	CIRCUIT BREAKERS 1 kV A.C.			5311		IEC 60056/267	
005	CIRCUIT BREAKERS A.C. VOLT. OPERATED			842		BS EN 61008-1	
006	CIRCUIT A.C. CURRENT OPERATED			4293		BS IEC 1008-2-2	BS 4293 Partially Replaced by BS EN 61008-1 and BS IEC 1008-2
007	FUSE SWITCHES (AIR BREAK)			5419		IEC 408	BS 5419 Withdrawn Replaced by BS EN 60947-3
008	MOTOR STARTERS AND CONTROLLERS	46062		587			BS 587 Withdrawn Replaced by BS EN 60947-4-1 and BS 5856-1
009	MOTOR STARTERS ABOVE 1000			5856	1	IEC 60632-1	
010	ELECTRIC MOTOR DIMENSIONS	42673	BL. 1-4	4999	10	IEC 60072, 72A	
011	INDUCTION MOTORS FOR GENERAL PURPOSE	42673	BL. 1-4	5000	10	IEC 60072	
012	ENCLOSURE PROTECTION SWITCH / CONTROL GEAR	40050	BL. 2, 6, 9, 10	5420		IEC 60144 (IP32)	BS 5420 Withdrawn Replaced by BS EN 60947-1
013	MOTOR STARTERS NOT EXC. 1000 V.A.C.	46062		4941	1, 3, 4	IEC 292, 1, 2, 3, 4	BS 4941 Withdrawn Replaced by BS EN 60947-4-1
014	ELECTRICITY METERS			37	1, 5, 8		BS 37 Withdrawn Replaced by Parts 1-4 of BS 5685
015	WATT-HOUR METERS			5685		IEC 521	BS 5685 Part 1 (1979) and Parts 2, 3 & 4 (1986) all Obsolete
016	ACCEPTANCE TESTS FOR PUMPS (CLASS C)	4325		5316	1	ISO 2548 IEC 198	
017	ACCEPTANCE TESTS FOR PUMPS (CLASS B)	4325		5316	2	ISO 3555 IEC 198	
018	CODE OF PRACTICE, ELECTRICAL WIRING					IEE W. REGS (15 TH)	
019	ELECTRICAL PROTECTIVE RELAYS			142			BS 142 Part 1 Section 1.5 Sub-Section 1.5.1 - 1.5.3 all renumbered as BS 60255-21-1, 2,
020	FACTORY BUILT SWITCHGEAR	57670	TL. 6	5486	1, 2, 3, 13	IEC 439-2	BS 5486 Part 1 Withdrawn Replaced by BS EN 60439-1
021	RECIPROCATING INT/COMB ENGINES			5514	1, 2	ISO 3046, PT. 1, 2	BS 5541 Part 2 (1988) Test Methods' Withdrawn - Replaced by BS 5514
022	MACHINES FOR MISCELLANEOUS			5000	99		
023	INSULATING MATERIALS FOR ELECTRICAL			2757		IEC 85	
024	PCV INSULATED CABLES NOT EXCEEDING 1900	57207	4, 5	6346			
025	ROTATING ELECTRICAL MACHINES - GENERAL			4999	1, 2, 3	IEC 34-1, 34-8, 72 72A	Renumbered as EN 60034-4
026	CONCRETE CABLE COVERS			2484			BS 2484 Obsolete
027	ELECTRIC POWER SWITCHGEAR (LOW VOL. N.E. 1kV)	57660		5486 5727 7354			
028	SAFETY ISOLATING			3535			
029	ROTATING ELECTRICAL MACHINES - RATING PLATES	42961		4999	4	IEC 60034-1	
030	ROTATING ELECTRICAL MACHINES - ENCLOSURES	40050		4999	20	IEC 60035-5	
031	ROTATING ELECTRICAL MACHINES - CONDITIONS			4999	31	IEC 60034-1	
032	ROTATING ELECTRICAL MACHINES - TEMPERATURE	See E DIN		4999	32	IEC 60034-1 E DIN	
033	ROTATING ELECTRICAL MACHINES - VIBRATION	See DIN		4999	50	ISO 2373	
034	ROTATING ELECTRICAL MACHINES - TESTS			4999	60	IEC 60034-1	
035	GENERATORS DRIVEN BY I/C ENGINES	See VDMA		5000	3	VDMA 6280	
036	MACHINES WITH FLAMEPROOF	22418		5000	17		
037	MAINTENANCE OF ELECTRICAL			6626			

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
038	PROTECTION PROVIDED BY ENCLOSURES (CLASS N OF DEG.)			5490		IEC 600529, BS EN 60529	BS 5490 Withdrawn Replaced by BS EN 60529
039	ELECTRICAL EQUIPMENT OF INDUSTRIAL MACHINES			2771		EN 60204, Part 1	BS 2771 Part 1 Replaced by EN 60204-1 (1993) but remains current for use as a reference standard for BS EN 60204-3-1: 1992
040	SWITCHGEAR AND CONTROL GEAR UPTO 1000V			4752		IEC 600157-1, 600157-1A	BS 4752 Withdrawn Replaced by BS EN 60947-2
041	PVC INSULATED CABLES FOR SWITCHES AND CONTROL GEAR			6231			
042	BASIC ENVIRONMENTAL TESTING PROCEDURES			2011	1.1	IEC 60068-1	BS 2011 Parts Withdrawn and Replaced by Parts of BS EN 60068
043	DEFINITIONS AND GENERAL					IEC 60051-1	
044	PANEL MOUNTED INSTRUMENTS - DIMENSIONS					IEC 600473	
045	CELLULOSIC PAPERS FOR ELECTRICAL PURPOSES			5626	1, 2, 3	IEC 600554	
046	COMMISSIONING, OPERATION AND MAINTENANCE OF					IEC 600805	
047	RUBBER INSULATED CABLES					IEC 600245	
048	VOLTAGE FLUCTUATION LIMITS					IEC 600827	
049	ELECTRIC CABLES - ARMOURING - WIRE FOR					KS 04-290	
050	ROTATING ELECTRICAL MACHINES FOR HARZARDOUS			5000	16		
051	POWER TRANSFORMERS - GENERAL					BS EN 60076-1	
052	ELECTRIC CONDUIT - STEEL			4568	2		
053	BUS BARS			159			
054	NON-METALLIC CONDUITS			4607 (6099)	2		Partially Replaced by BS 6099 Part 1 and BS 6099 Section 2.2
055	PVC CABLES IN CONDUITS			6004			
056	INSULATED FLEXIBLE CORD			6500			
057	M.I.C.C. CABLES			4782	1		
058	FLUSH SWITCHES			3676			
059	ELECTRIC SOCKETS			1363			Part 3: 1989 Replaced by BS 1363 Part 3 (1995) but remains current
060	FUSED SPUR BOXES			1362			
061	CONTACTORS			775			Part 1 (1969) Withdrawn Replaced by BS 5424: Part 1 1977
062	SECURITY LIGHTING INSTALLATION					CP 1004	Renumbered as BS 5498
063	ALUMINIUM SOLID CONDUCTORS			3988			

3.11 MISCELLANEOUS

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
900	ZINC SPRAY PROTECTION	55928	1-9	2569	1	ISO 2063 BS EN 22063	BS 2569 Withdrawn Replaced by BS EN 22063
900	ZINC SPRAY PROTECTION (CONT.)			5493		BS EN ISO 12944	BS 5493 Proposed for Obsolescence Partially Replaced by Parts 1-8 of BS EN ISO 12944
901	METALLIC ZINC RICH PRIMER			4652			
902	COLOUR OF FINISH (BUILDING MATERIALS)	See VOB		4800		VOB pt. C	
903	HOT DIP GALVANIZING ON IRON &			729		ISO 1459	
903	HOT DIP GALVANIZING ON IRON & STEEL (CONT.)			5493		ISO 1461 BS EN ISO 12944	BS 5493 Proposed for Obsolescence Partially Replaced by Parts 1-8 of BS EN ISO 12944
904	BLACK BITUMEN SOLUTION (COLD APP.) FOR WATER TANKS		See DVGW	3416	TYPE II	DVGW-GWS	
905	WELDABLE STRUCTURAL STEELS	1025	1-5	4360		ISO 630	BS 4360 Withdrawn - Replaced by BS 7613, BS 7668, BS EN 10113, BS EN 10155 & BS EN 10210
906	CLASSIFICATION OF GREY CAST IRON			1452		ISO 185	BS 1452 Withdrawn Replaced by BS EN 1561
907	BEARING DESIGN LIFE						
908	BITUMEN - HOT APPLIED - COATINGS FOR IRON AND	30673		4147			
908	BITUMEN - HOT APPLIED - COATINGS FOR IRON AND			5493			
909	PRESSED STEEL RECTANGULAR			1564			
910	GREY IRON CASTINGS FOR MANHOLE COVERS			1452	GRADE 10		
911	MALLEABLE CAST IRON			6681		ISO 5922	BS 6681 Withdrawn - Replaced by BS EN 1562
911	MALLEABLE CAST IRON (CONT.)					ASTM A 47-77	
912	ROLLED STEEL			4360		ISO 630	BS 4360 Withdrawn - Replaced by BS 7613, BS 7668, BS EN 10113, BS EN 10155 & BS EN 10210
912	ROLLED STEEL (CONT.)						
913	STRUCTURAL STEEL SECTIONS	1025	1-5	4	1		BS 4 Part 2 (1969) Withdrawn Replaced by BS 4848 Part 2
914	ISO METRIC BLACK HEXAGONAL BOLTS, SCREWS AND NUTS	267	1, 2	4190		ISO 272, 4759-1, 3	BS 4160 Obsolescent
914	ISO METRIC BLACK HEXAGONAL BOLTS, SCREWS AND NUTS (CONT)					ISO 885, 888	
914	ISO METRIC BLACK HEXAGONAL BOLTS, SCREWS AND NUTS (CONT)					ISO 898/2, 898/1	
915	SIZES FOR FERROUS & NON- FERROUS BARS			6722			
916	MECHANITE IRON, GRADE E					ASTM A48, No. 308	
917	CORROSION PROTECTION OF STEEL STRUCTURES - GENERAL	55928	1-9	5493		BS EN ISO 12944	BS 5493 Proposed for Obsolescence Partially Replaced by Parts 1-8 of BS EN ISO 12944
918	INGOT ZINC			3436		ISO 752 BS EN 1179	BS 3436 Withdrawn Replaced by BS EN 1179 (1996)
919	WELDING OF STEELS (METAL ARC)	8528	1-2	5135	1		BS 5135 Partially Replaced by BS EN
919	WELDING OF STEELS (METAL ARC) (CONT 1)	8553		499	1		BS 499 Part Obsolescent Withdrawn
919	WELDING OF STEELS (METAL ARC) (CONT 2)	8558	1				
919	WELDING OF STEELS (METAL ARC) (CONT 3)	50120	1				
920	STEEL PLATE, SHEET AND STRIP			1449	1 (Withdrawn)	ISO 3573	BS 1499 Parts Withdrawn Replaced by BS EN 10111, 10209, BS EN 10149-2 & 3, 10051, 10131, 10139, 10149-2 & 3, 10048, 10140,
920	STEEL PLATE, SHEET AND STRIP (CONT 1)					ISO 3574	
920	STEEL PLATE, SHEET AND STRIP (CONT 2)						

