REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE,LIVESTOCK,FISHERIES AND COOPERATIVES

CONSTRUCTION OF LEATHER INDUSTRIAL SHEDS FOR LEATHER GOODS MANUFACTURE AND ASSOCIATED INFRASTRUCTURE AT KENANIE LEATHER INDUSTRIAL PARK, KENANIE EPZ SITE, MACHAKOS COUNTY CIVIL WORKS

W.P ITEM NO. D117/EN/MKS/1902 JOB NO 10753A

TENDER DOCUMENT FOR: CIVIL ENGINEERING CONTRACT WORKS

INSTRUCTIONS TO TENDERERS
CONDITIONS OF CONTRACT
SPECIAL SPECIFICATIONS
BILLS OF QUANTITIES

VOL. 2 OF 6

PROJECT MANAGER:

WORKS SECRETARY-STATE DEPARTMENT OF PUBLIC WORKS
MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT, MoLHUD

STRUCTURAL/ CIVIL ENGINEER
CHIEF ENGINEER (STRUCTURAL)
MoTIH& UD
P.O BOX 30450-00100
NAIROBI

ELECTRICAL AND MECHANICAL ENGINEER
CHIEF ELECTRICAL & CHIEF MECHANICAL ENGINEER (BS)
MoTIH&UD
P.O BOX 30450-00100
NAIROBI

ARCHITECT
CHIEF ARCHITECT
MoTIH& UD
P.O BOX 30450-00100
NAIROBI

QUANTITY SURVEYOR
CHIEF QUANTITY SURVEYOR
MoTIH& UD
P.O BOX 30450-00100
NAIROBI

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REPUBLIC OF KENYA
KENYA LEATHER DEVELOPMENT COUNCIL

CONSTRUCTION OF LEATHER INDUSTRIAL SHEDS FOR LEATHER GOODS MANUFACTURE AND ASSOCIATED INFRASTRUCTURE AT KENANIE LEATHER INDUSTRIAL PARK, KENANIE EPZ SITE, MACHAKOS COUNTY
CIVIL WORKS
W.P ITEM NO. D117/EN/MKS/1902 JOB NO 10753A

INVITATION TO TENDER

The Government of the Republic of Kenya intends to complete Civil Engineering works at the above site. The brief overview of the scope of works is as described here below: -

a) Construction of Access Road and Parking.
b) Construction of Storm Water Drainage system.
c) Construction of Footpaths
d) Construction of Access ramps
e) Construction of Foul Drainage System.
f) Construction of Retaining Wall

Tenders are hereby invited for this project from pre selected contractors who have the necessary experience in Roads and other Civil works and are registered with the National Construction Authority in Category 'Roads, and other Civil Works NCA 3, 4 & 5' who may apply giving the following information :-

- Proof of current registration with the National Construction Authority Category of Roads, NCA 3, 4 & 5.
- Company dossier with proof of incorporation.
- List of similar Civil Works and their value undertaken within the last Three years.
- List of on-going works.
- List of plant and equipment owned by the firm including registration numbers and year of manufacture and their current condition.
- List of Personnel proposed for execution of the works and their detailed qualification and experience (attach copies of CV'S and certified certificates).
- Reports on financial standing of the firm including profit and loss statements, balance sheets and auditor's reports for the last three years.
- Evidence of access to lines of credit and availability of other financial resources.
- Litigation history of the company.
- Power of attorney
- Confidential Business Questionaire.
- Certificate of Tenderer's visit to site.

The Tender documents will be issued at as Per Press Advertisement.

Application in plain sealed envelopes and clearly marked with the name of the project must be sent as indicated on the Press advertisement so as to reach him on or before at noon.

The Bid documents should be accompanied by a Tender Security in form of a bank guarantee of 2.5% of the Tender sum from a reputable bank.

Tender Opening will take place immediately thereafter as per press advertisement..

Tenderers are expected to make their own travel arrangements to and from the site to acquaint themselves with the site.
The government reserves the right to accept or reject any application and is not bound to give any reason for acceptance or rejection thereof.

.....
.....
For: PRINCIPAL SECRETARY

REPUBLIC OF KENYA

CONSTRUCTION OF LEATHER INDUSTRIAL SHEDS FOR LEATHER GOODS MANUFACTURE AND ASSOCIATED INFRASTRUCTURE AT KENANIE LEATHER INDUSTRIAL PARK, KENANIE EPZ SITE, MACHAKOS COUNTY

CIVIL WORKS

Supplied as part of the **Contract No. W.P ITEM NO. D117/EN/MKS/1902 JOB NO 10753A**

for the **CONSTRUCTION OF LEATHER INDUSTRIAL SHEDS FOR LEATHER GOODS MANUFACTURE AND ASSOCIATED INFRASTRUCTURE AT KENANIE LEATHER INDUSTRIAL PARK, KENANIE EPZ SITE, MACHAKOS COUNTY, CIVIL WORKS**

Prepared by: -
Structural Department,
Ministry of Transport, Infrastructure, Public Works, Housing & Urban Development,
State Department of Public Works,
P O Box 30743-00100,
Ngong' Road,
NAIROBI.

Issued by: -
KENYA LEATHER DEVELOPMENT COUNCIL
MINISTRY OF INDUSTRIALIZATION, TRADE AND ENTERPRISE DEVELOPMENT

The contract for the above-mentioned works entered into this ..... day of ..... 20... by the undersigned refers to these Bills of Quantities and the Ministry of Public Works & Housing General Specification dated March, 1976 (together with any amendments issued thereto) shall be read and construed as part of the said contract.

.....
THE C O N T R A C T O R

.....
Chief Executive Officer
Kenya Leather Development Council
Ministry of Industrialisation, Trade and Enterprise Development.

Date: .....

Date: .....

SIGNATURE PAGE

FORM OF AGREEMENT

THIS AGREEMENT, made the _____ day of _____ 20 _____
between_____of
[or whose registered office is situated at]_____
(hereinafter called "the Employer") of the one part AND
_____of
[or whose registered office is situated at]_____
(hereinafter called "the Contractor") of the other part.

WHEREAS THE Employer is desirous that the Contractor executes
_____
(name and identification number of Contract) (hereinafter called "the Works") located at_____*[Place/location of the Works*]and the Employer has accepted the tender submitted by the Contractor for the execution and completion of such Works and the remedying of any defects therein for the Contract Price of Kshs_____[*Amount in figures*],Kenya Shillings_____[*Amount in words].*

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.

   (i) Letter of Acceptance

   (ii) Form of Tender

   (iii) Conditions of Contract Part I

   (iv) Conditions of Contract Part II and Appendix to Conditions of Contract

   (v) Specifications

   (vi) Drawings

   (vii) Priced Bills of Quantities

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.

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 thereto have caused this Agreement to be executed the day and year first before written.

FOR AND ON BEHALF OF THE EMPLOYER

Name: .....

Title: .....

Binding Signature:.....

Date:.....

Witnessed by

Name:.....

Address:.....

Signature:.....

Date:.....

FOR AND ON BEHALF OF THE CONTRACTOR

Name of Contractor:.....

Full name of Contractor's authorized representative:.....

Title:.....

Binding Signature:.....

Date:.....

Witnessed by

Name:.....

Address:.....

Signature:.....

Date:.....

DEFINITIONS

The following terms and expressions used in the Contract document shall have the following meanings:

The Employer	Government of the Republic of Kenya Represented by: **Chief Executive Officer,** **Kenya Leather Development Council** **Ministry of Industrialisation, Trade and Enterprise Development**
Project Manager	This shall mean the Project Manager and shall be WORKS SECRATRY-STATE DEPARTMENT OF PUBLIC WORKS MINISTRY OFTRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT P.O. Box 30743-00100 NAIROBI
Architect	Chief Architect MINISTRY OFTRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT P.O. Box 30743-00100 NAIROBI
Structural & Civil Engineer	Chief Engineer (Structural) MINISTRY OFTRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT P.O. Box 30743-00100 NAIROBI
Electrical Engineer **Mechanical Engineer**	Chief Electrical Engineer (BS) Chief Mechanical Engineer (BS) MINISTRY OFTRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT P.O. Box 30743-00100 NAIROBI
Quantity Surveyor	Chief Quantity Surveyor MINISTRY OFTRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT P.O. Box 30743-00100 NAIROBI
Main contractor	The firm appointed to carry out Civil Engineering Works.

SPECIAL NOTES

1. These notes shall form part of the specifications and conditions.

2. The tenderer is required to check the number of the pages of this specification and should he find any missing, or in duplicate, or indistinct, he should inform, in Writing, the Chief Quantity Surveyor (State Department of Public Works), MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT-STATE DEPARTMENT OF PUBLIC WORKS, P.O. Box 30743-00100, Nairobi.

3. Should the tenderer be in doubt about the precise meaning of any item or figure, for any reason whatsoever he must inform, in writing, the Chief Quantity Surveyor (State Department of Public Works), MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT-STATE DEPARTMENT OF PUBLIC WORKS, P.O. Box 30743-00100, Nairobi.
4. . in order that the correct meaning may be decided before the date of submission of the tender.

5. No liability will be admitted nor claim allowed, in respect of errors in the tender due to mistakes in the specification, which should have been rectified in the manner described above.

6. All tenders must make a declaration that, they have not and will not make any payment to any person which will be perceived as an inducement to enable them win this tender.

7. Heavy rainfall during certain periods of the year and the tenderer shall be deemed to have taken account of this fact both in his pricing and his planning of the execution of the works.

INSTRUCTIONS TO TENDERERS

INSTRUCTIONS TO TENDERERS.

1. 1. General/Eligibility/Qualifications/Joint venture/Cost of tendering

1.1 The Employer as defined in the Appendix to Conditions of Contract, invites tenders for Works Contract as described in the tender documents. The successful tenderer will be expected to complete the Works by the Intended Completion Date specified in the tender documents.

1.2 All tenderers shall provide the Qualification Information, a statement that the tenderer (including all members of a joint venture and subcontractors) is not associated, or has not been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to tender.

1.3 All tenderers shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.

1.4 In the event that pre-qualification of potential tenderers has been undertaken, only tenders from pre-qualified tenderers will be considered for award of Contract. These qualified tenderers should submit with their tenders any information updating their original pre-qualification applications or, alternatively, confirm in their tenders that the originally submitted pre-qualification information remains essentially correct as of the date of tender submission.

1.5 Where no pre-qualification of potential tenderers has been done, all tenderers shall include the following information and documents with their tenders, unless otherwise stated:

(a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the tender to commit the tenderer:

(b) total monetary value of construction work performed for each of the last five years:

(c) experience in works of a similar nature and size for each of the last five years, and details of work under way or contractually committed; and names and addresses of clients who may be contacted for further information on these contracts;

(d) major items of construction equipment proposed to carry out the Contract and an undertaking that they will be available for the Contract.

(e) qualifications and experience of key site management and technical personnel proposed for the Contract and an undertaking that they shall be available for the Contract.

(f) reports on the financial standing of the tenderer, such as profit and loss statements and auditor's reports for the past five years;

(g) evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);

(h) authority to seek references from the tenderer's bankers;

(i) information regarding any litigation, current or during the last five years, in which the tenderer is involved, the parties concerned and disputed amount; and

(j) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.

1.6 Tenders submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated:

(a) the tender shall include all the information listed in clause 1.5 above for each joint venture partner;

(b) the tender shall be signed so as to be legally binding on all partners;

(c) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;

(d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of all partners of the joint venture; and

(e) The execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

1.7 To qualify for award of the Contract, tenderers shall meet the following minimum qualifying criteria;

(a) annual volume of construction work whose value is equal to the estimated annual cash flow for the Contract;

(b) experience as main contractor in the construction of at least one project whose nature and complexity is equivalent to the Works over the last 10 years (to comply with this requirement, works cited should be at least 70 percent complete);

(c) proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment listed as required for the Works;

(d) a Contract manager with at least five years' experience in works of an equivalent nature and volume, including no less than three years as Manager; and

(e) Liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than 4 months of the estimated payment flow under this Contract.

1.8 The figures for each of the partners of a joint venture shall be added together to determine the tenderer's compliance with the minimum qualifying criteria of clause 1.7 (a) and (e); however, for a joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 1.7 (a), (b) and (e) for an individual tenderer, and the partner in charge at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's tender. Subcontractors' experience and resources will not be taken into account in determining the tenderer's compliance with the qualifying criteria, unless otherwise stated.

1.9 Each tenderer shall submit only one tender, either individually or as a partner in a joint venture. A tenderer who submits or participates in more than one tender (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the tenderer's participation to be disqualified.

1.10 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible or liable for those costs.

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

1.12 The procuring entity's employees, committee members, board members and their relative (spouse and children) are not eligible to participate in the tender.

1.13 The price to be charged for the tender document shall not exceed Kshs. 5,000/=

1.14 The procuring entity shall allow the tenderer to review the tender document free of charge before purchase.

2. Tender Documents

2.1 The complete set of tender documents comprises the documents listed below and any addenda issued in accordance with Clause 2.4.

(a) These Instructions to Tenderers
(b) Form of Tender and Qualification Information
(c) Conditions of Contract
(d) Appendix to Conditions of Contract
(e) Specifications
(f) Drawings

(g) Bills of Quantities
(h) Forms of Securities

2.2 The tenderer shall examine all Instructions, Forms to be filled and Specifications in the tender documents. Failure to furnish all information required by the tender documents, or submission of a tender not substantially responsive to the tendering documents in every respect will be at the tenderer's risk and may result in rejection of his tender.

2.3 A prospective tenderer making an inquiry relating to the tender documents may notify the Employer in writing or by cable, telex or facsimile at the address indicated in the letter of invitation to tender. The Employer will only respond to requests for clarification received earlier than seven days prior to the deadline for submission of tenders. Copies of the Employer's response will be circulated to all persons issued with tendering documents, including a description of the inquiry, but without identifying its source.