SRN	SUBJECT	DIN	PART	BSS	PART	OTHER	REMARKS
920	STEEL PLATE, SHEET AND STRIP (CONT 3)						
920	STEEL PLATE, SHEET AND STRIP (CONT 4)						
920	STEEL PLATE, SHEET AND STRIP (CONT 5)						
920	STEEL PLATE, SHEET AND STRIP (CONT 6)	1614					
920	STEEL PLATE, SHEET AND STRIP (CONT 7)	1632	2				
920	STEEL PLATE, SHEET AND STRIP (CONT 8)	1624					
921	ELECTROPLATED COATINGS ON THREADS -			3382	1-6		
922	ELECTROPLATED COATINGS ON THREADS -			3382	7	ISO-DIS 4042	
923	ISO METRIC SCREW THREADS			3643	1-2	ISO 68, 261, 724, 965/1, 965/3, 262	
923	ISO METRIC SCREW THREADS					ISO 1106-3, 7438	
924	ISO METRIC PRECISION HEXAGON BOLTS, SCREWS			3692		ISO 887	BS 3692 Obsolescent
925	METAL WASHERS FOR GENERAL ENGINEERING			4320		ASS 2602: 83 2603: 83 - ISO/12 887	
926	STEEL STRUCTURES - PAINTS FOR POLYURETHANE						
927	SHEAR TEST FOR METALS	50141					
928	WELDED STEEL TANKS FOR OIL STORAGE					APS 650	
929	LIFTING APPLIANCES - OVERHEAD TRAVELLING					ISO 7752/5	
930	HIGH STRENGTH FRICTION GRIP			4325			
931	ELECTRODES FOR MANUAL ARC WELDING			639		BS EN 499	BS 639 Withdrawn Replaced by BS EN 499
932	BLACK CUP COUNTERSUNK BOLTS, SCREWS WITH NUTS			4933			BS 4933 Obsolescent
933	METAL LATHING			1369			
934	ROLLED ASPHALT HOT PROCESS FOR ROADS			594			
935	BINDER DIST. FOR ROAD SURFACE DRESSING			1707			
936	BITUMINOUS ROOFING FELT			747		CP 114: 3	CP 114:3 Withdrawn
937	GAS WELDING			2640			
938	METALLIC COATINGS. HOT DIP GALVANISED COATINGS ON FERROUS MATERIALS					BS EN 1460	
939	METHOD FOR SPECIFYING ELECTROPLATED COATINGS OF ZINC AND CADMIUM ON IRON			1706			
940	DIMENSIONS OF GASKETS FOR PIPE FLANGES TO BS 4504			4865	1		Part 1: Non-metallic flat gaskets (including gaskets for flanges to BS 4722)
941	BONDING AGENTS FOR USE WITH GYPSUM PLASTERS AND CEMENT			5270	1		Part 1: Polyvinyl acetate (PVAC) emulsion bonding agents for indoor use with
942	FALSEWORK			5975			
943	TUBULAR POLYETHYLENE FILM FOR USE AS A PROTECTIVE SLEEVING FOR BURIED IRON PIPES			6076			
944	FLEXIBLE JOINTS FOR GREY OR DUCTILE CAST IRON DRAINPIPES AND FITTINGS (BS 437) AND FOR DISCHARGE AND VENTILATING PIPES AND FITTINGS (BS 416)			6087			
945	HOT ROLLED PRODUCTS OF NON-ALLOY STRUCTURAL STEELS			10025			
946	STAINLESS STEELS			10088	2		Part 2: Technical delivery conditions for sheet/plate and strip for general purposes

4.1 DIN

DIN	SRN	DIN	SRN	DIN	SRN	DIN	SRN	DIN	SRN
105	806	2000	651	2988	204	4279	405	19630	651
106	806	2403	700	2990	204	4279	602	19648	510
267	914	2406	701	2991	204	4281	845	19800	401
278	805	2410	213	2993	204	4325	017	19850	402
459	119	2413	210	2999	203	4325	016	19850	839
483	855	2413	228	2999	823	7572	832	19850	860
488	128	2425	708	3202	502	7865	138	22418	036
488	127	2425	651	3202	505	8061	305	28500	201
488	126	2429	701	3202	501	8061	314	28500	200
488	125	2440	203	3221	509	8061	313	28601	217
1025	905	2440	823	3230	501	8062	300	28602	218
1025	913	2441	203	3352	501	8062	305	28603	219
1045	108	2441	823	3352	502	8063	301	30670	227
1045	107	2442	203	3352	511	8072	825	30671	215
1045	110	2442	823	3354	506	8073	825	30672	221
1045	120	2444	225	3356	504	8074	825	30673	214
1045	111	2448	213	3357	514	8075	825	30673	908
1045	113	2458	213	3441	515	8528	919	30674	220
1045	112	2460	210	3620	847	8553	919	40050	012
1048	116	2460	213	4030	114	855	919	40050	030
1048	117	2460	824	4032	407	8564	600	42021	001
1060	801	2500	207	4032	409	8565	220	42673	010
1084	115	2501	207	4033	655	1045	100	42673	011
1084	121	2505	216	4034	854	16450	301	42961	029
1084	133	2519	207	4035	409	16451	301	46062	008
1101	815	2526	207	4035	408	16922	814	46062	013
1102	815	2559	210	4046	651	16928	302	50019	709
1164	103	2566	207	4060	222	16963	307	50120	600
1164	106	2605	226	4078	811	16970	304	50120	919
1164	105	2615	226	4085	667	18101	817	50141	927
1164	104	2615	216	4124	654	18195	668	50976	903
1187	862	2616	226	4126	145	18196	601	52128	856
1199	849	2616	216	4226	109	18196	650	52129	856
1211	845	2617	216	4226	110	18203	657	52130	856
1212	845	2617	226	4226	108	18301	822	53255	818
1229	846	2632	207	4226	107	18307	650	55928	900
1230	414	2633	207	4226	130	18330	656	55928	917
1249	822	2673	207	4226	111	18540	812	57207	024
1381	833	2693	208	4226	136	19522	829	57660	027
1387	833	2695	208	4226	114	19532	300	57670	020
1614	920	2696	208	4226	113	19532	305	68705	811
1623	920	2697	208	4226	112	19533	825	68706	817
1624	920	2873	221	4226	135	19593	846	68761	813
1626	213	2950	209	4235	132	19594	846	68763	813
1629	213	2980	204	4271	846	19596	846	68764	813
1754	205	2986	203	4279	202	19597	846	68791	131
1986	652	2987	204	4279	303	19630	653	68792	131

4.2 BSS

BSS	SRN	BSS	SRN	BSS	SRN	BSS	SRN	BSS	SRN
4	913	1188	835	2494	308	4466	129	5486	020
12	103	1189	831	2499	137	4483	128	5493	900
12	106	1192	703	2439	122	4504	207	5493	908
12	105	1192	704	2569	900	4514	862	5493	917
21	203	5911	410	2640	937	6811	012	5506	835
21	223	1199	130	2757	023	4550	603	5514	021
21	823	1199	136	2871	206	4568	052	5626	045
5685	014	1200	135	2871	205	4592	850	5642	142
65	414	1203	818	3148	114	4607	054	5669	813
78 (4772)	224	1211 (4772)	200	3284 (6811)	307	4622	200	5685	015
143	824	1212	508	3382	921	4624	401	5728	510
144	872	1212	827	3382	922	4624	858	5834	513
159	053	1217	871	3402	875	4625	408	5856	009
308	705	1243	857	3416	904	4652	901	5886	405

336	512	1244	836	3444	810	4660	309	5911	407
368	859	1247	845	3505	311	4670	938	5911	409
410	146	1254	834	3505	310	4800	902	5911	413
416	829	1256	824	3505	300	4870	670	5911	854
417	830	1363	059	3505	305	4871	671	5927	404
437	844	1369	933	3505	312	4999	030	5930	650
437	842	1377	601	3506	305	4999	033	5977	861
459	817	1387	203	3535	028	4999	034	6004	055
499	919	1362	060	3600	213	4999	031	6072	600
534	210	1387	823	3600	228	4999	010	6073	804
534	212	1438	870	3601	213	4999	029	6100	707
569	860	1449	920	3643	923	4999	025	6100	750
594	934	1521	124	3656	839	5000	011	6180	864
604	150	1521	856	3676	058	5000	022	6231	041
690	807	1553	701	3680	661	5000	036	6263	868
729	903	1554	229	3690	866	5000	035	6282	505
743	803	1564	909	3692	924	5000	050	6297	659
747	936	1579	820	3889	600	5041	517	6316	660
750	509	1707	935	3921	805	5070	706	6346	024
775	061	1722	849	3921	806	5075	149	6367	664
812	107	1740	204	3941	003	5135	919	6398	804
812	112	1740	824	3943	873	5150	502	6431	802
812	113	1881	139	3988	063	5151	503	6464	317
842	005	1881	140	3974	406	5152	504	6500	056
882	108	1881	141	4027	104	5153	505	6510	821
882	109	1881	116	4147	214	5154	511	6626	037
882	110	1881	117	4147	908	5163	501	6722	915
882	111	1924	673	4211	847	5212	879	6746	024
890	801	1968	874	4248	148	5311	004	6925	851
952	822	2011	042	4293	006	5316	016	8007	102
1010	826	2048	001	4320	925	5316	017	8010	316
1010	832	2494	318	4335	702	5328	100	8110	101
1105	815	2521	877	4346	301	5328	115	8110	143
1142	809	2456	828	4395	930	8007	138		
1186	816	2494	222	4449	126	5419	007		

4.3 OTHER STANDARDS

OTHER STANDARDS	SRN	OTHER STANDARDS	SRN
AAS 2602:83, 2603:03	926	ISO 2035, 2044	301
AGMA 5T 510	907	ISO 2045, 2048, 2536	301
ANSI A10 9-1983	663	ISO 2063	900
AP15LS	234	ISO 2505, 3114, 3472, 3473, 3474	315
APS 650	928	ISO 2531	202
AS 2813-85	867	ISO 2531	207
ASTM A 47-77	911	ISO 2548 ICE 198	016
ASTM A 48, No. 308	916	ISO 272, 4759-1, 3	914
AWWA C. 508-82	505	ISO 3046, PARTS 1, 2	021
AWWA C.104A, C602-76	211	ISO 3114, 3606	300
AWWA C.200-75	210	ISO 3127	310
AWWA C.200-75	230	ISO 4042	922
AWWA C.203-78	221	ISO 4179, 6600, DVGW W342	211
AWWA C.205 DVGW-W-342-71	212	ISO 4200	228
AWWA C.214-83	232	ISO 4633	222
AWWA C.602-83	212	ISO 49	209
AWWA C.602-89	413	ISO 7/2	203
CP 1004	062	ISO 7005/2, 3	207
CP 112, 2	666	ISO 7-1/2	223
CP 2004	665	ISO 7186	411
CP 2005	658	ISO 7194	662
CP 301	652	ISO 7268	231
CP 310	651	ISO 752	918
CP 312	302	ISO 7751	412
CP 499	848	ISO 7752/5	929
IEC 60072	011	ISO 8493	205
IEC 60072, 72A	010	ISO 881	402
IEC 600805	046	ISO 885, 888	914
IEC 600827	048	ISO 887	925
IEC 60085	023	ISO 898/2, 898/1	914

IEE W. REGS (15 TH EDITION)	018	ISO 965/3, 262	923
ISO 1106-3, 7438	924	ISO DIS 4042	921
ISO 1167	306	KENYA M.O.W. STANDARD SPEC.	804
ISO 128, 2162, 2203, 5455, 5457	705	KS 04-290	049
ISO 13	200	KS 05-459:5	606
ISO 160	401	KS 06-149:2	300
ISO 161/1	300	KS 06-248 1, 2	510
ISO 161-1	825	VDB 2	101
ISO 185	906	VDB PART C	902
ISO 1920, 4012, 4108, 4013	117	VDMA 6280	035
ISO 196 (TESTS)	206		

Environmental and Social Requirements

SUGGESTED CONTENT FOR AN ENVIRONMENTAL AND SOCIAL POLICY (STATEMENT)

The Works’ policy goal, as a minimum, should be stated to integrate environmental protection, occupational and community health and safety, gender, equality, child protection, vulnerable people (including those with disabilities), sexual harassment, gender-based violence, Sexual Exploitation and Abuse (SEA), HIV/AIDS awareness and prevention and wide stakeholder engagement in the planning processes, programs, and activities of the parties involved in the execution of the Works. The Employer is advised to consult with the World Bank to agree the issues to be included which may also address: climate adaptation, land acquisition and resettlement, indigenous people, etc. The policy should set the frame for monitoring, continuously improving processes and activities and for reporting on the compliance with the policy.

The policy shall include a statement that, for the purpose of the policy and/or code of conduct, the term “child” / “children” means any person(s) under the age of 18 years.

The policy should, as far as possible, be brief but specific and explicit, and measurable, to enable reporting of compliance with the policy in accordance with Sub-Clause 30.3 of the General Conditions of Contract.

As a minimum, the policy is set out to the commitments to:

- 1. apply good international industry practice to protect and conserve the natural environment and to minimize unavoidable impacts;*
- 2. provide and maintain a healthy and safe work environment and safe systems of work;*
- 3. protect the health and safety of local communities and users, with particular concern for those who are disabled, elderly, or otherwise vulnerable;*
- 4. be intolerant of, and enforce disciplinary measures for illegal activities. To be intolerant of, and enforce disciplinary measures for gender-based violence, inhumane treatment, sexual exploitation, rape, sexual abuse, sexual activity with children, and sexual harassment;*
- 5. incorporate a gender perspective and provide an enabling environment where women and men have equal opportunity to participate in, and benefit from, planning and development of the Works;*
- 6. work co-operatively, including with end users of the Works, relevant authorities, contractors and local communities;*
- 7. engage with and listen to affected persons and organizations and be responsive to their concerns, with special regard for vulnerable, disabled, and elderly people;*
- 8. provide an environment that fosters the exchange of information, views, and ideas that is free of any fear of retaliation, and protects whistleblowers;*

9. *minimize the risk of communicable diseases and to mitigate the effects of communicable diseases associated with the execution of the Works;*

The policy should be signed by the senior manager of the Employer. This is to signal the intent that it will be applied rigorously.

MINIMUM CONTENT OF ES REQUIREMENTS

In preparing detailed specifications for ES requirements, the specialists should refer to and consider:

- *project reports e.g. ESIA/ESMP*
- *consent/permit conditions*
- *required standards including World Bank Group EHS Guidelines*
- *relevant international conventions or treaties etc., national legal and/or regulatory requirements and standards (where these represent higher standards than the WBG EHS Guidelines)*
- *relevant international standards e.g. WHO Guidelines for Safe Use of Pesticides*
- *relevant sector standards e.g. EU Council Directive 91/271/EEC Concerning Urban Waste Water Treatment*
- *grievance redress mechanism including types of grievances to be recorded and how to protect confidentiality e.g. of those reporting allegations of SEA.*
- *SEA prevention and management.*

The detail specification for ES should, to the extent possible, describe the intended outcome rather than the method of working.

The ES requirements should be prepared in manner that does not conflict with the relevant General Conditions of Contract and Particular Conditions of Contract.

PAYMENT FOR ES REQUIREMENTS

The Employer's ES and procurement specialists should consider how the Contractor will cost the delivery of the ES requirements. In the majority of cases, the payment for the delivery of ES requirements shall be a subsidiary obligation of the Contractor covered under the prices quoted for other Bill of Quantity items or activities. For example, normally the cost of implementing workplace safe systems of work, including the measures necessary for ensuring traffic safety, shall be covered by the Bidder's rates for the relevant works. Alternatively, provisional sums could be set aside for discrete activities for example for HIV counseling service, and, and, GBV/SEA awareness and sensitization awareness and sensitization or to encourage the contractor to deliver additional ES outcomes beyond the requirement of the Contract.

Key Personnel

Key Personnel

Item No.	Position/ specialization	Minimum Relevant academic qualifications	Minimum years of relevant work experience
1	Contractor’s Representative/ Site Agent - (1No.)	<ul style="list-style-type: none"> - BSc./BEng./BTech. or Equivalent Degree in Civil Engineering - Registered Professional Engineer with EBK or Equivalent Body - Valid Practicing License 	<ul style="list-style-type: none"> i. 15 years’ general experience ii. 10 years’ specific experience in construction of bituminous paved roads iii. At least 5 years as a Site Agent in a project as in ii above but within urban setup or informal settlement of minimum value KES 0.75 Billion.
2	Assistant Site Agent/ Site Engineer – (2No.)	<ul style="list-style-type: none"> - HND Civil or Equivalent - Registered Technician Engineer with EBK or equivalent 	<ul style="list-style-type: none"> i. 10 years’ general experience ii. 8 years’ specific experience in construction of bituminous paved roads iii. At least 5 years as a Site Engineer or Assistant Site Agent in a project as in ii above but within urban setup or informal settlement
3	Surveyors – (2No.)	<ul style="list-style-type: none"> - BSc.(Survey/Geomatics/Geospatial Engineering) or equivalent. - Registered with ISK or any other equivalent body - Conversant in AUTOCAD/CIVIL 3D 	<ul style="list-style-type: none"> i. 8 years’ general experience ii. 5 years’ specific experience in construction projects iii. At least 3 years as a Surveyor in a project as in ii above but within urban setup or informal settlement
4	Environmentalist – (1No.)	<ul style="list-style-type: none"> - BSc. In Environmental science/Natural science or its equivalent - Registered by NEMA as a Lead expert - Valid NEMA License 	<ul style="list-style-type: none"> i. 8 years’ general experience ii. 5 years’ specific experience in construction projects iii. At least 3 years as an Environmentalist in a project as in ii above but within urban setup or informal settlement

5	Sociologist – (1No.)	- B.A(Sociology/Community Development/Social Work/Political Science) or its equivalent	i. 8 years' general experience ii. 5 years' specific experience in construction projects iii. At least 3 years as a Sociologist in a project as in ii above but within urban setup or informal settlement
6	Health & Safety Officer – (2No.)	- Dip.(Occupational Health and Safety) or its equivalent - Be a Certified Health and Safety Officer by relevant body	i. 8 years' general experience ii. 5 years' specific experience in construction projects iii. At least 3 years as an HSO in a project as in ii above but within urban setup or informal settlement
7	Earthworks Foreman – (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
8	Pavement Works Foreman – (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
9	Concrete Works Foreman (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
10	Material Technologist – (2No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of bituminous paved roads
11	Water & Sanitation Works Foreman – (1No.)	- Diploma (Civil Engineering) or Building Construction	i. 8 years' general experience ii. 5 years' specific experience in construction of Water Suppl and Sewer system and Individual Sewer connections
12	Electrical Foreman – (1No.)	- Diploma (Electrical Engineering)	i. 8 years' general experience ii. 5 years' specific experience in installation of integrated solar street lights and/or public high mast flood lighting

Drawings

The Drawings are presented as volume 2 of 2 as follows

VOLUME 2 OF 2 – TENDER DRAWINGS:

CONSTRUCTION OF ROADS/FOOTPATHS & DRAINAGE SYSTEM AND PUBLIC LIGHTING INFRASTRUCTURE WORKS IN SELECTED INFORMAL SETTLEMENTS OF CHEBIEMIT AND CHEPTONGEI; BOTH WITHIN ELGEYO MARAKWET COUNTY

Supplementary Information

PART 3 – Conditions of Contract and Contract Forms

Section VIII - General Conditions of Contract

These General Conditions of Contract (GCC), read in conjunction with the Particular Conditions of Contract (PCC) and other documents listed therein, should be a complete document expressing fairly the rights and obligations of both parties.