2.4 Before the deadline for submission of tenders, the Employer may modify the tendering documents by issuing addenda. Any addendum thus issued shall be part of the tendering documents and shall be communicated in writing or by cable, telex or facsimile to all tenderers. Prospective tenderers shall acknowledge receipt of each addendum in writing to the Employer.

2.5 To give prospective tenderers reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend, as necessary, the deadline for submission of tenders, in accordance with Clause 4.2 here below.

3. Preparation of Tenders

3.1 All documents relating to the tender and any correspondence shall be in English language.

3.2 The tender submitted by the tenderer shall comprise the following:

(a) These Instructions to Tenderers, Form of Tender, Conditions of Contract, Appendix to Conditions of Contract and Specifications;

(b) Tender Security;

(c) Priced Bill of Quantities;

(d) Qualification Information Form and Documents;

(e) Alternative offers where invited; and

(f) Any other materials required to be completed and submitted by the tenderers.

3.3 The tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items for which no rate or price is entered by the tenderer will not be paid for when executed and shall be deemed covered by

the other rates and prices in the Bill of Quantities. All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause relevant to the Contract, as of 30 days prior to the deadline for submission of tenders, shall be included in the tender price submitted by the tenderer.

3.4 The rates and prices quoted by the tenderer shall only be subject to adjustment during the performance of the Contract if provided for in the Appendix to Conditions of Contract and provisions made in the Conditions of Contract.

3.5 The unit rates and prices shall be in Kenya Shillings.

3.6 Tenders shall remain valid for a period of sixty (60) days from the date of submission. However, in exceptional circumstances, the Employer may request that the tenderers extend the period of validity for a specified additional period. The request and the tenderers' responses shall be made in writing. A tenderer may refuse the request without forfeiting the Tender Security. A tenderer agreeing to the request will not be required or permitted to otherwise modify the tender, but will be required to extend the validity of Tender Security for the period of the extension, and in compliance with Clause 3.7 - 3.11 in all respects.

3.7 The tenderer shall furnish, as part of the tender, a Tender Security in the amount and form specified in the appendix to invitation to tenderers.

3.8 The format of the Tender Security should be in accordance with the form of Tender Security included in Section G - Standard forms or any other form acceptable to the Employer. Tender Security shall be valid for 30 days beyond the validity of the tender.

3.9 Any tender not accompanied by an acceptable Tender Security shall be rejected. The Tender Security of a joint venture must define as "Tenderer" all joint venture partners and list them in the following manner: a joint venture consisting of"……","……",and "……".

3.10 The Tender Securities of unsuccessful tenderers will be returned within 28 days of the end of the tender validity period specified in Clause 3.6.

3.11 The Tender Security of the successful tenderer will be discharged when the tenderer has signed the Contract Agreement and furnished the required Performance Security.

3.12 The Tender Security may be forfeited

(a) if the tenderer withdraws the tender after tender opening during the period of tender validity;

(b) if the tenderer does not accept the correction of the tender price, pursuant to Clause 5.7;

(c) in the case of a successful tenderer, if the tenderer fails within the specified time limit to

(i) sign the Agreement, or

(ii) furnish the required Performance Security.

3.13 Tenderers shall submit offers that comply with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications. Alternatives will not be considered, unless specifically allowed in the invitation to tender. If so allowed, tenderers wishing to offer technical alternatives to the requirements of the tendering documents must also submit a tender that complies with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications. In addition to submitting the basic tender, the tenderer shall provide all information necessary for a complete evaluation of the alternative, including design calculations, technical specifications, breakdown of prices, proposed construction methods and other relevant details. Only the technical alternatives, if any, of the lowest evaluated tender conforming to the basic technical requirements shall be considered.

3.14 The tenderer shall prepare one original of the documents comprising the tender documents as described in Clause 3.2 of these Instructions to Tenderers, bound with the volume containing the Form of Tender, and clearly marked "ORIGINAL". In addition, the tenderer shall submit copies of the tender, in the number specified in the invitation to tender, and clearly marked as "COPIES". In the event of discrepancy between them, the original shall prevail.

3.15 The original and all copies of the tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the tenderer, pursuant to Clause 1.5 (a) or 1.6 (b), as the case may be. All pages of the tender where alterations or additions have been made shall be initialed by the person or persons signing the tender.

3.16 Clarification of tenders shall be requested by the tenderer to be received by the procuring entity not later than 7 days prior to the deadline for submission of tenders.

3.17 The procuring entity shall reply to any clarifications sought by the tenderer within 3 days of receiving the request to enable the tenderer to make timely submission of its tender.

4. Submission of Tenders

4.1 The tenderer shall seal the original and all copies of the tender in two inner envelopes and one outer envelope, duly marking the inner envelopes as "ORIGINAL" and "COPIES" as appropriate. The inner and outer envelopes shall:

(a) be addressed to the Employer at the address provided in the invitation to tender;

(b) bear the name and identification number of the Contract as defined in the invitation to tender; and

(c) Provide a warning not to open before the specified time and date for tender opening.

4.2 Tenders shall be delivered to the Employer at the address specified above not later than the time and date specified in the invitation to tender. However, the Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with Sub-Clause 2.5 in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline will then be subject to the new deadline.

4.3 Any tender received after the deadline prescribed in clause 4.2 will be returned to the tenderer un-opened.

4.4 Tenderers may modify or withdraw their tenders by giving notice in writing before the deadline prescribed in clause 4.2. Each tenderer's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with clause 3.13 and 4.1, with the outer and inner envelopes additionally marked "MODIFICATION" and "WITHDRAWAL", as appropriate. No tender may be modified after the deadline for submission of tenders.

4.5 Withdrawal of a tender between the deadline for submission of tenders and the expiration of the period of tender validity specified in the invitation to tender or as extended pursuant to Clause 3.6 may result in the forfeiture of the Tender Security pursuant to Clause 3.11.

4.6 Tenderers may only offer discounts to, or otherwise modify the prices of their tenders by submitting tender modifications in accordance with Clause 4.4 or be included in the original tender submission.

5. Tender Opening and Evaluation

5.1 The tenders will be opened by the Employer, including modifications made pursuant to Clause 4.4, in the presence of the tenderers' representatives who choose to attend at the time and in the place specified in the invitation to tender. Envelopes marked "WITHDRAWAL" shall be opened and read out first. Tenderers' and Employer's representatives who are present during the opening shall sign a register evidencing their attendance.

5.2 The tenderers' names, the tender prices, the total amount of each tender and of any alternative tender (if alternatives have been requested or permitted), any discounts, tender modifications and withdrawals, the presence or absence of Tender Security, and such other details as may be considered appropriate, will be announced by the Employer at the opening. Minutes of the tender opening, including the information disclosed to those present will be prepared by the Employer.

5.3 Information relating to the examination, clarification, evaluation, and comparison of tenders and recommendations for the award of Contract shall not be disclosed to tenderers or any other persons not officially concerned with such process until the award to the successful tenderer has been announced. Any effort by a tenderer to influence the Employer's officials, processing of tenders or award decisions may result in the rejection of his tender.

5.4 To assist in the examination, evaluation, and comparison of tenders, the Employer at his discretion, may ask any tenderer for clarification of the tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, telex or facsimile but no change in the price or substance of the tender shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered in the evaluation of the tenders in accordance with Clause 5.7.

5.5 Prior to the detailed evaluation of tenders, the Employer will determine whether each tender (a) meets the eligibility criteria defined in Clause 1.7;(b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the tendering documents. A substantially responsive tender is one which conforms to all the terms, conditions and specifications of the tendering documents, without material deviation or reservation. A material deviation or reservation is one (a) which

affects in any substantial way the scope, quality, or performance of the works; (b) which limits in any substantial way, inconsistent with the tendering documents, the Employer's rights or the tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.

5.6 If a tender is not substantially responsive, it will be rejected, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

5.7 Tenders determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows:

(a) where there is a discrepancy between the amount in figures and the amount in words, the amount in words will prevail; and

(b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will prevail, unless in the opinion of the Employer, there is an obvious typographical error, in which case the adjustment will be made to the entry containing that error.

(c) In the event of a discrepancy between the tender amount as stated in the Form of Tender and the corrected tender figure in the main summary of the Bill of Quantities, the amount as stated in the Form of Tender shall prevail.

(d) The Error Correction Factor shall be computed by expressing the difference between the tender amount and the corrected tender sum as a percentage of the corrected Builder's Work (i.e. Corrected tender sum less P.C. and Provisional Sums)

(e) The Error Correction Factor shall be applied to all Builders' Work (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuation of variations.

(f) the amount stated in the tender will be adjusted in accordance with the above procedure for the correction of errors and, with Concurrence of the tenderer shall be considered as binding upon the tenderer. If the tenderer does not accept the corrected amount, the tender may be rejected and the Tender Security may be forfeited in accordance with clause 3.11.

5.8 The Employer will evaluate and compare only the tenders determined to be substantially responsive in accordance with Clause 5.5.

5.9 In evaluating the tenders, the Employer will determine for each tender the evaluated tender price by adjusting the tender price as follows:

(a) making any correction for errors pursuant to clause 5.7;

(b) Excluding provisional sums and the provision, if any, for contingencies in the Bill of Quantities, but including Dayworks where priced competitively.

(c) making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with clause 3.12; and

(d) making appropriate adjustments to reflect discounts or other price modifications offered in accordance with clause 4.6

5.10 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the tender documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in tender evaluation.

5.11 The tenderer shall not influence the Employer on any matter relating to his tender from the time of the tender opening to the time the Contract is awarded. Any effort by the Tenderer to influence the Employer or his employees in his decision on tender evaluation, tender comparison or Contract award may result in the rejection of the tender.

5.12 Firms incorporated in Kenya where indigenous Kenyans own 51% or more of the share capital shall be allowed a 10% preferential bias provided that they do not sub-contract work valued at more than 50% of the Contract Price excluding Provisional Sums to an
Non-indigenous sub-contractor.

6. Award of Contract

6.1 Subject to Clause 6.2, the award of the Contract will be made to the tenderer whose tender has been determined to be substantially
responsive to the tendering documents and who has offered the lowest evaluated tender price, provided that such tenderer has been determined to be (a) eligible in accordance with the provision of Clauses 1.2, and (b) qualified in accordance with the provisions of clause 1.7 and 1.8.

6.2 Notwithstanding clause 6.1 above, the Employer reserves the right to
accept or reject any tender, and to cancel the tendering process and reject all tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the action.

6.3 The tenderer whose tender has been accepted will be notified of the award prior to expiration of the tender validity period in writing or by cable, telex or facsimile. This notification (hereinafter and in all Contract documents called the "Letter of Acceptance") will state the sum (hereinafter and in all Contract documents called the "Contract Price") that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract. At the same time the other tenderers shall be informed that their tenders have not been successful.

The contract shall be formed on the parties signing the contract.

6.4 The Agreement will incorporate all agreements between the Employer and the successful tenderer. Within 14 days of receipt the successful tenderer will sign the Agreement and return it to the Employer.

6.5 Within 21 days after receipt of the Letter of Acceptance, the successful tenderer shall deliver to the Employer a Performance Security in the amount stipulated in the Appendix to Conditions of Contract and in the form

stipulated in the Tender documents. The Performance Security shall be in the amount and specified form

6.6 Failure of the successful tenderer to comply with the requirements of clause 6.5 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Tender Security.

6.7 Upon the furnishing by the successful tenderer of the Performance Security, the Employer will promptly notify the other tenderers that their tenders have been unsuccessful.

6.8 Preference where allowed in the evaluation of tenders shall not be allowed for contracts not exceeding one year (12 months)

6.9 The tender evaluation committee shall evaluate the tender within 30 days of the validity period from the date of opening the tender.

6.10 The parties to the contract shall have it signed within 30 days from the date of notification of contract award unless there is an administrative review request.

6.11 Contract price variations shall not be allowed for contracts not exceeding one year (12 months)

6.12 Where contract price variation is allowed, the variation shall not exceed 15% of the original contract price.

6.13 Price variation request shall be processed by the procuring entity within 30 days of receiving the request.

6.14 The procuring entity may at any time terminate procurement proceedings before contract award and shall not be liable to any person for the termination.

6.15 The procuring entity shall give prompt notice of the termination to the tenderers and on request give its reasons for termination within 14 days of receiving the request from any tenderer.

6.16 A tenderer who gives false information in the tender document about its qualification or who refuses to enter into a contract after notification of contract award shall be considered for debarment from participating in future public procurement.

7. Corrupt and Fraudulent practices

7.1 The procuring entity requires that tenderers observe the highest standards of ethics during procurement process and execution of contracts. A tenderer shall sign a declaration that he has not and will not be involved in corrupt and fraudulent practices.

APPENDIX TO INSTRUCTIONS TO TENDERS

TENDER EVALUATION CRITERIA

After tender opening, the tenders will be evaluated in 4 **stages**, namely:

1. Preliminary examination;
2. Technical evaluation;
3. Financial Evaluation; and
4. Recommendation for Award.

STAGE 1: PRELIMINARY EXAMINATION

This stage of evaluation shall involve examination of the pre-qualification conditions as set out in the Tender Advertisement Notice or Letter of Invitation to Tender and any other conditions stated in the bid document.

These conditions may include the following:

i) Current Category of Registration with National Construction Authority (NCA) in the relevant trade; (NCA 3, 4, 5 Road works). Attach copies of certificates and licenses.
ii) The Bid has been paginated
iii) Provision of a tender Security, that is in the required format, amount and that the it is valid for the period required;
iv) Dully filled, stamped and signed Form of Tender;
v) Copy of Valid Tax Compliance Certificate;
vi) Dully filled, stamped and signed Confidential Business Questionnaire;
vii) Duly signed and stamped Statement of Compliance; and
viii) Power of attorney
ix) The required number of copies of the tender has been submitted
x) Certificate of Tenderer's visit to site.

Note:

The bid security shall be in accordance with clauses 13 and 23.2 of Instruction to Tenderers which states as follows:

- ***Clause 13.1*** *of Instruction to Tenderers,"the tenderers shall furnish as part of his tenders a tender surety in the amount stated in the tender document in the Appendix to Instructions to Tenderers".*
- ***Clause 13.2*** *of Instruction to Tenderers, "the unconditional Tender surety shall be in Kenya shillings and be in form of a certified cheque, bank draft, an irrevocable letter of credit or a guarantee from a reputable Bank/ Insurance approved by PPOA located in the Republic of Kenya. The format of the surety shall be in accordance with the sample form included in the tender documents and the tender surety shall be valid for* ***150 days*** *from the date of tender opening".*
- ***Clause 23.2*** *of Instruction to Tenderers: "For the purposes of this clause, a substantially responsive tender is one which conforms to all terms and condition and specifications of the tender document without material deviation or reservation and has a valid Bank/Insurance guarantee".*

The employer/procuring entity may seek further clarification/confirmation if necessary to confirm authenticity/compliance of any condition of the tender. Further, in case of a discrepancy between the amounts stated in the appendix to instruction to tenderers and

the one stated in the advertisement or invitation letter, the bid security shall be taken as the amount in the advertisement/ letter of invitation.

The tenderers who do not satisfy any of the above requirements shall be considered Non-Responsive and their tenders will not be evaluated further

STAGE 2 TECHNICAL EVALUATION

A) Assessment for eligibility

The tender document shall be examined based on clause 2.2 of the Instruction to Tenderers which states as follows:

'In accordance with clause 2.2 of Instruction to Tenderers, the tenderers will be required to provide evidence for eligibility of the award of the tender by satisfying the employer of their eligibility under sub clause 2.1 of Instruction to Tenderers and adequacy of resources to effectively carry out the subject contract. The tenderers shall be required to fill the Standard Forms provided for the purposes of providing the required information. The tenderers may also attach the required information if they so desire.

The award of points for the STANDARD FORMS considered in this section shall be as shown below

	PARAMETER	MAXIMUM POINTS
(i)	Tender Questionnaire	5
(ii)	Key personnel	20
(iii)	Contract Completed in the last Five (5) years	15
(iv)	Schedules of on-going projects	8
(v)	Schedules of contractors equipment	20
(vi)	Audited Financial Report for the last 3 years	10
(vii)	Evidence of Financial Resources	15
(viii)	Name, Address and Telephone of Banks (Contractor to provide)	5
(ix)	Litigation History	2
	TOTAL	100

The detailed scoring plan shall be as shown in table 1 below: -

TABLE 1: Assessment for Eligibility

Item	Description	Point Scored	Max. Point	
i.	**Tender Questionnaire Form** • Completely filled ——————————— 5 • Not filled ——————————————— 0		5	
ii	**Key Personnel (Attach evidence)**			20
	Director of the firm • Holder of degree in relevant Engineering field ——————————————— 6 • Holder of diploma in relevant Engineering field ——————————————— 5 • Holder of certificate in relevant Engineering field——————————————— 3 • Holder of trade test certificate in relevant Engineering field ——————————————2 • No relevant certificate ——————————— 1		6	
	At least 1No. degree/diploma holder of key personnel in relevant field • With over 10 years relevant experience ——————— 6 • With over 5 years relevant experience——————— 4 • With under 5 years relevant experience ——————— 2		6	
	At least 1No certificate holder of key personnel in relevant field • With over 10 years relevant experience——————— 4 • With over 5 years relevant experience ——————— 3 • With under 5 years relevant experience ———————1		4	
	At least 2No artisan (trade test certificate in relevant field) • Artisan with over 10 years relevant experience ——————————————— 2 • Artisan with under 10 years relevant experience ——————————————— 1 • Non skilled worker with over 10 years relevant experience ——————————————— 1		4	
iii	**Contract completed in the last five (5) years (Max of 5No. Projects)- <u>Provide Evidence</u>** • Project of similar nature, complexity or magnitude ——————————————— 4 • Project of similar nature but of lower value than the one in consideration ——————————— 3 • No completed project of similar nature ———————0		20	

iv	**On-going projects – <u>Provide Evidence</u>** • No Project of similar nature, complexity and magnitude - ——————————————— 8 • Three and below Projects of similar, nature complexity and magnitude –———————————————6 • Four and above Projects of similar nature, complexity and magnitude ——————————————— 4		**8**	
v	**Schedule of contractors equipment and transport (proof or evidence of ownership/Lease)** **a)Relevant Transport** • Means of transport (Vehicle) ——————————— 10 • No means of transport ——————————— 0		10	**20**
	b)Relevant Equipment • Has relevant equipment for work being tendered ———— ——————————————— 10 • No relevant equipment for work being tendered ———— ——————————————— 0		10	
vi	**Financial report** a)Audited financial report (last three (3) years) • Average Annual Turn-over equal to or greater than the cost of the project ——————————————— 10 • Average Annual Turn-over above 50% but below 100% of the cost of the project ——————————————— 6 • Average Annual Turn-over below 50% of the cost of the project ——————————————— 3		**10**	
	b)Evidence of Financial Resources (cash in hand, lines of credit, over draft facility etc) • Has financial resources to finance the projected **monthly cash flow*** for three months ———————————15 • Has financial resources equal to the projected **monthly cash flow***———————————————————10 • Has financial resources less the projected **monthly cash flow***———————————————————5 • Has not indicated sources of financial resources ———— ——————————————— 0		**15**	
vii	**Litigation History** • Duly Filled ——————————————— 2 • Not filled ——————————————— 0		**2**	
	TOTAL		**100**	

Any bidder who scores 60 points and above shall be considered for further evaluation

**Monthly Cash Flow =Tender Sum/Contract Period*

STAGE 3 - FINANCIAL EVALUATION

Upon completion of the technical evaluation a detailed financial evaluation shall follow. The financial evaluation shall proceed in the manner described in the Public Procurement and Disposal Act (2005) of the laws of Kenya (Section 66) and the Public Procurement and Disposal Regulations, 2006 specifically section 50 (1), (2), and (3).

The evaluation shall be in **three stages**

a) Determination of the Corrected Tender Sums;
b) Comparison of Rates; and
c) Consistency of the Rates.

A) Determination of the corrected tender sums

The Corrected Tender Sum for each bid shall be determined by-

1. *Taking the bid price, as read out at the bid opening;*

2. *Adjusting the tender sum by taking into account any corrections made relating to arithmetic errors;*

Arithmetic Errors will be corrected by the Procuring Entity as follows:

i) If there is a discrepancy between unit prices 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 Procuring Entity there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected;

ii) 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;

iii) Where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

iv) The committee shall promptly write to the tenderer and if the tenderer rejects the correction, the tender shall be rejected and the tender security shall be forfeited. If the tenderer accepts the correction, the error shall be considered in adjusting the tender sum.

3. *Adjusting the tender sum by taking into account any quantified minor deviations (where applicable pursuant to Stage 2C of this evaluation criteria)*, which were documented, quantified and accepted by a procuring entity (as described in Stage 2 of the Technical evaluation of this criteria –Assessment of Deviations;)

4. Where applicable, *converting all tenders to the same currency,* using a uniform exchange rate prevailing at the date indicated in the tender documents;

5. *Adjusting the tender sum by applying any discounts offered* in the tender;

6. *Adjusting the tender sum by applying any margin of preference* indicated in the tender documents

B) Comparison of rates-

Items that are under priced or overpriced may indicate potential for non-delivery and front loading respectively. The committee shall promptly write to the tenderer asking for detailed breakdown of costs for any of the quoted items, relationship between those prices, proposed construction/installation methods and schedules.
The evaluation committee shall evaluate the responses and make an appropriate recommendation to the procuring entity's tender committee giving necessary evidence. Such recommendations may include but not limited to:

a) Recommend no adverse action to the tenderer after a convincing response;
b) Employer requiring that the amount of the performance bond be raised at the expense of the successful tenderer to a level sufficient to protect the employer against potential financial losses;
c) Recommend non-award based on the response provided and the available demonstratable evidence that the scope, quality, completion timing, administration of works to be undertaken by the tenderer, would adversely be affected or the rights of the employer or the tenderers obligations would be limited in a substantial way.

C) Consistency of the Rates

The evaluation committee will compare the consistency of rates for similar items and note all inconsistencies of the rates for similar items.

STAGE 4 - RECOMMENDATION FOR AWARD

The successful bidder shall be the tenderer with the lowest evaluated tender price.

SPECIFICATIONS

OF

MATERIALS AND WORKS

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

2.1 GENERAL

This specification is to be read in conjunction with the drawings which are issued with it. Bills of quantities shall be the basis of all additions and omissions during the progress of the works.

2.2 STANDARD OF MATERIALS

Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the contractor shall adhere.

Should the contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the contractor. All materials required for the works shall be new and the best of the respective kind and shall be of a uniform pattern.

2.3 WORKMANSHIP

The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the contractor's expense.

Permits, Certificates or Licences must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licences exist under Government legislation.

2.4 PROCUREMENT OF MATERIALS

The contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

Contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

2.5 SHOP DRAWINGS

Before manufacture or Fabrication is commenced the contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information

including sizes, capacities, construction details, etc, as may be required to determine the suitability of the equipment for the approval of the Engineer. Approval of the detailed drawings shall not relieve the sub-contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

2.6 RECORD DRAWINGS

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

2.7 REGULATIONS AND STANDARDS

All work executed by the contractor shall comply with the current edition of the "Specifications for Civil Engineering Works, issued by the MINISTRY OF PUBLIC WORKS, or the relevant Local Authority by-Laws.

Where two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification or the appropriate British Standard.

2.8 SETTING OUT WORK

The contractor at his own expenses; is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his Tender for all such modifications and for the provision of any such sketches or drawings related thereto.

2.9 TESTING ON SITE

The contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations or the standards for Civil engineering Works issued by the MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT- STATE DEPARTMENT

OF PUBLIC WORKS or the latest Kenyan or British Standards Specification or Local Authority By-Laws.

(a) The Sub-contractor shall provide accurate instruments and apparatus and all labour required to carry out all the necessary tests. The instruments and apparatus shall be made available to the engineer to enable him to carry out such tests as he may require.

(b) The Sub-Contractor shall generally attend on other Contractors employed on the project and carry out such tests as may be necessary.

(c) The Sub-Contractor shall test to the engineer's approval and as specified elsewhere in this specification or in Standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any other setting or work.

(d) Where such equipment, etc. forms part of or is connected to a system whether primarily or of whatever nature or otherwise, the Sub-Contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or the system forming part of works, shall balance, regulate, test and commission the system to the engineer's approval.

TECHNICAL SPECIFICATIONS FOR CIVIL WORKS

1.0 GENERAL SPECIFICATIONS

1.1 The detailed specifications given hereafter are for the items of works described in the schedule of quantities attached herein, and shall be guidance for proper execution of work to the required standards.

1.2 It may also be noted that the specification are of generalized nature and these shall be read in conjunction with the description of item in schedule of quantities and drawings.

1.3 In case any difference or discrepancy between the specifications and the description in the schedule of quantities, the schedule of quantities shall take precedence.

1.4 In case any difference or discrepancy between the specifications and the drawing, the specification shall take precedence.

1.5 TESTS AND SAMPLES

Samples of all materials shall be deposited with the Engineer and approved prior to ordering or delivery on site. The Engineer reserves the right to test any sample to destruction and retain samples until the end of the maintenance period. All materials delivered to site shall be at least equal in all respects to the samples delivered to the Engineer.

All sampling of materials on the site must be done by or in the presence of the Engineer. All other samples will be deemed to be not valid under the Contract.

1.6 KENYA STANDARDS

All materials and goods supplied for incorporation in the works must comply with any relevant current standards issued by the Kenya Bureau of Standards. Where these are not established or are unclear the latest British Standards and Codes of Practice shall apply.

1.7 **PROTECTION OF EXISTING "MANHOLES AND CHAMBERS**

Where it is necessary to remove existing manhole covers and gulley gratings for adjustment thereof, or in connection with any other work, the Contractor shall take all necessary precautions to prevent the entry of debris into such manhole or chambers.

1.8 **WATER SUPPLY, LIGHT AND POWER**

The Contractor shall provide for all purpose of the work, an adequate supply of water. He must pay the water charges and make all arrangements for supply, transport and distribution.

In addition, the Contractor shall make his own arrangements for the supply of light and power required by him for the construction of the Works and shall pay all fees and charges in connection therewith.

1.9 **PROVISION OF INSTRUMENTS AND LABOUR**

The Contractor shall provide at his own expense all instruments, materials, tools and other things which the Engineer considers necessary .for his proper supervision of the Works and shall maintain the same in good order. He shall also provide labour for attendance on the Engineer and his representative in carrying out operations connected with the supervision of the Works.

1.10 PROTECTION OF WORKS FROM RAINS

The Works shall be so executed that should it be necessary to suspend work due to rain, no part thereof is left in such *a* state as to be liable to damage thereby. No claim by the Contractor arising out of the reinstatement of any damage caused by or accidental to rain shall be accepted.

1.11 WORKMANSHIP

Notwithstanding anything mentioned to the contrary in this Specification, the whole of the Works shall be carried out in a thoroughly workmanlike manner.