These General Conditions of Contract have been developed on the basis of considerable international experience in the drafting and management of contracts, bearing in mind a trend in the construction industry towards simpler, more straightforward language.

The GCC can be used for both smaller admeasurement contracts and lump sum contracts.

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General Conditions of Contract

A. General

1. Definitions

Boldface type is used to identify defined terms.

- (a) The “**Accepted Contract Amount**” means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.
- (b) The “**Activity Schedule**” is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump-sum contract. It includes a lump-sum price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events.
- (c) The “**Adjudicator**” is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC Clause 23.
- (d) “**Bank**” means the financing institution **named in the PCC**.
- (e) “**Bill of Quantities**” means the priced and completed Bill of Quantities forming part of the Bid.
- (f) “**Compensation Events**” are those defined in GCC Clause 42 hereunder.
- (g) The “**Completion Date**” is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 55.1.
- (h) The “**Contract**” is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub-Clause 2.3 below.
- (i) The “**Contractor**” is the party whose Bid to carry out the Works has been accepted by the Employer.
- (j) The “**Contractor’s Bid**” is the completed bidding document submitted by the Contractor to the Employer.
- (k) The “**Contract Price**” is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.
- (l) “**Days**” are calendar days; months are calendar months.
- (m) “**Dayworks**” are varied work inputs subject to payment on a time basis for the Contractor’s employees and

- Equipment, in addition to payments for associated Materials and Plant.
- (n) A “**Defect**” is any part of the Works not completed in accordance with the Contract.
 - (o) The “**Defects Liability Certificate**” is the certificate issued by Project Manager upon correction of defects by the Contractor.
 - (p) The “**Defects Liability Period**” is the period **named in the PCC** pursuant to GCC Sub-Clause 36.1 and calculated from the Completion Date.
 - (q) “**Drawings**” means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract.
 - (r) The “**Employer**” is the party who employs the Contractor to carry out the Works, **as specified in the PCC**.
 - (s) “**Equipment**” is the Contractor’s machinery and vehicles brought temporarily to the Site to construct the Works.
 - (t) “**In writing**” or “**written**” means hand-written, type-written, printed or electronically made, and resulting in a permanent record;
 - (u) The “**Initial Contract Price**” is the Contract Price listed in the Employer’s Letter of Acceptance.
 - (v) The “**Intended Completion Date**” is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is **specified in the PCC**. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.
 - (w) “**Materials**” are all supplies, including consumables, used by the Contractor for incorporation in the Works.
 - (x) “**Plant**” is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.
 - (y) The “**Project Manager**” is the person **named in the PCC** (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.

- (z) **“PCC”** means Particular Conditions of Contract.
- (aa) The **“Site”** is the area **defined as such in the PCC**.
- (bb) **“Site Investigation Reports”** are those that were included in the bidding document and are factual and interpretative reports about the surface and subsurface conditions at the Site.
- (cc) **“Specification”** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.
- (dd) The **“Start Date”** is **given in the PCC**. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.
- (ee) A **“Subcontractor”** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.
- (ff) **“Temporary Works”** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
- (gg) A **“Variation”** is an instruction given by the Project Manager which varies the Works.
- (hh) The **“Works”** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, **as defined in the PCC**.
- (ii) **“Contractor’s Personnel”** refers to all personnel whom the Contractor utilizes on the Site or other places where the Works are carried out, including the staff, labor and other employees of each Subcontractor.
- (jj) **“Key Personnel”** means the positions (if any) of the Contractor’s personnel that are stated in the Specification.
- (kk) **“ES”** means Environmental and Social (including Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH);
- (ll) **“Sexual Exploitation and Abuse”** **“(SEA)”** means the following:

“Sexual Exploitation” is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;

“**Sexual Abuse**” is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;

- (mm) “**Sexual Harassment**” “**(SH)**” is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor’s Personnel with other Contractor’s or Employer’s Personnel; and
- (nn) “**Employer’s Personnel**” refers to the Project Manager and all other staff, labor and other employees (if any) of the Project Manager and of the Employer engaged in fulfilling the Employer’s obligations under the Contract; and any other personnel identified as Employer’s Personnel, by a notice from the Employer or the Project Manager to the Contractor.

2. Interpretation

- 2.1 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.
- 2.2 If sectional completion is **specified in the PCC**, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).
- 2.3 The documents forming the Contract shall be interpreted in the following order of priority:
 - (a) Agreement,
 - (b) Letter of Acceptance,
 - (c) Contractor’s Bid,
 - (d) Particular Conditions of Contract,
 - (e) General Conditions of Contract, including Appendices,
 - (f) Specification,
 - (g) Drawings,
 - (h) Bill of Quantities,¹ and

¹ In lump-sum contracts, delete “Bill of Quantities” and replace with “Activity Schedule.”

- (i) any other document **listed in the PCC** as forming part of the Contract.
- 3. Language and Law**
- 3.1 The language of the Contract and the law governing the Contract are **stated in the PCC**.
- 3.2 Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Employer's country when
- (a) as a matter of law or official regulations, the Borrower's country 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, the Borrower's Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country.
- 4. Project Manager's Decisions**
- 4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.
- 5. Delegation**
- 5.1 Otherwise **specified in the PCC**, the Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.
- 6. Communications**
- 6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.
- 7. Subcontracting**
- 7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations. The Contractor shall require that its Subcontractors execute the Works in accordance with the Contract, including complying with the relevant ES requirements and the obligations set out in Sub-Clause 26.1 of the General Conditions of Contract.
- 7.2 Submission by the Contractor for approval of the Project Manager, addition of any Subcontractor not named in the Contract, shall also include the Subcontractor's declaration in accordance with Appendix C- Sexual exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration

**8. Other
Contractors**

8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as **referred to in the PCC**. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.

9. Personnel and Equipment

- 9.1 The Contractor shall employ the Key Personnel and use the Equipment identified in its Bid, to carry out the Works or other personnel and Equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of Key Personnel and Equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.
- 9.2 The Project Manager may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Key Personnel (if any), who:
- (a) persists in any misconduct or lack of care;
 - (b) carries out duties incompetently or negligently;
 - (c) fails to comply with any provision of the Contract;
 - (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment;
 - (e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works;
 - (f) has been recruited from the Employer's Personnel;
 - (g) undertakes behavior which breaches the Code of Conduct for Contractor's Personnel (ES).

If appropriate, the Contractor shall then promptly appoint (or cause to be appointed) a suitable replacement with equivalent skills and experience.

Notwithstanding any requirement from the Project Manager to remove or cause to remove any person, the Contractor shall take immediate action as appropriate in response to any violation of (a) through (g) above. Such immediate action shall include removing (or causing to be removed) from the Site or other places where the Works are being carried out, any Contractor's Personnel who engages in (a), (b), (c), (d), (e) or (g) above or has been recruited as stated in (f) above.

9.3 Labor

- 9.3.1 *Engagement of Staff and Labor.* The Contractor shall provide and employ on the Site for the execution of the Works such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within the Country.

Unless otherwise provided in the Contract, the Contractor shall be responsible for the recruitment, transportation, accommodation and welfare facilities in accordance with GCC Sub-Clause 9.3.6, of the Contractor's Personnel, and for all payments in connection therewith.

- 9.3.2 *Conditions of Labor.* The Contractor shall pay rates of wages, and observe conditions of labor, which comply with all applicable laws. The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of the Country for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.
- 9.3.3 The Contractor may bring into the Country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, if requested by the Contractor, use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel.
- 9.3.4 The Contractor shall at its own expense provide the means of repatriation to and the Contractor's Personnel employed on the Contract at the Site to their various home countries. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.
- 9.3.5 *Disorderly conduct.* The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst the Contractor's Personnel.
- 9.3.6 *Facilities for Staff and Labor.* Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

- 9.3.7 The Contractor shall, in all dealings with the Contractor's Personnel, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor. The Contractor shall provide the Contractor's Personnel annual holiday and sick, maternity and family leave, as required by applicable laws or as stated in the Specification.
- 9.3.8 *Supply of Foodstuffs.* The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.
- 9.3.9 *Supply of Water.* The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.
- 9.3.10 *Measures against Insect and Pest Nuisance.* The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.
- 9.3.11 *Alcoholic Liquor or Drugs.* The Contractor shall not, otherwise than in accordance with the laws of the Country, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereto by Contractor's Personnel.
- 9.3.12 *Arms and Ammunition.* The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.
- 9.3.13 *Funeral Arrangements.* The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of its local employees who may die while engaged upon the Works.
- 9.3.14 *Forced Labor.* The Contractor, including its Subcontractors, shall not employ or engage forced labor. Forced labor consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

No persons shall be employed or engaged who have been subject to trafficking. Trafficking in persons is defined as the recruitment, transportation, transfer, harboring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a

position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation.

9.3.15 *Child Labor.* The Contractor, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the national law specifies a higher age (the minimum age).

The Contractor, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

The Contractor including its Subcontractors, shall only employ or engage children between the minimum age and the age of 18 after an appropriate risk assessment has been conducted by the Contractor with the Project Manager's approval. The Contractor shall be subject to regular monitoring by the Project Manager that includes monitoring of health, working conditions and hours of work.

Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:

- (a) with exposure to physical, psychological or sexual abuse;
- (b) underground, underwater, working at heights or in confined spaces;
- (c) with dangerous machinery, equipment or tools, or involving handling or
- (d) transport of heavy loads;
- (e) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or
- (f) under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer.

9.3.16 *Employment Records of Workers.* The Contractor shall keep complete and accurate records of the employment of labor at the Site. The records shall include the names, ages, genders, hours worked, and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the project Manager.

9.3.17 *Workers' Organizations.* In countries where the relevant labor laws recognize workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference, the Contractor shall comply with such laws. In such circumstances, the role of legally established workers' organizations and legitimate workers' representatives will be respected, and they will be provided with information needed for meaningful negotiation in a timely manner. Where the relevant labor laws substantially restrict workers' organizations, the Contractor shall enable alternative means for the Contractor's Personnel to express their grievances and protect their rights regarding working conditions and terms of employment. The Contractor shall not seek to influence or control these alternative means. The Contractor shall not discriminate or retaliate against the Contractor's Personnel who participate, or seek to participate, in such organizations and collective bargaining or alternative mechanisms. Workers' organizations are expected to fairly represent the workers in the workforce.