1.12 LEAVE WORKS CLEAN

On completion of the Works, or if directed by the Engineer, on completion of any portion thereof, the Contractor shall carefully restore to the original condition the ground, fences and other structures that may have been interfered with in any way by him or his employees and shall remove all rubbish, tools and materials which are not required, so as to leave the Works and site in a clean and orderly condition, such work being carried out by the Contractor without extra charge over and above his scheduled rates for the execution of the Works.

1.13 NO BORROW PITS

No borrow pits will be allowed to be opened on site unless with written approval from the Project manager.

PARTICULAR SPECIFICATIONS

2.0 SITE CLEARANCE

2.01 CLEARING SITE

The Contractor shall remove buildings, walls, gates, fences and other structures and obstructions, grub up and remove trees, hedges, bushes and shrubs and clear the site of the Works at such time, and to the extent required by the Engineer, but not otherwise, the materials so obtained shall so far as suitable be reserved and stacked for further use; all rubbish and material unsuitable for use shall be destroyed or removed from the site.

2.02 BUSHES, SMALL TREES AND FELLING TREES

All bushes and small trees, the main stem of which is less than 100mm girth at 1 metre above ground level shall be uprooted (unless otherwise directed by the Engineer) and burnt or otherwise disposed off as directed by the Engineer.

Where directed by the Engineer, trees shall be uprooted or cut down as near to ground level as is possible, and No such trees shall be cut down without the express permission of the Engineer.

Where pipes are passing through any of the existing bushes or trees, authority should be sought from the landscape designer.

The engineer and the landscape designer to work in coordination to ensure as many trees as possible are preserved. According to the landscape designer's decision, special dispositions can be taken for important trees.

2.03 GRUBBING UP ROOTS

Stumps and tree roots shall, unless otherwise directed, be grubbed up, blasted, burnt or removed and disposed of in approved dumps, to be provided by the Contractor where directed by the Engineer, the holes resulting from grubbing up shall be filled with approved materials, which shall be deposited and compacted in layers not exceeding 225mm loose depth, to the same dry density as that of the adjoining soil.

2.04 UNDERGROUND CHAMBERS, ETC. TO BE CLEANED

Demolition of pits, walls etc shall be to a depth of 1 metre below ground level and the remainder shall be properly cleaned out and filled with approved materials, which shall be deposited and compacted in layers not exceeding 225mrn loose depth to the same dry density as that of the adjoining soil. Soil and surface water drains, lying within the site of the Works, shall, where directed by the Engineer, be sealed off, and *all* other services satisfactorily severed and sealed to the satisfaction of the appropriate authorities and/or owners. Disused soil and surface water drains within 1 metre of formation level shall if required by the Engineer be removed and trenches shall be backfilled as necessary.

2.05 WEED CONTROL

The Contractor shall take all necessary precautions against the growth on the site of weeds and remove them as necessary throughout the period of works and maintenance.

The formation level and finished surface of base of all footways and elsewhere as directed shall be sprayed with an approved persistent total herbicide at the rate recommended by the manufacturer. The application shall be by an even spray in a

high volume of water at about 0.07 to 0.11 litres per square metre. After this application the footways shall receive at least two further waterings before the surface is sealed.

3. 0 SEWERS, DRAINS AND MANHOLES

3.01 EXCAVATION FOR PIPE LINES, SEWERS AND MANHOLES

The ground shall be excavated to the lines and depths shown on the Drawings or to such other lines and depths as the Engineer may direct. Excavations taken out to greater depth than is necessary shall be filled in to the required level with concrete of the appropriate class as specified for the pipe bed at the Contractors own cost. Trenches shall be of sufficient widths to enable the pipes to be property laid and jointed. Special care shall be taken to provide *a* solid and even bed for the barrels of the pipes and, where a concrete bed is not specified, the floor of the trench shall be properly shaped to receive the sockets.

Excavations will be considered to be from ground level at the centre line of the pipe measured to the invert level of the pipe. The Contractor must allow in his prices for all extra excavation required to allow for thickness of pipes and concrete beds.

3.02 SUPPORTS FOR PITS, TRENCHES AND OTHER EXCAVATIONS

The sides of pits, trenches and other excavations shall where necessary be adequately supported to the satisfaction of the Engineer by timber or by other approved means, and all such excavations shall be of sizes sufficient to enable the pipes and concrete to be laid accurately, and proper refilling and compaction to be carried out.

The Contractor shall take all precautions necessary for the safety of adjoining structures and buildings by shoring, opening in short lengths or otherwise, during the time the trenches are open.

Where directed by the Engineer, the supports shall be left in trenches or other excavations, and such supports so left will be measured and paid for at the prices entered in the Bills of Quantities except where in the opinion of the Engineer the necessity for leaving the supports in has arisen from carelessness or neglect on the part of the Contractor.

3.03 ROCK CUTTING IN TRENCHES FOR PIPES

Where solid rock is met with in trenches, it shall be cut out to a depth of 100mm below the intended level of the bottom of the pipes, and replaced with 100mm of concrete of the appropriate class specified elsewhere. In measuring such rock excavation the Contractor will be allowed width of 300mm more than the external diameter of the pipes to a level of 100mm below the bottom of the pipes. The price inserted in the Bills of Quantities shall be held to cover all expenses in connection with excavation of the rock and disposing off surplus material as directed by the Engineer.

3.04 WATER IN TRENCHES FOR THE PIPE LINES AND SEWERS

Trenches shall be kept free from water until, in the opinion of the Engineer, any concrete or other works therein are sufficiently set, and the Contractor shall construct any sumps or temporary drains that the Engineer may deem necessary.

3.05 PUTRESCENT MATTER

The Contractor shall include in his excavation prices for the removal of all filth or putrescent matter met with in the excavation of the Works to suitable places to be

provided by the Contractor clear of the works, and on no account shall it be so replaced as to allow its gaining admission into the pipes, laid or un-laid. Such material shall be replaced as required by surplus excavated soil.

3.06 SIGHT RAILS

Before trenches are excavated sight rails shall be provided and erected by the Contractor at convenient intervals not exceeding the distance between those manholes for whichever an invert level is given in the Drawings or 50 metres whichever is the less. Rails shall be of substantial construction and shall be painted in alternate contrasting colours in such a manner as to indicate clearly the lines and levels, and, for use in conjunction with them, suitable boning rods shall be provided by the Contractor. The posts shall be firmly planted on either side of the trench. The Contractor will be held responsible for any errors, which may occur in the execution of the Works through sight rails being disturbed, faulty setting out there from, or from any other cause whatsoever and shall make good at his own expense.

The sight rails shall be fixed with the upper edge an integral height in metres above the level of the invert of the pipe being laid.

3.07 INSPECTION OF TRENCHES

Before any pipes are laid in a trench the trench shall be inspected and passed as satisfactory by the Engineer.

3.08 CLEANING OF PIPES

Before being laid in the trench, each pipe and fitting shall be inspected and any dirt or foreign matter inside the pipe or fitting shall be removed. Spigots and sockets shall also be examined for cleanliness to ensure proper joints.

3.09 PIPE LAYING

In any length of drain, laying shall always be carried out from the lower end of the length to the higher. In case of spigot and socket pipes the socket shall always be at the upper end of the pipe. Pipes shall be laid true to line and grade or as directed by the Engineer. In order to prevent stones or soil from entering the pipe suitable cover or plug shall be provided which is to be used for covering the mouth of the last laid pipe at all times while pipe laying is not proceeding.

3.10 JOINTING OF P.V.C. PIPES - GLUED JOINTS

The following procedures must be strictly followed:-

The spigot end shall be chamfered and cut square.

Clean spigot and socket with wet cloth and let dry.

Un-grease spigot and socket with acetone.

Mark length of joint on spigot.

Apply first a relatively thick layer of glue onto spigot, then a thin layer into socket.

Push home the joint to the mark quickly and give at once a 9Odegrees twist.

Remove pressed out cement.

Do not disturb the joint for five minutes whilst the glue is hardening.

It is essential that the glue used is the correct type, i.e. it shall be purchased from the same factory which delivers the pipes.

3.11 JOINTING OF P.V.C. PIPES - RUBBER RING JOINTS

The joints can be either tye tyton type which incorporates only one rubber ring or loose couplets, in any case the fittings used shall be purchased from the same factory which delivers the pipes. Jointing procedure is:-

The end of pipes shall be cut' square and shall be chamfered.

Coupler rubber ring and pipe end shall be cleaned and dry.

The rubber ring(s) shall be placed in the groove (s) or other socket (coupler).

Rubber ring (s) and end of pipe shall be lubricated with a lubricant delivered by the pipe manufacturer.

Mark clearly on the pipe ends the distance from the edge of the coupler to centre of coupler. Push home pipe end to within a few millimetres from centre of coupler.

3.12 PROTECTION OF PIPES

The concrete used for bedding, haunching and surrounding the pipes shall be concrete class 15 (20) unless otherwise ordered by the Engineer.

All concrete pipes will normally be laid with one of the alternative means of protective concrete hereinafter specified.

In all cases where concrete protection is adopted, a concrete mat at least 75mm thick shall first be laid on the bottom of the trench and shall be allowed to set before pipe laying is commenced. Individual pipes shall be firmly supported on bricks or pre-cast concrete blocks or wedges placed immediately behind the socket and in such a manner that each pipe is accurately positioned in both line and level. After the pipe joints have been made and the pipelines satisfactorily tested the remainder of the bedding concrete (and haunching and surrounding concrete where required) shall be placed.

In cases where pipes are not required to be laid on a concrete bed the Contractor shall ensure that each pipe is supported throughout its length by the bottom quarter of the barrel and is bedded on a firm foundation of sand which does not contain any hard lumps.

Joint holes are to be formed in the sand to enable joints to be made and inspected as they are to be as short as practicable.

in all cases the concrete protection shall be thoroughly worked around the undersides of the pipes, and into the joint holes, if any, and shall be thoroughly compacted during the operation of placing and in the case of pipes 450mm or more in diameter, the concreting operations shall be so organized that the vertical faces of the concrete shall bear upon the sides of the excavations, the trench supports being withdrawn as required to achieve this or additional concrete shall be placed between the concrete protection and the sides of the excavation.

Where concrete raft protection is required, the pipe shall be completely surrounded (minimum 150mm) with hand compacted sand up to the prescribed level. The raft shall then be cast and the next 0.5 metres backfilling shall be carried out with sand spread in 150mrn layers each layer being well compacted by hand.

3.13 TEMPORARY SEALING OF DRAINS

During progress of the Works, all open ends of drains to be temporarily sealed off with hardwood plugs.

3.15 PIPES PASSING THROUGH WALLS

A lintel or arch to be provided through walls to allow 50mm clearance around pipes unless otherwise shown.

Foundation concrete to be lowered where necessary to allow drains to pass over and be adequately supported.

3.16 uP.V.C. UNDERGROUND DRAIN *PIPES*

uP.V.C. underground drain pipes and fittings shall be golden brown colour underground pipes and shall comply either with ISO/DIS 4435 'Unplasticised P.V.C. pipes and fittings' for buried drains or with B. S. 4660 or B. S. 5481 and to be obtained complete with coupling rings and relevant sealing compound from an approved manufacturer and laid and jointed strictly in accordance with the manufacturer's printed instructions.

3.17 BACKFILLING OF TRENCHES

Trenches shall be backfilled with suitable excavated material but not before the work has been measured and approved by the Engineer. For pipes which are not surrounded with concrete, the first layer of filling material shall be free from stones and shall not be thrown directly onto the pipes, but shall be placed and packed with care under and round them. All filling shall be deposited and compacted in layers, not exceeding 225mrn loose depth, to a dry density not less than that of the adjoining soil.

3.18 BACKFILLING OF MANHOLES

Backfilling around manhole wails will not be started earlier than 3 days after the building or making of the wall nor sooner than 14 days over the cover slabs of manholes, after these are cast.

3.19 CONNECTIONS OF EXISTING SEWERS AND DRAINS

Where shown on the Drawings, existing sewers and drains shall be property extended, connected and jointed to new sewers, culverts, drains or channels. All such connections shall be made during the construction of the main sewer, drain or other work and a record of their positions kept for future use or reference. Where pipe connections are made to a sewer, culvert, stone pitched or lined channel, the pipes shall be well and tightly built into the concrete or masonry work and be so placed as to discharge in the direction of flow of the main sewer, drain or channel and with the end of the pipe carefully cut to the necessary angle. Where the connections are between pipe sewers or drains, special connection pipes as shown on the Drawings shall be supplied and be truly laid and property jointed.

3.20 MANHOLES AND INSPECTION CHAMBERS

Manholes and inspection chambers shall be constructed in accordance with the Drawings and in the positions shown on the Drawings or as directed by the Engineer.

Benching to manhole floors shall have a minimum fall of 1 in 12 from the manhole walls and shall be finished tangentially vertical to the bore of the channels, providing a gross channel depth not less than the channel diameter. The intersection of the channel

sides and the benching shall be finished in a sharp curve not grater than 30mm in diameter.

The benching shall be formed of concrete, as specified, floated to a hard smooth surface with a coat of cement-sand mortar (1:1).

If required half channel pipes, bends and junctions shall be laid and bedded in cement-sand mortar (1:3) to the required lines and levels, and both sides of the channel pipes shall be benched up with concrete of the appropriate class and finished smooth to the slopes and levels as shown on the drawings or directed by the Engineer. The ends of all pipes shall be neatly built in and finished flush with cement-sand mortar (1:3).

Walls of manholes and access shafts shall be constructed of concrete block work as specified elsewhere and in accordance with the Drawings.

Walls shall be rendered internally for the full height with a cement-sand mortar (1:3) of at least 12mm thickness and finished with s completely smooth surface.

Cast iron manhole covers and frames as specified shall be provided and the frames shall be bedded in cement-sand mortar (1:3) and so set that the tops of the covers shall be flush at all points with the surrounding surface of the footway, verge or carriageway, as the case may be. Any slight adjustment of the cover level which may be necessary to accomplish this shall be affected by topping the side walls with concrete integral with the slab.

Manhole covers and frames: bed and point frames in cement-sand mortar 1:3.Apply two coats of bitumen paint internally and externally. Bed covers in grease-sand mixture to make them airtight.

The manholes shall be covered by high density coated cast iron (where there is a road atop) and medium density coated cast iron covers.

Reinforced concrete manholes shall have 50mm thick concrete blinding. 1000 gauge polythene sheeting, 225mm thick reinforced concrete over slab, concrete benching trowelled smooth with main and branch channels formed in the same.

Step irons shall be laid at 225mm vertical centers for manholes over 1.20m Deep. All sizes shown on the drawings are internal sizes.

All manholes when completed shall be watertight and to the satisfaction of the Engineer.

3.25 PROVISION FOR FUTURE CONNECTION TO MANHOLES

Inlet pipes of the required diameters shall be built into the walls of manholes and elsewhere for future se and shall be of the diameters shown on the Drawings. The external ends of all such connections shall be sealed off with temporary stoppers, or otherwise sealed off as approved by the Engineer.

3.26 GRANULAR BEDDING TO' PIPES

Immediately following excavations of the trench, pipes shall be laid and jointed except when shown otherwise on the Drawings on pipe bedding material as specified elsewhere in this Specification. Brick or other hard material shall not be placed under the pipes for temporary support.

After jointing of the pipes the bedding snail be brought up equally on both sides of the pipe, first to the level of the centre of the pipeline and then up to height 225rnm above the top of the pipe barrel. The bedding material shall be carefully compacted for the

full width of the trench with hand tools. Pipes shall be laid so that each one is in contact with the bed throughout the length of its barrel, bedding material being scooped away at each socket in the case of socketed pipes so that the socket does not bear on the bed.

3.28 AIR TEST

All branches and openings in the length of drain under test shall first be sealed with approved expanding plugs and appropriate lids in the case of access fittings. After sealing, an air pressure of 100mm of water as measured on a manometer tube shall be applied. The drop in pressure after pumping has ceased shall not exceed 25mm of water in five minutes. Should the rate of pressure drop exceed that specified, a smoke test shall be applied for the purpose of locating the fault. Any failure of the drains to withstand these tests and any defect which may be found while they are under test must be made good to the satisfaction of the Engineer and at the Contractor's expense, and the test repeated. Upon the successful completion of the test, the pipes shall be backfilled in accordance with this Specification.

3.29 WATER TEST

All branches and openings in the lengths of drain under test shall first be sealed with approved expanding plugs and appropriate lids in the case of access fittings. The pipes shall be filled with water in such a matter as will give rise to no shock and prevent any accumulation of air in the sewer. When all air has been expelled and the pipes saturated, the pressure in the drains shall be raised by means of a force pump or standpipe so that the length under test is subjected to a hydrostatic pressure of at least 1.2 metres head of water. The drop in pressure after pumping has ceased shall not exceed 25mm head of water in 10 minutes. Should the rate of pressure drop exceed that specified, the Contractor shall thereupon, at his own expense, search for and rectify any weakness or defect in the pipes and fittings under test to the satisfaction of the Engineer. The pipes shall then be subjected to the specified water pressure again and re-tested and repaired until a satisfactory test is obtained. The Contractor shall allow for supplying all water required for such tests and shall make provision for its disposal after use.

3.30 TESTING OF MANHOLES

Manholes shall be tested by filling to the adjacent ground level with clean water. After allowing a 60 minutes period of initial absorption, no measurable subsidence in the water level shall occur during the next 30 minutes. The Contractor shall correct any leaks in the manhole at his own expense.

The Contractor shall, at his own expense, provide the water and everything necessary for the carrying out of the manhole test.

3.31 PROTECTION OF WORK

The drains are to be laid to suit the general progress of the Works and at such times and in such a manner as to be adequately protected against damage and deterioration. The whole of the work is to be maintained and handed over in a sound clean condition on completion of the Contract.

3.32 SOAK PITS

Where the collected surface water is to be discharged to a soak pit, the suitability of the natural ground to receive and dispose of the water without causing damage or nuisance to neighbouring property shall be demonstrated to the satisfaction of the territorial authority.

If required, field testing of soakage can be carried out as follows:
a) Bore test holes of 100mm to 150mm diameter to the depth of the proposed soak pit If groundwater is encountered in the bore test hole then this depth shall be taken as the depth of the soak pit.
b) Fill the hole with water and maintain full for at least 4 hours (unless the soakage is so great that the hole completely drains in a short time).
c) Fill the hole with water to within 750mm of ground level, and record the drop in water level against time, at intervals of no greater than 30 minutes, until the hole is almost empty, or over 4 hours, whichever is the shortest.
d) Plot the drop in water level against time on a graph, and the soakage rate in mm/hr is determined from the minimum slope of the curve If there is a marked decrease in soakage rate as the hole becomes nearly empty, the lower rates may be discarded and the value closer to the average can be adopted.

Soak pits must be located at least 10 metres away from any waterways in saturated soil conditions.

A well-sized soak pit should last for about 3 to 5 years without maintenance. To extend the life of a soak pit, care should be taken to ensure that the effluent has been clarified and/or filtered well before they are discharged in to the pit. This prevents an excessive build-up of solids.
The soak pit should be kept away from high-traffic areas so that the soil above and around it is not compacted. When the performance of the soak pit deteriorates, the material inside the soak pit can be excavated and refilled.
To allow for future access, a removable (preferably concrete) lid should be used to seal the pit until it needs to be maintained. Particles and biomass will eventually clog the pit and it will need to be cleaned or moved. As long as the soak pit is not used for raw sewage, and as long as the previous collection and storage/treatment technology is functioning well, health concerns are minimal. The technology is located underground and thus, humans and animals should have no contact with the effluent.

It is important however, that the soak pit is located a safe distance from a drinking water source (ideally at least 30 m). Particles and biomass will eventually clog the pit and it will need to be cleaned or moved.

3.33 SEPTIC TANKS

Septic tanks shall receive all wastewater (black and grey water), from toilets, baths, showers, wash basins, sinks and washing machines. Water that must be excluded, includes run-off water from roofs, yards, foundation drains, and other sources not considered to be wastewater.

LOCATION – Septic tanks and sewage holding tanks shall be located so as to be readily accessible for the pumping out of liquid sewage and sludge.

Septic tank covers shall always be accessible. Where manholes are more than 300mm below final grade, an extension collar shall be provided over each opening. Extension collars shall not be brought flush with the ground surface unless the cover can be locked

to prevent tampering. Driveways or other facilities shall not be constructed above septic tanks unless specially designed and reinforced to safely carry the load imposed.

Tanks must be watertight, constructed of durable material not subject to corrosion, decay, frost damage, or cracking

Tanks shall have inlet and outlet baffles, sanitary tees or other devices to prevent the passage of floating solids and to minimize disturbance of settled sludge and floating scum by sewage entering and leaving the tank

There shall be a minimum drop in elevation of 60mm between the inverts of the inlet and outlet pipes.

4.0 CONCRETE

4.01 NORMINAL MIX PROPORTIONS FOR CONCRETE

The nominal mix proportions shall comply with the requirements of Table 4.1 below

Table 4.1

Class of Concrete	Nominal Mix Proportions by Weight	Sum of the Volumes of Each Size of Aggregate per 50 Kg. Concrete (m^3)	Minimum Compressive Strength 28 days after mixing	
			Preliminary Test (N/mm^2)	Works Test (N/mm^2)
30	1 : 1 : 2	0.105	42	32
25	1 : 1'/2 : 3	0.16	35	26
20	1 : 2 : 4	0.21	28	21
(Q)15	1 : 3 : 6	0.29	21	14
P	1 : 4 : 8	0.4	4	3

The minimum compressive strength of concrete of a particular class after 7 days of mixing shall not be less than 0.67 times the corresponding strength of concrete of the same class after 28 days of mixing.

4.02 ADMIXTURES

Admixtures shall not be used without the specific approval, in writing, of the Engineer.

4.03 MIXING CONCRETE

The weight of fine and coarse aggregate shall be adjusted to allow for the free water contained in it. The water to be added to the mix shall be reduced by the quantity of free water contained in the fine coarse aggregates. This shall be determined by a method to be approved by the Engineer, each day immediately before mixing begins, and further as he requires. Unless approval is obtained from the Engineer to batching by volume, the aggregates for all classes of concrete shall be batched by weight in separate fractions, allowance being made for the amount of water contained in the aggregate. When volume batching is permitted due allowance shall be made in addition for the bulking effect in the fine aggregate. Cement shall be added as a number of whole bags or weighed
separately in purpose-made cement batching equipment.

Concrete shall be mixed in a power-driven batch mixer which has been approved by the Engineer. The quantity of material in each batch shall not exceed the rated capacity of the mixer and the speed of rotation shall be within ± 1 revolution per minute of that recommended by the manufacturer.

For drum type mixers mixing shall continue for not less than 2 minutes after all materials are in the drum. When concrete is mixed in a truck mixer, all water shall be added at the site and mixing carried out for a period of at least 5 and not more than 30 minutes. Each batch shall be homogenous and completely discharged without segregation. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before any fresh concrete is mixed. Mixing plant shall be thoroughly cleaned before changing from one type of cement to another.

4.04 SAMPLING CONCRETE

The Contractor shall take samples of the concrete in accordance with British Standard 1381: Methods of Testing Concrete, for the purpose of making lest cubes and/or testing its consistency in accordance with Clause 12.03. The number, frequency and location of samples shall be decided by the Engineer.

4.05 TRANSPORT AND PLACING

Concrete shall be transported and placed as near to its final position as possible so that segregation or loss of the constituent materials does not occur.

Placing of Concrete - General:

All concrete shall be compacted and in its final position within 30 minutes of the water being added to the dry materials, and when carried in purpose-made agitators the time shall be not more than $1^1/_2$ hours after the introduction of the cement to the mix. If the temperature of the cement entering the mixer exceeds 66° C. the concrete shall be placed within 15 minutes.

4.06 COMPACTION OF CONCRETE

Concrete shall normally be compacted by vibration to produce a dense homogeneous mass. Mass concrete only may be hand- tamped. The method of applying vibration and the type of vibrator shall be approved by the Engineer.

4.07 CURING OF CONCRETE

Concrete shall be protected during initial hardening from the harmful effects of sun, wind, low temperature, rain and running water.

It shall be kept moist and protected in a manner approved by the Engineer for at least 7 days. No loading of any description will be allowed on concrete until permitted by the Engineer, who may then require supporting calculations to be submitted by the Contractor.

4.08 CONSTRUCTION JOINTS

Construction joints shall be formed at right angles to the axis of the member. Vertical joints shall be formed by the insertion of rigid stopping off forms. The position of any construction joints not shown on the Drawings shall be subject to the approval of the Engineer. In the absence of specified details, construction joints shall be at places of minimum shear stress and with joggle joints a right angles to the main reinforcement.

Bonding Concrete to that which has been in position for more than 4 hours but no longer than 3 days

The laitance film and porous layer shall be removed and the surface of the concrete cleaned with a wire brush and thoroughly washed with clean water. Immediately before

the fresh concrete is deposited the surface shall be covered with a layer of cement mortar of similar richness and consistency to that embodied in the concrete mix.

Bonding Concrete to that which is more than 3 days old:

The surface shall be chipped to expose the aggregate and thoroughly rinsed with clean water to remove loose particles. Immediately before the fresh concrete is deposited a slurry of neat cement with the consistency of thick cream shall be applied and well worked into the interstices of the prepared surface and followed by a layer of cement mortar of similar richness and consistency to that embodied in the concrete mix.

4.09 BENDING AND FIXING OF STEEL REINFORCMENT

The bending and cutting of all reinforcement shall be entirely in accordance with British Standard 4466: Bending Dimensions of Bars for Concrete Reinforcement. Cold-twisted steel bars and hot roiled high tensile steel bars shall be bent cold; other reinforcement may be bent hot or cold, but the steel shall not be heated to a temperature exceeding 845°C .(cherry red heat), nor shall it be cooled by quenching. The written consent of the Engineer is required for hot bending.

All reinforcement shall only be welded with the permission of the Engineer. The workmanship shall conform to the requirements of British Standard 5135: General Requirements for the Metal-Arc Welding of MM Steel, or British Standard 693: General Requirements for the Oxyacetylene Welding of Mild Steel.

All reinforcement shall be placed and maintained in the position shown on the Drawings. Where intersecting bars are tied together, 1.5 mm soft annealed iron wire shall be used, the ends of the wire being turned into the main body of the concrete. It shall be entirely free, both before and after placing in position of loose scale, rust, oil, grease, dirt or other foreign matter. It shall be secured and supported in position so that no significant movement occurs during placing of concrete. Reinforcement's spacers shall be submitted to the Engineer for approval.

No splices shall be made in the reinforcements except where shown on the Drawings or where approved by the Engineer.

4.10 FORMWORK FOR CONCRETE

Formwork shall include all temporary or permanent moulds for forming the concrete, together with all temporary construction required for their support. The form work must maintain the concrete in its correct position during placing, compaction, setting and hardening, without loss of any material, and provide against its own deformation under load. It shall be arranged to avoid overstressing any part of the existing structure from which it may be supported.

Immediately before concreting, the forms shall be thoroughly cleaned out, temporary openings being provided for the purpose. This inside surfaces shall then, if necessary, be coated with an approved material to prevent adhesion of the concrete, which must not come into contact with the reinforcement. Otherwise the surfaces shall be thoroughly wetted with clean water.