9.3.18 *Non-Discrimination and Equal Opportunity.* The Contractor shall not make decisions relating to the employment or treatment of Contractor's Personnel on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment of Contractor's Personnel on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to any aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices.

Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination. The Contractor shall provide protection and assistance as necessary to ensure non-discrimination and equal opportunity, including for specific groups such as women, people with disabilities, migrant workers and children (of working age in accordance with GCC Sub-Clause 9.3.15).

9.3.19 *Contractor's Personnel Grievance Mechanism.* The Contractor shall have a grievance mechanism for Contractor's Personnel, and where relevant the workers' organizations stated in GCC Sub-Clause 9.3.17, to raise workplace concerns. The grievance mechanism shall be proportionate to the nature, scale, risks and impacts of the Contract. The mechanism shall address concerns

promptly, using an understandable and transparent process that provides timely feedback to those concerned in a language they understand, without any retribution, and shall operate in an independent and objective manner.

The Contractor's Personnel shall be informed of the grievance mechanism at the time of engagement for the Contract, and the measures put in place to protect them against any reprisal for its use. Measures will be put in place to make the grievance mechanism easily accessible to all Contractor's Personnel.

The grievance mechanism shall not impede access to other judicial or administrative remedies that might be available, or substitute for grievance mechanisms provided through collective agreements.

The grievance mechanism may utilize existing grievance mechanisms, providing that they are properly designed and implemented, address concerns promptly, and are readily accessible to Contractor's Personnel. Existing grievance mechanisms may be supplemented as needed with Contract-specific arrangements.

9.3.20 *Training of Contractor's Personnel.* The Contractor shall provide appropriate training to relevant Contractor's Personnel on ES aspects of the Contract, including appropriate sensitization on prohibition of SEA and SH, and health and safety training.

As stated in the Specification or as instructed by the Project Manager, the Contractor shall also allow appropriate opportunities for the relevant Contractor's Personnel to be trained on ES aspects of the Contract by the Employer's Personnel.

The Contractor shall provide training on SEA, including its prevention, to any of its personnel who has a role to supervise other Contractor's Personnel.

**10. Employer's
and
Contractor's
Risks**

10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

**11. Employer's
Risks**

11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:

- (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to

- (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or
 - (ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.
- (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

11.2 From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer's risk except loss or damage due to

- (a) a Defect which existed on the Completion Date,
- (b) an event occurring before the Completion Date, which was not itself an Employer's risk, or
- (c) the activities of the Contractor on the Site after the Completion Date.

12. Contractor's Risks

12.1 From the Starting Date until the Defects Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.

13. Insurance

13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles **stated in the PCC** for the following events which are due to the Contractor's risks:

- (a) loss of or damage to the Works, Plant, and Materials;
- (b) loss of or damage to Equipment;
- (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
- (d) personal injury or death.

13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide

for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

- 13.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
- 13.4 Alterations to the terms of an insurance shall not be made without the approval of the Project Manager.
- 13.5 Both parties shall comply with any conditions of the insurance policies.

14. Site Data

- 14.1 The Contractor shall be deemed to have examined any Site Data **referred to in the PCC**, supplemented by any information available to the Contractor.

15. Contractor to Construct the Works

- 15.1 The Contractor shall construct and install the Works in accordance with the Specification and Drawings.

16. The Works to Be Completed by the Intended Completion Date

- 16.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.
- 16.2 The Contractor shall not carry out mobilization to the Site unless the Project Manager gives approval, an approval that shall not be unreasonably delayed, to the measures the Contractor proposes to address environmental and social risks and impacts, which at a minimum shall include applying the Management Strategies and Implementation Plans (MSIPs) and Code of Conduct for Contractor's Personnel submitted as part of the Bid and agreed as part of the Contract.

The Contractor shall submit, to the Project Manager for its approval any additional MSIPs as are necessary to manage the ES risks and impacts of ongoing Works. These MSIPs collectively comprise the Contractor's Environmental and Social Management Plan (C-ESMP). The Contractor shall review the C-ESMP, periodically (but not less than every six (6) months), and update it as required to ensure that it contains measures appropriate to the Works. The updated C-ESMP shall be submitted to the Project Manager for its approval.

- 17. Approval by the Project Manager**
- 17.1 The Contractor shall submit Specification and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.
- 17.2 The Contractor shall be responsible for design of Temporary Works.
- 17.3 The Project Manager’s approval shall not alter the Contractor’s responsibility for design of the Temporary Works.
- 17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.
- 17.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.
- 18. Health, Safety and Protection of the Environment**
- 18.1 The Contractor shall be responsible for the safety of all activities on the Site.
- 18.2 The Contractor shall:
- (a) comply with all applicable health and safety regulations and Laws;
 - (b) comply with all applicable health and safety obligations specified in the Contract;
 - (c) take care for the health and safety of all persons entitled to be on the Site and other places, if any, where the Works are being executed;
 - (d) keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons;
 - (e) provide fencing, lighting, safe access, guarding and watching of:
 - (i) the Works until the Works are taken over by the Employer; and
 - (ii) any part of the Works where the Contractor is executing outstanding works or remedying any defects during the Defects Liability Period; and
 - (f) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.
- 18.3 Protection of the environment
- The Contractor shall take all necessary measures to:
- (a) protect the environment (both on and off the Site); and

- (b) limit damage and nuisance to people and property resulting from pollution, noise and other results of the Contractor's operations and/ or activities.

The Contractor shall ensure that emissions, surface discharges, effluent and any other pollutants from the Contractor's activities shall exceed neither the values indicated in the Specification, nor those prescribed by applicable laws.

In the event of damage to the environment, property and/or nuisance to people, on or off Site as a result of the Contractor's operations, the Contractor shall agree with the Project Manager the appropriate actions and time scale to remedy, as practicable, the damaged environment to its former condition. The Contractor shall implement such remedies at its cost to the satisfaction of the Project Manager

19. Archaeological and Geological Findings

19.1 All fossils, coins, articles of value or antiquity, structures, groups of structures, and other remains or items of geological, archaeological, paleontological, historical, architectural or religious interest found on the Site shall be placed under the care and custody of the Employer. The Contractor shall:

- (a) take all reasonable precautions, including fencing-off the area or site of the finding, to avoid further disturbance and prevent Contractor's Personnel or other persons from removing or damaging any of these findings;
- (b) train relevant Contractor's Personnel on appropriate actions to be taken in the event of such findings; and
- (c) implement any other action consistent with the requirements of the Specification and relevant laws.

The Contractor shall, as soon as practicable after discovery of any such finding, notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them..

20. Possession of the Site

20.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date **stated in the PCC**, the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.

21. Access to the Site

21.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

22. Instructions, Inspections and Audits

22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.

22.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub consultants to keep, accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs.

22.3 Inspections & Audit by the Bank

Pursuant to paragraph 2.2 e. of Appendix A to the GCC- Fraud and Corruption, the Contractor shall permit and shall cause its agents (where declared or not), subcontractors, sub consultants, service providers, suppliers, and personnel, to permit, the Bank and/or persons appointed by the Bank to inspect the site and/or the accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have such accounts, records and other documents audited by auditors appointed by the Bank. The Contractor's and its Subcontractors' and sub consultants' attention is drawn to GCC Sub-Clause 25.1 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).

23. Appointment of the Adjudicator

23.1 The Adjudicator shall be appointed jointly by the Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority **designated in the PCC**, to appoint the Adjudicator within 14 days of receipt of such request.

23.2 Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority **designated in the PCC** at the request of either party, within 14 days of receipt of such request.

- 24. Procedure for Disputes**
- 24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager’s decision.
- 24.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.
- 24.3 The Adjudicator shall be paid by the hour at the **rate specified in the PCC**, together with reimbursable expenses of the types **specified in the PCC**, and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator’s written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator’s decision shall be final and binding.
- 24.4 The arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and in the place **specified in the PCC**.
- 25. Fraud and Corruption**
- 25.1 The Bank requires compliance with the Bank’s Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG’s Sanctions Framework, as set forth in Appendix A to the GCC.
- 25.2 The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.
- 26. Code of Conduct**
- 26.1 The Contractor shall have a Code of Conduct for the Contractor’s Personnel.
- The Contractor shall take all necessary measures to ensure that each Contractor’s Personnel is made aware of the Code of Conduct including specific behaviors that are prohibited, and understands the consequences of engaging in such prohibited behaviors.
- These measures include providing instructions and documentation that can be understood by the Contractor’s Personnel and seeking to obtain that person’s signature

acknowledging receipt of such instructions and/or documentation, as appropriate.

The Contractor shall also ensure that the Code of Conduct is visibly displayed in multiple locations on the Site and any other place where the Works will be carried out, as well as in areas outside the Site accessible to the local community and project affected people. The posted Code of Conduct shall be provided in languages comprehensible to Contractor's Personnel, Employer's Personnel and the local community.

The Contractor's Management Strategy and Implementation Plans shall include appropriate processes for the Contractor to verify compliance with these obligations.

27. Security of the Site

27.1 The Contractor shall be responsible for the security of the Site, and:

- (a) for keeping unauthorized persons off the Site;
- (b) authorized persons shall be limited to the Contractor's Personnel, the Employer's personnel, and to any other personnel identified as authorized personnel (including the Employer's other contractors on the Site), by a notice from the Employer or the Project Manager to the Contractor.

The Contractor shall (i) conduct appropriate background checks on any personnel retained to provide security; (ii) train the security personnel adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct towards Contractor's Personnel, Employer's Personnel and affected communities; and (iii) require the security personnel to act within the applicable Laws and any requirements set out in the Specification.

The Contractor shall not permit any use of force by security personnel in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.

In making security arrangements, the Contractor shall also comply with any additional requirements stated in the Specification.

B. Time Control

28. Program

28.1 Within the time **stated in the PCC**, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump-sum contract, the activities in the

Program shall be consistent with those in the Activity Schedule. The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.

- 28.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.
- 28.3 The Contractor shall monitor progress of the Works and submit to the Project manager progress report and any updated Program showing the actual progress achieved and the effect of the progress achieved on the timing of the remaining Works, including any changes to the sequence of the activities, at intervals no longer than the period **stated in the PCC**. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount **stated in the PCC** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of lump-sum Contract, the Contractor shall provide an updated Activity Schedule within 14 days of being instructed to by the Project Manager.
- 28.4 Unless otherwise stated in the Specification, each progress report shall include the Environmental and Social (ES) metrics set out in Appendix B
- 28.5 In addition to the progress report, the Contractor shall inform the Project Manager immediately of any allegation, incident or accident in the Site, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer's Personnel, or Contractor's Personnel. This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; or any allegation of SEA and/or SH. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information.