Removal of Formwork:

All formwork must be removed without damage to the concrete.

The minimum periods between concreting and the removal of formwork shall be as directed by the Engineer,

4.12 CONCRETE SURFACE FINISH

Unless otherwise shown on the Drawings, all permanently visible concrete surfaces shall have a smooth and dense finish of uniform texture free from holes, fins and shutter staining. All arises shall be clean and true. Minor blemishes shall be removed immediately after striking the framework by rubbing clown and holes filled with a cement arid suitable fine aggregate grout to match the colour of the concrete. The grout shall be well worked into the voids and cured in accordance with the Clause 11.07. Honeycombed concrete shall not be made good until inspected by the Engineer who shall give his consent to the proposed method of repair.

Faces of concrete intended to be rendered shall be chipped or roughened in an approved manner to provide a bond.

On no account may any finishing work to concrete surfaces be postponed to a later stage in the Works.

5.0. MASONRY AND BLOCKWORK

6.01 GENERAL

All masonry work shall be constructed from building stone as specified in Clause11.13.

For culvert headways and other small works, the stone shall, unless otherwise specified, be rough dressed. For walls, facing and other exposed works the stone shall, unless otherwise specified, be medium chisel-dressed.

5.02 WORKMANSHEP

The Contractor shall provide and use proper setting-out rods for all work.

Stones and blocks shall be well soaked before use and the tops of walls shall be kept wet as the work proceeds. The stones and blocks shall be properly bonded so that no vertical joint in a course is within 115mm of a joint in the previous course. Alternate courses of walling at angles and intersections shall be carried through the full thickness of the adjoining walls. All perpends, reveals and other angles of the walling shall be built strictly true and square.

The stones and blocks shall be bedded, jointed" and pointed in cement - sand mortar (1:3) in accordance with Clause 11.07 with beds and joints 9 mm thick flushed up and grouted solid as the work proceeds.

All work shall be cured in accordance with the relevant requirements for concrete works.

8.0 MATERIALS

8.01 CEMENT

Ordinary Portland cement and rapid-hardening Portland cement shall comply with the requirements of British Standard 12: Portland Cement (Ordinary and Rapid-hardening).

Sulphate resisting cement shall comply with the physical requirement of British Standard 12: Portland Cement (Ordinary and Rapid-hardening).

High alumina cement shall comply with the requirements of British Standard 915: High Alumina Cement.

White or coloured cement shall be of approved quality and chemical composition, and shall comply with the physical requirements of British Standard 12: Portland Cement (Ordinary and Rapid-hardening).

Cement shall be delivered in unbroken bags, barrels or by an approved bulk delivery vehicle.

Cement shall be stored in a dry weatherproof shed with a raised wooden floor, or in a silo, and shall be delivered in quantities sufficient to ensure that there is no suspension or interruption of the work of concreting at any time and if in sheds, each consignment shall be kept separate and distinct. Any cement which shall have become injuriously affected by damp or other causes shall at once be removed from the site. Cement should be used in rotation.

The Contractor shall furnish as directed by the Engineer test certificates relating to the cement to be used on the work. Each certificate shall indicate that the sample has been tested and analyzed by an approved laboratory and that it complies in all respects with the requirements of the appropriate Specification for the particular type of cement.

8.02 AGGREGATES FOR CONCRETE

Aggregates for concrete shall consist of naturally occurring material complying with the requirement of British Standard 882: Concrete Aggregates from Natural Sources.

A certificate as to compliance with the British Standard shall be provided by the supplier of the aggregate. Tests for the determination of impurities in the sand shall be made once daily until the Engineer is satisfied that the specified compressive strength is being regularly obtained, when, with his approval, such tests shall be made once weekly and at other times as directed by the Engineer.

The coarse aggregate, unless otherwise authorized by the Engineer, shall be delivered to the site in separate sizes, (two sizes when the maximum size is 20 mm and three sizes when the maximum size is 38 mm or more).

The Flakiness Index when determined by the sieve method described in British Standard 812 shall not exceed 35 for 65 mm and 38 mm aggregates nor shall it exceed 35 for 20mm and 10mm aggregates.

All aggregates brought upon the site shall be kept free from contact with deleterious matter and in the case of aggregate passing a 5mm sieve they shall have been deposited on site of mixing for not less than 16 hours before further use; aggregates of different sizes shall be stored in different hoppers, or different stacks on a clean hard surface and shall be separated from each other as approved by the Engineer.

8.03 SAND FOR MORTAR

(a) Sand for mortar shall be natural or crushed stone sand and shall be in accordance with British .Standard. 1198 -1200 where applicable to sands for general purpose mortars.

(b) The source of the sand is to be approved by the Engineer.

(c) At the Works the sand is to be stored on a clean, hard surface.

8.04 STONE DUST

Stone dust for blinding shall be blacktrap screened to the following grading:-

Passing 10mm sieve	100 %
Passing No. 4 sieve	85%-100%
Passing No. 100 sieve	5%- 25%

8.05 MURRAM

Murram shall be from an approved source quarried-so-.as to exclude vegetable matter, loam, top soil or clay and shall comply with, unless otherwise specified in this Specification, the requirements for gravel wearing course of the current Standard Specification for Road and Bridge Construction of the Ministry of Public Works and Housing of Kenya. The California Bearing Ratio (C.B.R.) of the Murram, as determined for a sample compacted to maximum density (as defined under British Standard. 1377) and allowed to soak in water for four days, shall not be less than 30. This C.B.R. is a guide to quality only and compaction in the work will be judged by density.

In the event that murram is not readily available in the immediate vicinity of the Works, the Contractor will be required to provide it and to pay for all haulage. The source of supply shall be approved by the Engineer before any material is brought to site.

8.06 WATER FOR CEMENT TREATED MATERIALS

If water for the work is not available from the public mains, the Engineer's approval must be obtained regarding the source of supply and manner of its use. Water to be used with cement or lime shall be free from salt, oil, alkali, organic matter and other deleterious substances. If the water is required to be tested, this shall be done in accordance with the requirements of British Standard 3148: Tests for Water for Making Concrete.

8.07 CEMENT - SAND MORTAR

Cement - sand mortar shall consist of proportions by volume as specified of Portland cement and natural sand or crushed natural stone or a combination of both as specified in British Standard 1198 - 1200: Building Sands from Natural Sources. The constituent materials shall be accurately gauged and mixed in an approved manner.

Cement - sand mortar shall be made in small quantities only as and when required, and any mortar which has begun to set or which has been mixed for a period of more than one hour shall be rejected.

8.08 HYDRATED LEME

Hydrated lime shall comply with British Standard 890: Building Limes, and shall be Class B of the semi-hydrated type.

8.09 LIME MORTAR

Lime mortar shall consist of proportions by volume as specified of hydrated lime and natural sand or crushed natural stone combination of both as specified for cement mortar in Clause 10.07. The constituent materials shall be accurately gauged and mixed in an approved manner.

8.10 CEMENT - LIME MORTAR

Cement-lime mortar shall consist of Portland cement, hydrated lime and natural sand or crushed natural stone or a combination of both, as specified for cement mortar in Clause 11.07. The constituent materials shall be accurately gauged and mixed by volume in an approved manner in the proportions specified.

Cement-lime mortar shall be made only in small quantities as and, when required and any mortar which has been mixed for a period of more than two hours shall be rejected.

8.11 CEMENT GROUT

Cement grout shall consist of Portland cement and water mixed in the proportion of one part by volume of cement and one-and-a-half parts by volume of water. The grout shall be used within one hour of mixing.

8.12 STEEL REINFORCEMENT FOR CONCRETE

Mild steel and hot-rolled high tensile steel rod reinforcement for concrete shall be as specified in British Standards 4449, 4482: Rolled Steel Bars and Hard Drawn Wire for concrete Reinforcements. Cold-twisted high tensile bars shall be as specified in British Standard 4461 Metric Units: Cold-twisted Steel Bars for Concrete Reinforcement. Steel fabric reinforcement shall be as specified in British Standard 4483: Steel Fabric for Concrete Reinforcement, and shall be delivered to the site in mats, unless the Engineer allows otherwise, and free from any permanent set tending to make it curl under vibration.

The Contractor shall furnish the Engineer with copies of the manufacturer's certificates of tests for the steel reinforcement to be supplied. The Engineer may, however, order independent tests to be made and any steel which does not comply in all respects with the appropriate foregoing Specifications will be rejected.

8.13 CONCRETE SLABS FOR OPEN DRAINS

Precast concrete slabs for lining open drains shall be manufactured to the detail Drawings supplied from concrete class specified using maximum 12mm size aggregate. If required, cube test certificates shall be supplied by the manufacturer.

8.14 AGRICULTURAL TILES AND PIPES

Agricultural tiles and pipes shall be well burnt earthenware, true and circular in bore with an externally fiat bottom and plain ends suitable for laying with open or butt joints.

8.15 MANHOLE COVERS AND FRAMES

Manhole covers and frames shall be basically in accordance with the requirements of British Standard. 497: Cast Manhole Covers, Road Gulley Gratings and Frames for Drainage Purposes, except that the manhole covers shall be constructed of mild steel, concrete filled, in accordance with detail Drawings.

Foul water sewer manholes shall have triangular Grade 'A' heavy duty covers and frames. Circular manhole covers and frames shall be used on surface water sewer manholes.

8.16 MANHOLE STEP - IRONS

Step-irons shall be galvanized malleable iron and shall comply with the requirements of British Standard 1247:F/ie!ieabie Step - irons. Step-irons to be built into in-situ concrete shall be of general-purpose type and weighing not less than 2.2kg. Those to be built into precast concrete manholes shall be of pre-cast concrete manhole pattern.

8.17 TIMBER

Timber shall be sound, well seasoned and entirely free from worm, beetle, warps, shakes, splits, and ail forms of rot and deadwood. Where required, all timber shall be treated with creosote, as specified in British Standard 144: Coal Tar Creosote for the Preservation of Timber, or an alternative approved timber preservative.

8.18 uPVC PIPES

P.V.C pipes shall comply with British Standard 3505 and shall be of the type and class as specified on the Drawings or the Bills of quantities. The joint shall employ a flexible rubber ring which shall meet the requirements of British Standard 2494. Laying, jointing and testing shall generally be carried out according to the relevant Clauses of this Specification and all as per the manufacturer's instructions.

3.0 SCHEDULE OF CONTRACT DRAWINGS

DRAWING NO.	DRAWING TITLE
SD/10753A/001	CIVIL LAYOUT PLAN
SD/10753A/001B	ROAD LONGITUDINAL PROFILE
SD/10753A/002	CIVIL WORKS STANDARD DETAILS
	ROAD CROSS SECTIONS

NOTE:

Tenderers are advised to inspect the drawings at the office of the **Chief Engineer (Structural),** MINISTRY OF TRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT- STATE DEPARTMENT OF PUBLIC WORKS, Hill Plaza Building, 2nd floor, along Ngong Road, Nairobi, during normal working hours.

SECTION F

SPECIAL SPECIFICATIONS

OF

MATERIALS AND WORKS

SPECIAL SPECIFICATION

01. SITE LOCATION

The site of the proposed works is in KENANIE - Machakos **County.**

i) SCOPE OF WORKS

The works to be carried out under this contract comprise supply, installation, testing and commissioning of the work described under (ii) below.

ii) DESCRIPTION OF WORKS

The main works involves completion of Civil Works

The main items of work are as follows: -

a) **Construction of Access Road and Parking.**
b) **Construction of Storm Water Drainage system.**
c) **Construction of Footpaths**
d) **Construction of Access ramps**
e) **Construction of Foul Drainage System.**
f) **Construction of Retaining Wall**

N/B: The works entails civil works around the 2,500m^2 warehouse, parking with its assorted civil works, drainage and the 480m Access road.

iii) SITE VISIT

The contractor shall visit the site to acquaint himself with topography, soil condition, access, sources of construction materials, reliability of water source, periods during which execution of work will be possible etc. and no claims incurred due to lack of knowledge of the said and other site conditions will be considered.

iv) ACCESS TO SITE

The site can be approached by road off Lukenya, Mombasa road.

v) DRAWINGS

All drawings are deemed to be self-explanatory. However, where doubts exist, the sub-contractor should liaise with the Engineer before proceeding with the works. The scales are as shown and only figured dimensions are to be applied.

vi) ENGINEER'S STATIONERY

The tenderer shall be required to provide stationery, as described in schedule I of Bills of Quantities, to be used by the Engineer in running of the project.

vii) SITE OFFICE

The Main contractor shall be required to construct and maintain a site office for the Project Manager and his team together with all standard furniture, fittings and telephone. The contractor shall be responsible for paying all connections, rent and call charges in connection therewith.

iii) LABOUR CAMP

The Main Contractor is not permitted to house labour on site. He will be responsible for the transportation of workmen to and from site at his own cost and risk.

02. THE MANAGEMENT OF THE CONTRACT

1. The **Works Secretary- State Department of Public Works of the MINISTRY OFTRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT** will be responsible for the contract management and site supervision.

2. All materials and workmanship shall comply with the latest edition of the MINISTRY OFTRANSPORT, INFRASTRUCTURE, HOUSING AND URBAN DEVELOPMENT -STATE DEPARTMENT OF PUBLIC WORKS specifications for Works.

03. EXTENT OF CONTRACT AND ALTERATION OF DESIGN

1. The works specified under this contract shall include all general work preparatory to execution of all matters, things, requisites and work of any kind necessary for the due and satisfactory construction, completion and maintenance of the work to the intent and meaning of the drawings and this specification and further drawings and orders, that may be issued by the Engineer from time to time. Compliance by the Contractor with all the General Conditions of Contract, whether specifically mentioned or not in the clause of this specification, all materials, apparatus, plant, machinery, tools, fuel, water, timbering and tackle of every description, transport, offices, stores, workshops, staff, labour, the provision of proper and sufficient protective works, temporary fencing, lighting and watching required for the safety of the public and protection of the works and adjoining lands: first aid equipment, sanitary , accommodation for the staff and workmen; the effecting and maintenance of all insurances, the payment of all wages, salaries, fees, royalties, duties or other charges arising out of the execution of the works and the regular clearance of rubbish. re-instatement and clearing and leaving perfect on completion. The Contractor will be deemed to have included in his rates the cost of complying with the requirements of this Specification and General Conditions of the Contract unless otherwise specified.

2 Should the Contractor have comments regarding soundness of the design of any part of the work, or should he consider that the execution of the design is impossible on any part of the, Contract, the Contractor is required to notify the Engineer in writing at the time of the tender and provide factual evidence substantiating his opinion when required to do so by the Engineer.

3. Notices given by the Contractor in respect of the above after the tender is submitted will not be considered as the basis of a claim for additional costs or extensions of the time.

4. The Engineer may require to alter the design of *any* part of the structure should site conditions warrant such a change and the rates entered in the Bill of Quantities should be applicable for the similar items. The rates for the items of the work not covered by the Bill of Quantities shall be established by the Engineer.

04. PROGRAMME FOR EXECUTION OF THE WORKS

1. In accordance with the terms of Clause 14 of the General Conditions of the Contract, the Contractor shall submit to the Engineer within 14 days from the order to commence fully detailed programme showing

the order, procedure and method by which he proposes to carry out the construction and completion of the works.

2. The information to be supplied to the Engineer shall include drawings showing the general arrangement of the temporary offices and any other temporary structures, which the Contractor proposes to use together with details of the construction plant and temporary works and all other devices, which he proposes to adopt for the construction and completion of the whole of the works, and in addition to details of the labour strength, skilled and unskilled, and supervision arrangements.

3 The Order in which it is proposed to execute the permanent works is subject to adjustment and approval by the Engineer and the Contract Price shall be held to include for any reasonable and necessary adjustment required by the Engineer during the course of the Works.

4 The Contractor will be deemed to have considered the effect of seasonal weather variations, when programming his operations it must be dearly understood, that rains of up to 75mm per day will be deemed to be normal and expected. No claims by the Contractor for extension of time due to rains or floods less than 75mm per day as measured by the Meteorological Department will be considered by the Engineer.

5. The Contractor, when preparing his programme has to consider the time for the delivery of any imported material and the Engineer's normal working hours.

6. The Engineer's normal working hours shall be defined as 8a.m. to 5p.m. on weekdays with Saturdays and Sundays set aside for rest. If the Contractor wishes to execute permanent works outside these hours, he shall obtain the written permission of the engineer to make provision for supervision of such works.

7. The Contractor shall carry out the Contract in accordance with the Programme agreed with the Engineer, but he shall in no manner be relieved by the Engineer's approval of the programme of his obligations to complete the works 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 fulfill his obligations.

8. If in the opinion of the Engineer the plant or the equipment used by the Contractor for any specific item of the work does not fulfill the requirements of the specifications in respect of the workmanship, quality and safety of structures, sum items of plant and equipment shall be replaced with similar or equivalent items of plant or equipment to the satisfaction of the Engineer. No extra payment will be made in respect of such replacements.

05. TEMPORARY WORKS

1. After the Contract is placed and before the work commences, the Contractor shall submit to the Engineers drawings showing the general arrangement of his offices, quarters, workshops, etc and other temporary works with diagrams and descriptions showing how he proposes to execute such temporary works and how they fit into his programme for the permanent works, all to be subject to adjustment and approval by the Engineer.

2. The Contractor shall be fully responsible for the sufficiency, stability and safely of all temporary works and their care in accordance with the Conditions of Contract.

3. The Contractor shall at *his* own expense, supply in advance to the Engineer for his approval detailed drawings and calculations of stability of such temporary works as the Engineer may direct, but no approval given or implied by the Engineer shall relieve the Contractor of his responsibilities in connection with the temporary works

4. Unless otherwise instructed, upon completion of the contract and after receiving approval in writing from the Engineer, the Contractor shall take down and remove all structures forming part of his own camp and that of the Engineer, and shall arrange for the disconnection of water supply, remove all drains and culverts, backfill trenches, fill in all latrine pits, soakaway and other sewage disposal excavations, with the exception of items and services to revert to the ownership of the Employer and shall restore the site as far as practicable .to its original condition and leave it neat and tidy to the satisfaction of the Engineer.

06. SITE PERSONNEL

1. The Engineer will require the Contractor to submit a list of professional and sub-professional personnel to be employed on the site stating their qualifications and experience.

2. The Contractor shall be responsible for ensuring, that all personnel of Non-Kenyan origin employed on site by himself or his Contractors or who are otherwise connected with the construction contract through the Contractor must be approved and cleared individually in writing by the appropriate Government Official to work on the project. Where personnel are not approved, the Contractor shall be responsible at his own expense for obtaining and employing suitable and approved personnel.

3. The Engineer reserves the right to determine suitability of the persons employed by the Contractor and may request replacement at any time of any member of the team employed by the Contractor. If in the opinion of the Engineer the presence of such a person is deleterious to the execution of the Contract, the Engineer's decision is final and binding.

4. The Site Agent to be a competent person approved by the engineer.

5. The Contractor shall always keep a literate English speaking Agent or Engineer as his representative on the site, competent and experienced *in* the type of works Involved, who shall give his whole time to the Supervision of the Contractor's operations.

    5. The name of such Agent or Representative shall be submitted in writing to the Engineer for approval and he shall receive on behalf of the Contractor all directions and instructions from the Engineer or his representative and such directions and instructions shall be deemed to have been given to the Contractor in accordance with the conditions of contract.

07 NOTICE OF OPERATIONS

1. No important operations shall be carried out without the consent of the Engineer in writing, or without full and complete notice also in writing, being given to the Engineer by the Contractor sufficiently in advance of the time of the operation as to enable the Engineer to make such arrangements, as he may deem necessary for its inspection.

2. The Contractor shall supply, from time to time, to the Engineer in writing, full information with respect of locations in whim the work is being prepared.

3. The Contractor shall give the Engineer not less than 24 hours notice of his intentions to set out or give levels for any part of the works, in order that arrangements may be made for checking. The Contractor shall carefully preserve any benchmarks, setting out pegs or other line or level markings installed or made by the Engineer. Working shall be suspended for such times as may be necessary for checking the lines and levels on any part of the work.

08 SETTING OUT

1. It will be the responsibility of the Contractor to obtain before commencing work the value and location of the benchmarks to be used for the works from the Engineer. All temporary benchmarks will be referred hereto. The Contractor shall construct such temporary benchmarks as the engineer may direct and agree the level thereof with the Engineer. The establishment of such temporary benchmarks will be deemed to be part of the Contractor's responsibility in setting out the works and no additional payment will be allowed.

2. Should the Contractor discover any error in the alignment or levels of the basic setting out, he shall at once notify the Engineer, who will then issue amended drawings or instructions regarding the correction of the error.

3. All approved setting out points, lines, stations etc shall be marked by concrete markers and steel pegs or as otherwise approved by the Engineer.

4. The contractor shall allow in the Bill of Quantities for complying with the provisions of this Clause and any abortive setting out occasioned by errors in the alignment of levels of the Contractor's basic setting out.

11. HEALTH AND SAFETY ON SITE

1. The Contractor shall ensure, so far as is reasonably practicable and to the satisfaction of the Engineer, the health, safety and welfare at work of his employees including those of his sub-contractors and of all other persons on the site.

2. From the time any portion of the works is commenced, until the end of the maintenance period, the Contractor shall be responsible for protecting the public from anything

dangerous to persons or property and for the safe and easy passage of pedestrians and vehicular traffic.

3. The Contractor shall designate one of his senior staff, who shall have specific knowledge of safety regulations and experience of safety precautions on similar works and who shall advise on matters affecting the safety of workmen and on measures to be taken to promote safety in compliance with the factories Act Cap. 514 as a safety officer.

4. The Contractor shall provide protective clothing and equipment, first aid stations with such personnel and equipment as are necessary. The appropriate information, instruction, training and supervision will be arranged by the Contractor to ensure the safety and health of all the persons employed on the works, all in accordance with the laws of Kenya.

5. The Contractor shall provide adequate waterborne sanitation and refuse collection and disposal complying with the laws of Kenya and all local by- laws, and to the satisfaction of the Engineer, for all houses, offices, workshops erected on site. Construction of pit latrines will not be permitted unless the Engineer has given his approval in writing.

6. During the period of execution of the works the Contractor shall ensure that no pollution of existing water courses or of reservoir catchment areas is allowed to take place as a result of his operation.

7. 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 for a duration of contract a fully equipped dispensary. This shall be with a qualified Clinical Officer who shall offer the necessary medical advice on AIDS/HIV and related diseases to Engineers and Contractors site staff. The contractor shall allow for all costs of providing these facilities in his rates.

12. PRIVATELY OWNED AND PUBLIC UTILITY SERVICES

1. The Contractor shall make himself acquainted with the position of all existing works and services inter alia sewers, storm water drains, cables for electricity and telephone and lighting poles and water mains before any excavation commences.

1 The Contractor will be held responsible for damage caused in the course of the execution of the works to some existing works and services and shall indemnify the Employer against any claims arising from such damage (including consequential damages). Any damage caused must be made good at the Contractor's own expense.

2 Such existing works and services, where exposed the execution of the works, must be properly shored, hung-up and supported to the satisfaction of the Engineer and of the Authority concerned. The Contractor shall exercise special care, when refilling trenches or other excavations around some existing works / services.

3 Poles supporting cables, etc adjacent to the works will be kept securely in place, until the work is completed and will then be made as safe and permanent as before.

4 Notwithstanding the foregoing requirements and without lessening the Contractor's responsibility, the contractor shall inform the Engineer immediately when existing works

have been exposed and conform to any requirements of the Authority concerned and of the Engineer.

5 Any damage to or interference with existing services occasioned during the progress of the works, will be deemed to be the responsibility of the Contractor' who shall undertake to make good at his own expense any damage so caused to the existing underground services or other features, and shall be liable in respect of all claims arising from such damage or interference, however occasioned.

6 Only when and as directed by the Engineer the position of an existing work or service can be changed by the Contractor to meet the requirements of the proposed work. The cost of such work will be paid for on a day work basis, except where a specific item has been provided in the Bills of Quantities.

13. EXISTING ROADS AND ACCESSES

1. The Contractor shall comply with all requirements of the Employer, owners or the competent Authority concerning the use of traded equipment or other construction plant on any public or private road.

2. The cost of providing all *diversions,* signs, operators, flagment and all reinstatement to *the* approval of the Engineer will be deemed to be included in the rates entered in the Bill of Quantities, as will the cost of any road opening permit.

3. Before excavating across any public road, the Contractor shall give 10 days notice in writing to the Engineer and the Local Authority his intention to excavate. He shall satisfy the Engineer, the Local Authority and the Police as to the precautions he proposes to take and the signs and lights to be provided and operated. On *any* road or track at least 4 red lights shall be suitably placed on either side of the trench and diversions shall be clearly marked, signed and maintained.

4. The Contractor shall further give to the Engineer a 24 hours notice before excavating across a private road. Existing access to lands, property and all other things will be maintained by the Contractor during the continuance of the Works to the Engineer's satisfaction. The cost of such maintenance will be deemed to be covered by and included in the rates entered on the Bills of Quantities.

5. When a road, used *by* the -Contractor for transporting labour or construction plant or for delivery of any materials for the works, is dosed under Section 71 of the traffic ordinance 1962 or amendments thereto, the Contractor shall obey such closure and shall use alternative roads.

14. COMPLIANCE WITH STATUTES AND REGULATIONS

1. In addition to the requirements of Clause 26 of the General Conditions of Contract, the Contractor shall be responsible for acquainting himself with all current valid statute ordinances or bye-laws or building regulations, which may affect the Works and shall include in his rates for all costs arising from compliance with the same. This applies in particular to the training levy and similar taxes for which no claims on the part of the Contractor will be entertained-

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

3. The Contractor's attention is drawn to legal Notice No.237 of October, 1971, which requires payment by the sub-Contractor for Training Levy at the rate of 0.25% of the Contract sum on all contracts of more than KSh50,000.00 value and his tender must include for all costs arising or resulting thereof. The Contractor without delay shall pay the Training levy. The original receipt shall be given to the Engineer for verification. The Engineer will certify no payment certificate, until the Contractor complies with the above legal notice.

15. WATER SUPPLY

1. The Contractor shall provide clean and sufficient supply of fresh water both for construction of the works and for all offices and workshops, etc. includes the arrangement of pipe lines, metres, etc for connecting to local water main, the provision of storage tanks or water conveyance where necessary, payment of all fees and water charges.

2. The water shall be reasonably clear of suspended solids and free from any matter in quantities considered by the Engineer to be deleterious to the proposed work. Water supplied to the Engineer's offices, laboratories, etc. shall be drinkable to the satisfaction of the Medical Officer in the area. No separate payment shall be made for the provision of water or its attendant facilities and the Contractor shall allow for all these in his tender rates.

3. In the event that a water main is not available on or rear the site, or that any available mains will not have sufficient capacity to provision of water adequate for the works, then the Contractor shall provide temporary tanks or other means of collecting, storing and distributing water on the site.

17. LIGHTING, POWER AND TELEPHONE

1. The Contractor shall make his own arrangements for the supply of light, power and telephone required for the construction of the works and shall pay all fees and charges in connection therewith.