The Contractor, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Project Manager of any such incident or accident on the Subcontractors' or suppliers' premises relating to the Works which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer's Personnel, or Contractor's,

its Subcontractors' and suppliers' personnel. The notification shall provide sufficient detail regarding such incidents or accidents. The Contractor shall provide full details of such incidents or accidents to the Project Manager within the timeframe agreed with the Project Manager.

The Contractor shall require its Subcontractors and suppliers (other than Subcontractors) to immediately notify the Contractor of any incidents or accidents referred to in this Subclause.

29. Extension of the Intended Completion Date

29.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.

29.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

30. Acceleration

30.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor.

30.2 If the Contractor's priced proposals for an acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.

31. Delays Ordered by the Project Manager

31.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.

32. Management Meetings

32.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

32.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

33. Early Warning 33.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.

33.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager.

C. Quality Control

34. Identifying Defects 34.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.

35. Tests 35.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.

36. Correction of Defects 36.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is **defined in the PCC**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

36.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.

- 37. Uncorrected Defects** 37.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager’s notice, the Project Manager shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.

D. Cost Control

- 38. Contract Price²** 38.1 The Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item.

- 39. Changes in the Contract Price³** 39.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.

- 39.2 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.

- 40. Variations** 40.1 All Variations shall be included in updated Programs⁴ produced by the Contractor.

- 40.2 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Contractor shall also provide information of any ES risks and impacts of the Variation. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.

² In lump-sum contracts, replace GCC Sub-Clauses 38.1 as follows:

38.1 The Contractor shall provide updated Activity Schedules within 14 days of being instructed to by the Project Manager. The Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid. If payment for materials on site shall be made separately, the Contractor shall show delivery of Materials to the Site separately on the Activity Schedule.

³ In lump-sum contracts, replace entire GCC Clause 39 with new GCC Sub-Clause 39.1, as follows:

39.1 The Activity Schedule shall be amended by the Contractor to accommodate changes of Program or method of working made at the Contractor’s own discretion. Prices in the Activity Schedule shall not be altered when the Contractor makes such changes to the Activity Schedule.

⁴ In lump-sum contracts, add “and Activity Schedules” after “Programs.”

- 40.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.
- 40.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.
- 40.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.
- 40.6 If the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in GCC Sub-Clause 39.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.⁵
- 40.7 Value Engineering: The Contractor may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following;
- (a) the proposed change(s), and a description of the difference to the existing contract requirements;
 - (b) a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle cost) the Employer may incur in implementing the value engineering proposal;
 - (c) a description of any effect(s) of the change on performance/functionality; and
 - (d) a description of the proposed work to be performed, a program for its execution and sufficient ES information to enable an evaluation of ES risks and impacts.

The Employer may accept the value engineering proposal if the proposal demonstrates benefits that:

- (a) accelerates the contract completion period; or

⁵ In lump-sum contracts, delete this paragraph.

- (b) reduces the Contract Price or the life cycle costs to the Employer; or
 - (c) improves the quality, efficiency, safety or sustainability of the Facilities; or
 - (d) yields any other benefits to the Employer,
- without compromising the functionality of the Works.

If the value engineering proposal is approved by the Employer and results in:

- (a) a reduction of the Contract Price; the amount to be paid to the Contractor shall be the **percentage specified in the PCC** of the reduction in the Contract Price; or
- (b) an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above, the amount to be paid to the Contractor shall be the full increase in the Contract Price.

41. Cash Flow Forecasts

41.1 When the Program,⁶ is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.

42. Payment Certificates

42.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.

42.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.

42.3 The value of work executed shall be determined by the Project Manager.

42.4 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed.⁷

42.5 The value of work executed shall include the valuation of Variations and Compensation Events.

42.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

⁶ In lump-sum contracts, add "or Activity Schedule" after "Program."

⁷ In lump-sum contracts, replace this paragraph with the following: "The value of work executed shall comprise the value of completed activities in the Activity Schedule."

42.7 If the Contractor was, or is, failing to perform any ES obligations or work under the Contract, the value of this work or obligation, as determined by the Project Manager, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Project Manager, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following:

- (a) failure to comply with any ES obligations or work described in the Works' Requirements which may include: working outside site boundaries, excessive dust, failure to keep public roads in a safe usable condition, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion;
- (b) failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ES issues, or anticipated risks or impacts;
- (c) failure to implement the C-ESMP e.g. failure to provide required training or sensitization;
- (d) failing to have appropriate consents/permits prior to undertaking Works or related activities;
- (e) failure to submit ES report/s (as described in Appendix B), or failure to submit such reports in a timely manner;

failure to implement remediation as instructed by the Project Manager within the specified timeframe (e.g. remediation addressing non-compliance/s).

43. Payments

43.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 28 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.

43.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon

which the increased amount would have been certified in the absence of dispute.

43.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.

43.4 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

44. Compensation Events

44.1 The following shall be Compensation Events:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC Sub-Clause 20.1.
- (b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.
- (c) The Project Manager orders a delay or does not issue Drawings, Specification, or instructions required for execution of the Works on time.
- (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.
- (e) The Project Manager unreasonably does not approve a subcontract to be let.
- (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.
- (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.
- (h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (i) The advance payment is delayed.
- (j) The effects on the Contractor of any of the Employer's Risks.
- (k) The Project Manager unreasonably delays issuing a Certificate of Completion.

- 44.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.
- 44.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager shall assume that the Contractor shall react competently and promptly to the event.
- 44.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.

45. Tax

- 45.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 28 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC Clause 47.

46. Currencies

- 46.1 Where payments are made in currencies other than the currency of the Employer's country **specified in the PCC**, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Bid.

47. Price Adjustment

- 47.1 Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the PCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies to each Contract currency:

$$P_c = A_c + B_c \text{ Imc/Ioc}$$

where:

P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency “c.”

A_c and B_c are coefficients⁸ **specified in the PCC**, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific currency “c;” and

I_{mc} is the index prevailing at the end of the month being invoiced and I_{oc} is the index prevailing 28 days before Bid opening for inputs payable; both in the specific currency “c.”

47.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.

48. Retention

48.1 The Employer shall retain from each payment due to the Contractor the proportion **stated in the PCC** until Completion of the whole of the Works.

48.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC Sub-Clause 55.1, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected. The Contractor may substitute retention money with an “on demand” Bank guarantee.

49. Liquidated Damages

49.1 The Contractor shall pay liquidated damages to the Employer at the rate per day **stated in the PCC** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount **defined in the PCC**. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor’s liabilities.

49.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of

⁸ The sum of the two coefficients A_c and B_c should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A_c , for the nonadjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.

payment to the date of repayment, at the rates specified in GCC Sub-Clause 43.1.

50. Bonus

50.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day **stated in the PCC** for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.

51. Advance Payment

51.1 The Employer shall make advance payment to the Contractor of the amounts **stated in the PCC** by the date **stated in the PCC**, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest shall not be charged on the advance payment.

51.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.

51.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.

52. Securities

52.1 The Performance Security, and if so **specified in the PCC** an environmental and social (ES) performance security, shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount **specified in the PCC**, by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee, and until one year from the date of issue of the Certificate of Completion in the case of a Performance Bond.

- 53. Dayworks**
- 53.1 If applicable, the Dayworks rates in the Contractor’s Bid shall be used only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
- 53.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.
- 53.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.
- 54. Cost of Repairs**
- 54.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor’s cost if the loss or damage arises from the Contractor’s acts or omissions.

E. Finishing the Contract

- 55. Completion**
- 55.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the whole of the Works is completed.
- 56. Taking Over**
- 56.1 The Employer shall take over the Site and the Works within seven days of the Project Manager’s issuing a certificate of Completion.
- 57. Final Account**
- 57.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor’s account if it is correct and complete. If it is not, the Project Manager shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.
- 58. Operating and Maintenance Manuals**
- 58.1 If “as built” Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates **stated in the PCC**.

58.2 If the Contractor does not supply the Drawings and/or manuals by the dates **stated in the PCC** pursuant to GCC Sub-Clause 60.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount **stated in the PCC** from payments due to the Contractor.

59. Termination

59.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

59.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- (a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;
- (b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;
- (c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 84 days of the date of the Project Manager's certificate;
- (e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
- (f) the Contractor does not maintain a Security, which is required;
- (g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as **defined in the PCC**; or
- (h) if the Contractor, in the judgment of the Employer has engaged in Fraud and Corruption, as defined in paragraph 2.2 a of the Appendix A to the GCC, in competing for or in executing the Contract, then the Employer may, after giving fourteen (14) days written notice to the Contractor, terminate the Contract and expel him from the Site.

59.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.

59.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

59.5 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC Sub-Clause 59.2 above, the Project Manager shall decide whether the breach is fundamental or not.

60. Payment upon Termination

60.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as **specified in the PCC**. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

60.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

61. Property

61.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.

62. Release from Performance

62.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

**63. Suspension of
Bank Loan or
Credit**

63.1 In the event that the Bank suspends the Loan or Credit to the Employer, from which part of the payments to the Contractor are being made:

- (a) The Employer is obligated to notify the Contractor of such suspension within 7 days of having received the Bank's suspension notice.
- (b) If the Contractor has not received sums due to it within the 28 days for payment provided for in GCC Sub-Clause 43.1, the Contractor may immediately issue a 14-day termination notice.

APPENDIX A TO GENERAL CONDITIONS

Fraud and Corruption *(Text in this Appendix shall not be modified)*

1. Purpose

1.1 The Bank's Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

2. Requirements

2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

2.2 To this end, the Bank:

a. Defines, for the purposes of this provision, 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:
 - (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation 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

- (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 2.2 e. below.
- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, 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;
- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti- Corruption Guidelines and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;¹ (ii) to be a nominated² sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders(applicants/proposers), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents personnel, permit the Bank to inspect³ 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 Bank.

¹ For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, 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 A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

³ Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank 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 B

Environmental and Social (ES) Metrics for Progress Reports

[Note to Employer: the following metrics may be amended to reflect the specifics of the Contract. The Employer shall ensure that the metrics provided are appropriate for the Works and impacts/key issues identified in the environmental and social assessment.]

Metrics for regular reporting:

- a. *environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;*
- b. *health and safety incidents, accidents, injuries that require treatment and all fatalities;*
- c. *interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);*
- d. *status of all permits and agreements:*
 - i. *work permits: number required, number received, actions taken for those not received;*
 - ii. *status of permits and consents:*
 - *list areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
 - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
 - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*
 - *for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).*

- e. *health and safety supervision:*
 - i. safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;
 - ii. number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);
- f. *worker accommodations:*
 - i. number of expats housed in accommodations, number of locals;
 - ii. date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;
 - iii. actions taken to recommend/require improved conditions, or to improve conditions.
- g. *Health services: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);*
- h. *gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);*
- i. *training:*
 - i. number of new workers, number receiving induction training, dates of induction training;
 - ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;
 - iii. number and dates of communicable diseases (including STDs) sensitization and/or training, no. workers receiving training (in the reporting period and in the past); same questions for gender sensitization, flag person training.
 - iv. number and date of SEA and SH prevention sensitization and/or training events, including number of workers receiving training on Code of Conduct for Contractor's Personnel (in the reporting period and in the past), etc.
- j. *environmental and social supervision:*

- i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;
 - ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and
 - iii. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.
- k. *Grievances*: list new grievances (e.g. number of allegations of SEA and SH) received in the reporting period and number of unresolved past grievances by date received, complainant's age and sex, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed):
- i. Worker grievances;
 - ii. Community grievances
- l. *Traffic, road safety and vehicles/equipment*:
- i. traffic and road safety incidents and accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;
 - ii. traffic and road safety incidents and accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;
 - iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).
- m. *Environmental mitigations and issues (what has been done)*:
- i. dust: number of working bowsers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve;

- highlights of quarry dust control (covers, sprays, operational status); % of rock/ spoil lorries with covers, actions taken for uncovered vehicles;
 - ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
 - iii. quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
 - iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);
 - v. spill clean-ups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);
 - vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
 - vii. details of tree plantings and other mitigations required undertaken in the reporting period;
 - viii. details of water and swamp protection mitigations required undertaken in the reporting period.
- n. compliance:*
- i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
 - ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
 - iii. compliance status of SEA and SH prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

- iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
- v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

APPENDIX C

Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration for Subcontractors

[The following table shall be filled in by each subcontractor proposed by the Contractor, that was not named in the Contract]

Subcontractor’s Name: *[insert full name]*

Date: *[insert day, month, year]*

Contract reference *[insert contract reference]*

Page *[insert page number]* of *[insert total number]* pages

SEA and/or SH Declaration
<p>We:</p> <p><input type="checkbox"/> (a) have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.</p> <p><input type="checkbox"/> (b) are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.</p> <p><input type="checkbox"/> (c) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations. An arbitral award on the disqualification case has been made in our favor.</p> <p><input type="checkbox"/> (d) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations for a period of two years. We have subsequently demonstrated that we have adequate capacity and commitment to comply with SEA /SH obligations.</p> <p><input type="checkbox"/> (e) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations for a period of two years. We have attached specific evidence demonstrating that we have adequate capacity and commitment to comply with SEA and SH obligations.</p>
<p><i>[If (c) above is applicable, attach evidence of an arbitral award reversing the findings on the issues underlying the disqualification.]</i></p>
<p><i>[If (d) or (e) above are applicable, provide the following information:]</i></p>
<p>Period of disqualification: From: _____ To: _____</p>
<p>If previously provided on another Bank financed works contract, details of evidence that demonstrated adequate capacity and commitment to comply with SEA/SH obligations (as per (d) above)</p> <p>Name of Employer: _____</p> <p>Name of Project: _____</p> <p>Contract description: _____</p> <p>Brief summary of evidence provided: _____</p>

<p>_____</p> <p>Contact Information: (Tel, email, name of contact person): _____</p> <p>_____</p>
<p>As an alternative to the evidence under (d), other evidence demonstrating adequate capacity and commitment to comply with SEA/SH obligations (as per (e) above) [<i>attach details as appropriate</i>].</p> <p>_____</p> <p>_____</p>

Name of the Subcontractor _____

Name of the person duly authorized to sign on behalf of the Subcontractor _____

Title of the person signing on behalf of the Subcontractor _____

Signature of the person named above _____

Date signed _____ day of _____, _____

Countersignature of authorized representative of the Contractor:

Signature: _____

Date signed _____ day of _____, _____

Section IX - Particular Conditions of Contract

Except where otherwise specified, all Particular Conditions of Contract should be filled in by the Employer prior to issuance of the bidding document. Schedules and reports to be provided by the Employer should be annexed.

A. General	
GCC 1.1 (d)	The financing institution is: The World Bank and Agence Française de Développement
GCC 1.1 (r)	The Employer is; The County Government of Elgeyo Marakwet – Lands, Physical Planning, Housing and Urban Development (LPPH&UD) P.O. Box 220-30700, Iten, Kenya
GCC 1.1 (v)	The Intended Completion Date for the whole of the Works shall be 2nd April 2025
GCC 1.1 (y)	The Project Manager is; Eng. xxxxxxxxxxxxxxxxxxxx County Government of Elgeyo Marakwet P.O. Box 220-30700, Iten, Kenya
GCC 1.1 (aa)	The Site is located at Chebiemit & Cheptongei Settlements, Elgeyo Marakwet and is defined in drawings No. KISIP-SAL/EMCMY/StD/01
GCC 1.1 (dd)	The Start Date shall be 2nd April 2024
GCC 1.1 (hh)	The Works consist of Construction of roads/footpaths & drainage system, water supply & sanitation system and public lighting infrastructure works in selected informal settlements of Chebiemit & Cheptongei; both within Elgeyo Marakwet county
GCC 2.2	Sectional Completions are: Not Applicable
GCC 2.3(i)	The following documents also form part of the Contract: C-ESMP
GCC 3.1	The language of the contract is English . The law that applies to the Contract is the law of Kenya
GCC 5.1	The Project manager may delegate any of his duties and responsibilities.
GCC 8.1	Schedule of other contractors: Not Applicable

GCC 13.1	<p>The minimum insurance amounts and deductibles shall be:</p> <p>(a) and (b) for loss or damage to the Works, Plant, Materials and Equipment (Contractors All Risk Insurance):</p> <p>Minimum Amount: Contract Amount</p> <p>Deductibles: 10% of Claimed Amount</p> <p>(c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract and personal Injury or death of other people (Employers Liability (Common Law) Insurance):</p> <p>Minimum Amount: As per the Laws of Kenya</p> <p>Deductibles: 10% of Claimed Amount</p> <p>(d) for personal injury or death of the Contractor’s employees (Work Injury Benefit Act (WIBA) Insurance.</p> <p>Minimum Amount: As per the Laws of Kenya</p> <p>Deductibles: 10% of Claimed Amount</p> <p>Contractor to bear the responsibility of the payments of deductibles.</p>
GCC 14.1	Site Data are: Not Applicable
GCC 20.1	The Site Possession Date(s) shall be: 2nd April 2024
GCC 23.1 & GCC 23.2	Appointing Authority for the Adjudicator: The Institution of Engineers of Kenya
GCC 24.3	Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: [insert hourly fees and reimbursable expenses].
GCC 24.4	<p>Institution whose arbitration procedures shall be used: Chartered Institute of Arbitrators - Kenya</p> <p><i>“United Nations Commission on International Trade Law (UNCITRAL) Arbitration Rules:</i></p> <p>Any dispute, controversy, or claim arising out of or relating to this Contract, or breach, termination, or invalidity thereof, shall be settled by</p>

	<p>arbitration in accordance with the UNCITRAL Arbitration Rules as at present in force.”</p> <p>The place of arbitration shall be: Nairobi, Kenya</p>
B. Time Control	
GCC 28.1	The Contractor shall submit for approval a Program for the Works within 28 days from the date of the Letter of Acceptance.
GCC 28.3	<p>The period between Program updates is 56 days.</p> <p>The amount to be withheld for late submission of an updated Program is Ksh. 500,000</p> <p>The period for submission of progress reports is 28 days.</p>
C. Quality Control	
GCC 36.1	The Defects Liability Period is: 365 days.
D. Cost Control	
GCC 40.7	<p>If the value engineering proposal is approved by the Employer the amount to be paid to the Contractor shall be ___% (<i>insert appropriate percentage. The percentage is normally up to 50%</i>) of the reduction in the Contract Price.</p> <p>Not Applicable</p>
GCC 46.1	The currency of the Employer’s Country is: Kenya Shillings.
GCC 47.1	<p>The Contract is not subject to price adjustment in accordance with GCC Clause 45, and the following information regarding coefficients does not apply.</p> <p><i>[Price adjustment is mandatory for contracts which provide for time of completion exceeding 18 months]</i></p> <p>The coefficients for adjustment of prices are:</p> <p>(a) For currency <i>[insert name of currency]</i>:</p> <p style="padding-left: 40px;">(i) <i>[insert percentage]</i> percent non adjustable element (coefficient A).</p> <p style="padding-left: 40px;">(ii) <i>[insert percentage]</i> percent adjustable element (coefficient B).</p> <p>(b) For currency <i>[insert name of currency]</i>:</p>

	<p>(i) <i>[insert percentage]</i> percent nonadjustable element (coefficient A).</p> <p>(ii) <i>[insert percentage]</i> percent adjustable element (coefficient B).</p> <p>The Index I for local currency shall be <i>[insert index]</i>.</p> <p>The Index I for the specified international currency shall be <i>[insert index]</i>.</p> <p><i>[These proxy indices shall be proposed by the Contractor, subject to acceptance by the Employer]</i></p> <p>The Index I for currencies other than the local currency and the specified international currency shall be <i>[insert index]</i>.</p> <p><i>[These proxy indices shall be proposed by the Contractor, subject to acceptance by the Employer.]</i></p>
GCC 48.1	The proportion of payments retained is 10%
GCC 49.1	The liquidated damages for the whole of the Works are 0.05% per day. The maximum amount of liquidated damages for the whole of the Works is 10% of the final Contract Price.
GCC 50.1	<p>The Bonus for the whole of the Works is <i>[insert percentage of final Contract Price]</i> per day. The maximum amount of Bonus for the whole of the Works is <i>[insert percentage]</i> of the final Contract Price.</p> <p>Not Applicable</p>
GCC 51.1	The Advance Payments shall be: <i>[insert amount(s)]</i> and shall be paid to the Contractor no later than <i>[insert date(s)]</i> . Not Applicable
GCC 52.1	The Performance Security will be in the form of a demand guarantee in the amount(s) of 10 percent of the Accepted Contract Amount and in the same currency (ies) of the Accepted Contract Amount.
E. Finishing the Contract	
GCC 58.1	<p>The date by which operating and maintenance manuals are required is within 3 months of Taking Over</p> <p>The date by which “as built” drawings are required is <i>within 3 months of Taking Over</i></p>
GCC 58.2	The amount to be withheld for failing to produce “as built” drawings and/or operating and maintenance manuals by the date required in GCC Sub-Clause 58.1 is KES. 1,000,000
GCC 59.2 (g)	The maximum number of days is: 100 days

GCC 60.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is 30% .
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Section X - Contract Forms

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Notification of Intention to Award

[This Notification of Intention to Award shall be sent to each Bidder that submitted a Bid.]

[Send this Notification to the Bidder's Authorized Representative named in the Bidder Information Form]

For the attention of Bidder's Authorized Representative

Name: *[insert Authorized Representative's name]*

Address: *[insert Authorized Representative's Address]*

Telephone/Fax numbers: *[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 Bidders. The Notification must be sent to all Bidders 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/fax]* on *[date]* (local time)

Notification of Intention to Award

Employer: *[insert the name of the Employer]*

Project: *[insert name of project]*

Contract title: *[insert the name of the contract]*

Country: *[insert country where RFB is issued]*

Loan No. /Credit No. / Grant No.: *[insert reference number for loan/credit/grant]*

RFB No: *[insert RFB reference number from Procurement Plan]*

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 to the evaluation of your Bid, and/or
- b) submit a Procurement-related Complaint in relation to the decision to award the contract.

1. The successful Bidder

Name:	<i>[insert name of successful Bidder]</i>
Address:	<i>[insert address of the successful Bidder]</i>
Contract price:	<i>[insert contract price of the successful Bid]</i>

2. Other Bidders *[INSTRUCTIONS: insert names of all Bidders that submitted a Bid. If the Bid's price was evaluated include the evaluated price as well as the Bid price as read out.]*

Name of Bidder	Bid price	Evaluated Bid price (if applicable)
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]
[insert name]	[insert Bid price]	[insert evaluated price]

3. Reason/s why your Bid was unsuccessful

[INSTRUCTIONS: State the reason/s why this Bidder's Bid was unsuccessful. Do NOT include: (a) a point by point comparison with another Bidder's Bid or (b) information that is marked confidential by the Bidder in its Bid.]

4. 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 Bid. 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 Bidder, contact details; and address the request for debriefing as follows:

Attention: [insert full name of person, if applicable]

Title/position: [insert title/position]

Agency: [insert name of Employer]

Email address: [insert email address]

Fax number: [insert fax number] *delete if not used*

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.

5. 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 Bidder, contact details; and address the Procurement-related Complaint as follows:

Attention: [insert full name of person, if applicable]

Title/position: [insert title/position]

Agency: [insert name of Employer]

Email address: [insert email address]

Fax number: [insert fax number] *delete if not used*

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.

Further information:

For more information see the [Procurement Regulations for IPF Borrowers \(Procurement Regulations\)\[https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=4005\]](https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=4005) (Annex III). You should read these provisions before preparing and submitting your complaint. In addition, the World Bank's Guidance "[How to make a Procurement-related Complaint](http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework#framework)" [<http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework#framework>] provides a useful explanation of the process, as well as a sample letter of complaint.

In summary, there are four essential requirements:

1. You must be an 'interested party'. In this case, that means a Bidder who submitted a Bid in this bidding process, and is the recipient of a Notification of Intention to Award.
2. The complaint can only challenge the decision to award the contract.
3. You must submit the complaint within the period stated above.

4. You must include, in your complaint, all of the information required by the Procurement Regulations (as described in Annex III).

6. Standstill Period

DEADLINE: The Standstill Period is due to end at midnight on [insert date] (local time).

The Standstill Period lasts ten (10) Business Days after the date of transmission of this Notification of Intention to Award.

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 Employer:

Signature: _____

Name: _____

Title/position: _____

Telephone: _____

Email: _____

Beneficial Ownership Disclosure Form

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form (“Form”) is to be completed by the successful Bidder¹. In case of joint venture, the Bidder 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 Bidder is any natural person who ultimately owns or controls the Bidder by 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 Bidder*

RFB No.: *[insert number of RFB process]*

Request for Bid No.: *[insert identification]*

To: *[insert complete name of Employer]*

In response to your request in the Letter of Acceptance dated *[insert date of letter of Acceptance]* to furnish additional information on beneficial ownership: *[select one option as applicable and delete the options that are not applicable]*

(i) we hereby provide the following beneficial ownership information.

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 Bidder (Yes / No)
<i>[include full name (last, middle, first), nationality, country of residence]</i>			

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 Bidder

OR

(iii) *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 Bidder 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 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 Bidder”

Name of the Bidder: **[insert complete name of the Bidder]*_____

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ***[insert complete name of person duly authorized to sign the Bid]*_____

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

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]*_____

* In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder. In the event that the Bidder is a joint venture, each reference to “Bidder” in the Beneficial Ownership Disclosure Form (including this Introduction thereto) shall be read to refer to the joint venture member.

** Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

Letter of Acceptance

[on letterhead paper of the Employer]

..... *[date]*

To: *[name and address of the Contractor]*

Subject: *[Notification of Award Contract No.]*

This is to notify you that your Bid dated *[insert date]* for execution of the
. . . . *[insert name of the contract and identification number, as given in the PCC]* for the
Accepted Contract Amount of *[insert amount in numbers and words and name of
currency]*, as corrected and modified in accordance with the Instructions to Bidders is
hereby accepted by our Agency.

You are requested to furnish (i) the Performance Security and an Environmental and
Social (ES) Performance Security ***[Delete ES Performance Security if it is not required
under the contract]*** within 28 days in accordance with the Conditions of Contract, using
for that purpose the of the Performance Security Form and the ES Performance Security
Form, ***[Delete reference to the ES Performance Security Form if it is not required under
the contract]*** and (ii) the additional information on beneficial ownership in accordance
with BDS ITB 47.1, within eight (8) Business days using the Beneficial Ownership
Disclosure Form, included in Section X - Contract Forms, of the bidding document.
[Choose one of the following statements:]

We accept that _____ *[insert the name of Adjudicator proposed by the
Bidder]* be appointed as the Adjudicator.

[or]

We do not accept that _____ *[insert the name of the Adjudicator proposed
by the Bidder]* be appointed as the Adjudicator, and by sending a copy of this Letter of
Acceptance to _____ *[insert name of the
Appointing Authority]*, the Appointing Authority, we are hereby requesting such Authority
to appoint the Adjudicator in accordance with ITB 48.1 and GCC Sub-Clause 23.1.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

Contract Agreement

THIS AGREEMENT made theday of,, between
 . [name of the Employer]. (hereinafter “the Employer”), of the one part, and
 [name of the Contractor].(hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as [name of the Contract]. . . .
 .should be executed by the Contractor, and has accepted a Bid by the Contractor for the
 execution and completion of these Works and the remedying of any defects therein,

The Employer 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 Bid
 - (c) the addenda Nos _____(if any)
 - (d) the Particular Conditions
 - (e) the General Conditions of Contract, including appendix;
 - (f) the Specification
 - (g) the Drawings
 - (h) Bill of Quantities;¹ and
 - (i) any other document listed in the PCC as forming part of the Contract, but not limited to;
 - i. the ES Management Strategies and Implementation Plans; and
 - ii. Code of Conduct for Contractor’s Personnel (ES).

3. In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

¹ In lump sum contracts, delete “Bill of Quantities” and replace with “Activity Schedule.”

4. The Employer 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 *[name of the borrowing country]*. on the day, month and year specified above.

Signed by: _____
for and on behalf of the Employer

Signed by: _____
for and on behalf the Contractor

in the
presence of: _____
Witness, Name, Signature, Address, Date

in the
presence of: _____
Witness, Name, Signature, Address, Date

Performance Security – Option 1: Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of Employer]*

Date: *_ [Insert date of issue]*

PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

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]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *_ [insert name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

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 *[insert amount in figures]* (_____) *[insert amount in words]*,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.

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.

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(ies) 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 GCC Sub-Clause 55.1. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer 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*

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

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guarantee, the Employer 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.”

Performance Security

Option 2: Performance Bond

By this Bond *[insert name of Principal]* as Principal (hereinafter called “the Contractor”) and *[insert name of Surety]* as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[insert name of Employer]* as Obligee (hereinafter called “the Employer”) in the amount of *[insert amount in words and figures]*, for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Contractor has entered into a written Agreement with the Employer dated the _____ day of _____, 20 ____, for *[name of contract and brief description of Works]* in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Employer to be, in default under the Contract, the Employer having performed the Employer’s obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) complete the Contract in accordance with its terms and conditions; or
- (2) obtain a Bid or Bids from qualified Bidders for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by the Employer and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or
- (3) pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of one year from the date of issue of the Certificate of Completion.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators, successors, and assigns of the Employer.

In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this _____ day of _____ 20_____
_____.

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____

Environmental and Social (ES) Performance Security

ES Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of Employer]*

Date: *[Insert date of issue]*

ES PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ (hereinafter called "the Applicant") has entered into Contract No. _____ dated _____ with the Beneficiary, for the execution of _____ (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

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 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 Environmental and/or Social (ES) obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

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.

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 55.1. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer 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 Employer 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."

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

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Advance Payment Security

Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Insert name and Address of Employer]*

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]*

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]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum *[insert amount in figures]* () *[insert amount in words]* is to be made against an advance payment 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 *[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 either that the Applicant:

- (a) has used the advance payment for purposes other than the costs of mobilization in respect of the 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.

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

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 Employer.*

has been credited to the Applicant on its account number *[insert number]* at *[insert name and address of Applicant's bank]*..

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 *[insert day]* day of *[insert month]*, 2 *[insert year]*,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.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

² *Insert the expected completion date as described in GC Clause 55.1. The Employer should note that in the event of an extension of the expected completion date, the Employer 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 Employer 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."*