2 The Contractor shall arrange with the appropriate authority for a temporary meter and supply of electricity and provide all temporary wiring, power and lighting points as he may consider necessary In the event no fixed electricity being available, the Contractor shall provide the necessary power generating plant his own expense.

18. WORKING AREA

I. The Contractor shall restrict his operations to those areas made available to him by the Engineer and shall at all times provide and maintain an adequate access for the Employer's employees and vehicles to carry out their normal duties in and around the existing works.

2. The Contractor shall, before entering upon any land purchased, rented, or for the use of which compensation has been paid, ensure that all formalities have been completed and the agreement of the Owner, Tenant and the Engineer has been obtained.

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

19. CO-ORDINATION OF THE WORKS

I. The Employer reserves the right to execute works on the site which are not included in this Contract. He will employ for this purpose either his own employees or another Contractor. The Contractor shall ensure that neither his own operations nor trespass by his employees will interfere with the operations of the Employer nor his Contractor employed on such works.

2. The Contractor will be required to carefully co-ordinate his activities and work, both on and off site, with the activities and work of the other Contractors, Sub-Contractors, statutory, undertaking and all supervisory staff for the works appointed by the Employer. He shall allow all works to proceed without undue hindrance and will cooperate to expedite execution of the works.

3. If any dispute or difference of any kind whatsoever shall arise between the Contractor or statutory undertaking regarding the phasing, progress or execution of the works then the Engineer shall have full power to direct in what order the works, or any portion thereof shall be carried on or completed and he may from time to time require the whole or any portion of the works to be discontinued or the execution thereof postponed for such a period as he may think fit.

4. The Contractor shall respect any works executed by others and articles supplied or installed by others and will be held responsible for any loss or damage thereto, if caused by him or his Contractors.

20. COPIES OF ORDERS AND TEST CERTIFICATES

I. Before entering into any Contract for the supply of any material or article the Contractor shall obtain the Engineer's approval in writing of the Contractor from whom he proposes to obtain such materials or goods. Should the Engineer at any time be dissatisfied with such materials or goods or with the method of operations carried out at such Contractor's works or place or business, he shall be empowered to cancel his previous given approval of sub-contract and shall specify any other supplier whom he may choose, or shall approve another sub-contractor for the supply of such materials or goods. The Contractor shall then obtain such said materials or goods from such other

supplier and shall bear any additional cost thereof, together with the costs and consequences of replacing any unsatisfactory materials already incorporated in the work.

2. The Contractor shall deposit with the Engineer samples of materials and manufactured articles including the manufacturer's specification, when and where appropriate.

3. When instructed by the Engineer, the Contractor shall submit test-certificates from the suppliers of the materials and goods to be used for the contract to the Engineer. 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 tests carried out. The Contractor shall provide adequate means of identifying the materials and goods delivered to the site with the corresponding certificates.

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

5. All materials and manufactured articles shall be stored on site in a manner acceptable to the Engineer. The Contractor shall carefully protect from weather and vermin all work, materials and manufactured articles, which may be affected.

21. PROGRESS PHOTOGRAPHS AND RECORD DRAWINGS

1. Colour negatives showing the progress of the works shall be taken every month by the Contractor from positions to be selected by the Engineer. The Contractor shall supply proof prints of each negative from which the Engineer shall select negatives. The Contractor shall produce 2No. sets of those selected colour prints which shall be handed over to the Engineer together with all the negatives. Each photograph shall be marked with the number of negative and a statement shall be submitted giving location and date when taken and a brief description or title.

2. The photographs shall be mounted on A4 loose-leaf sheets, minimum 200g, with transparent plastic sheets...

3. After the work has been completed, the Contractor shall furnish as built drawings, showing the works as constructed together with all other information that may either be required or be useful for the operation and maintenance of the works in the future, such as alignment and depth of cover of pipelines, type of soil, rock levels, type, dimensions and location of structures, size of pipelines and cables encountered during excavation

4. All drawings shall be A 1 in size to the ink border and drawn on a permatrace paper.

26. SITE MEETINGS

The Main Contractor to provide for monthly site meetings to be held on site, and where the sub-Contractor(s) will be expected to attend.

STANDARD FORMS

NOTE:

1.0 Tenderers ***must*** duly fill these Standard Forms as a mandatory requirement.

PERFORMANCE BANK GUARANTEE

To:
Chief Executive Officer,
Kenya Leather Development Council (KLDC)
P.O Box 30418-00100,
NAIROBI -KENYA

Dear Sir,

WHEREAS ..... (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. ..... dated ..... to execute

CONSTRUCTION OF LEATHER INDUSTRIAL SHEDS FOR LEATHER GOODS MANUFACTURE AND ASSOCIATED INFRASTRUCTURE AT KENANIE LEATHER INDUSTRIAL PARK; KENANIE EPZ SITE, MACHAKOS COUNTY, CIVIL WORKS. W.P ITEM NO. D117/EN/MKS/1902 JOB NO 10753A

hereinafter called "the Works");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognised bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of:
Kshs. ..... (*amount of Guarantee in figures*)
Kenya Shillings .....
.....(*amount of Guarantee in words*),
and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of Kenya Shillings .....
..... (*amount of Guarantee in words*) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any change, addition, or modification.

This guarantee shall be valid until the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR .....

Name of Bank .....

Address .....
Date .....

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of Tenderer:

   .....

2. Full address of Tenderer to which tender correspondence is to be sent (unless an agent has been appointed below):

   .....

3. Telephone number (s) of Tenderer:

   .....

4. Telex/Fax Address of Tenderer:
   .....

5. Name of Tenderer's representative to be contacted on matters of the tender during the tender period:
   .....

6. Details of Tenderer's nominated agent (if any) to receive tender notices. This is essential if the Tenderer does not have his registered address in Kenya (name, address, telephone, telex):

   .....

   .....

.....

Signature of Tenderer

Make copy and deliver to:
THE PRINCIPAL SECRETARY-STATE DEPARTMENT OF PUBLIC WORKS,
MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT –
P.O. Box 30743-00100
NAIROBI

CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2(c) and (2d) whichever applies to your type of business.

You are advised that it is a serious offence to give false information on this Form.

Part 1 – General

Business Name .....

Location of business premises: Country/Town.....

Plot No..... Street/Road .....

Postal Address..... Tel No.....

Nature of Business.....

Current Trade Licence No..... Expiring date.....

Maximum value of business which you can handle at any time:
Kenya Shillings.....

Name of your bankers.....

Branch.....

Part 2 (a) – Sole Proprietor

Your name in full..... Age.....

Nationality..... Country of Origin.....

Citizenship details .....

Part 2 (b) – Partnership

Give details of partners as follows:

	Name in full	*Nationality*	*Citizenship Details*	*Shares*
1.	.....	.....	.....	.....
2.	.....	.....	.....	.....
3.	.....	.....	.....	.....
4.	.....	.....	.....	.....

Part 2(c) – Registered Company

Private or Public .....

State the nominal and issued capita of the company:

Nominal KShs. .....

Issued KShs. .....

Give details of all directors as follows:

	Name in full	*Nationality*	*Citizenship Details**	*Shares*
1.	.....	.....	.....	.....
2.	.....	.....	.....	.....
3.	.....	.....	.....	.....
4.	.....	.....	.....	.....

Part 2(d) Interest in the Firm:

Is there any person/persons in the employment of the Government of Kenya who has interest in this firm? Yes/No ..... (Delete as necessary)

I certify that the above information is correct.

.....	.....	.....
Title	Signature	Date

* *Attach proof of citizenship*

KEY PERSONNEL

Qualifications and experience of key personnel proposed for administration and execution of the Contract.

POSITION	NAME	YEARS OF EXPERIENCE (GENERAL)	YEARS OF EXPERIENCE IN PROPOSED POSITION
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.			

I certify that the above information is correct.

....

Title Signature Date

CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS

Work performed on works of a similar nature, complexity and volume over the last 5 years.

PROJECT NAME	NAME OF CLIENT	TYPE OF WORK AND YEAR OF COMPLETION	VALUE OF CONTRACT (Kshs.)

I certify that the above works were successfully carried out and completed by ourselves.

....

Title Signature Date

SCHEDULE OF ON-GOING PROJECTS

Details of similar on-going or committed projects, including expected completion date.

PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETE	COMPLETION DATE

I certify that the above works are currently being carried out by ourselves.....

....

Title Signature Date

LITIGATION STATUS

Give full information and particulars of your company's litigation history and the nature of any litigation.

You are advised that it is serious a offence to give false information on this form.

Client	Contract Name	Contract Sum	Commencement Date	Completion Date	Date of Litigation

N.B. Indicate ``NONE" in case your company does not have any litigation history.

NATURE AND DETAIL OF LITIGATION

Note: More sheets may be attached if necessary.

....

(Signature of Contractor) (Date)

FORM OF WRITTEN POWER-OF-ATTORNEY

The Tenderer consisting of a joint venture shall state here below the name and address of his representative who is authorized to receive on his behalf correspondence in connection with the Tender.

.....

(Name of Tenderer's Representative in Block Letters)

.....

(Address Tenderer's Representative)

.....

(Signature of Tenderer's Representative)

CERTIFICATE OF TENDERER'S OR REPRESENTATIVES VISIT TO SITE

1. This is to certify that I , ...

   .....(Name of Tenderer or his Representative)

   of the Firm of .....

   ..... (Name of the Firm Tendering)

2. Having previously studied the Bidding Documents I carefully examined the site.

3. I have made myself familiar with all the local conditions likely to influence theTender and the cost thereof.

4. I further certify that I am satisfied with description of the scope of the study and that I understand perfectly the work to be done as specified and implied in the Conditions of this Invitation to Tender.

5. I also confirm that M/S .....

   .....Will Perform the contract in accordance with the Terms and Conditions of this Invitation to Tender.

Signed .....(Tenderer or his Representative)

Witness .....

Signature .....

Date .....

BANK GUARANTEE FOR ADVANCE PAYMENT

To..... (*Name of Employer*)
..... (*Date*)
..... (*Address of Employer*)

Gentlemen,
Ref :.....(*Name of Contract*)

In accordance with the provisions of the Conditions of Contract of the above-mentioned Contract,.....(*Name and Address of Contractor*) (hereinafter called ``the contractor'') shall deposit with.....(*Name of Employer*) a bank Guarantee to guarantee his proper and faithful performance under the said contract in an amount of Kshs.....(*Amount of Guarantee*).....(*Amount in Words*)
We, the.....(*Bank or Financial institution*), as instructed by the contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to .....(*Name of Employer*) on his first demand without whatsoever right of objection on our part and without his first claim to the contractor, in the amount not exceeding Kshs.....(*Amount of Guarantee in Figures*) Kenya shillings.....(*Amount of Guarantee in Words*), such amount to be reduced periodically by the amounts recovered by you from the proceeds of the contract.

We further agree that no change or addition to or other modification of the terms of the contract or of the Works to be performed thereunder or of any of the contract documents which may be made between ..... (*Name of Employer*) and the contractor, shall in any way release to us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

No drawing may be made by you under this guarantee until we have received notice in writing from you that an advance payment of the amount listed above has been paid to the Contractor pursuant to the contract.

This Guarantee shall remain valid and in full effect from the date of the advance payment under the contract until.....(*Name Of Employer*) receives full payment of the same amount from the contract.

Yours Faithfully,

Signature and Seal.....
Name of the Bank or Financial Institution.....
Address.....
Date.....
Witness: Name:.....
Address:.....

Signature:.....Date:.....

STATEMENT OF FOREIGN CURRENCY REQUIREMENTS

In the event of our Tender for the execution
of.....
.....(*Name of Contract*)
Being accepted, we would require in accordance with Clause 60(1) of the conditions of Contract, which is attached hereto, the following percentage;
(*Figures*).....
(*Words*)..... Of the Contract sum, (*Less Variation of price*) to be paid in foreign currency.

Currency in which foreign exchange is element is
required.....
.....

Date: The.....Day of.....20.....

Enter 0%(Zero percent) if no payment will be made in foreign currency. Maximum foreign currency requirement shall be.....(percent) of the Contract Sum, (*Less Variation of price*).

.....
(Signature of Tenderer)

.....
(Date)

DETAILS OF SUB-CONTRACTORS

If the Tenderer wishes to sublet any portions of the Works under any heading, he must give below details of the sub-contractors he intends to employ for each portion. Failure to comply with this requirement may invalidate the tender.

1) Portion of works to be sublet:
   .....
   .....
   i. Full Name of sub- contractor:
      .....
      .....
      and name of head office:
      .....
      .....
   ii. Sub-contractors' experience of similar works carried out in the last 3 years with contract value:
      .....
      .....

2) Portion of works to be sublet:
   .....
   .....
   i. Full Name of sub-contractor:
      .....
      .....
      and name of head office:
      .....
      .....
   ii. Sub-contractors' experience of similar works carried out in the last 3 years with contract value:
      .....
      .....

(NOTE: - The above list may be extended depending on the number of sub-contractors required.)

....

(Signature of Tenderer) (Da

SCHEDULE OF PLANT AND EQUIPMENT

Note: Details of each machine/equipment is more than one of the same make or type must be given separately.
Item to be imported pursuant to clause 78(1) of the conditions of contract to be indicated together with the seller's name, address and CIF value @ details of proposed hire or hire purchase to be submitted giving names and addresses of hiring/selling party and serial number/engines number before the award of contract, the Engineer or his representative may carry out physical verification of the availability of the plant and equipment listed on the schedule.

SCHEDULE OF UNIT RATES

SCHEDULE OF UNIT RATES

1. The tenderer shall insert unit rates against the items in the following schedules and may add such other items as he considers appropriate.
2. The unit rates shall include for supply, transport, insurance, delivery to site, storage as necessary, assembling, cleaning, installing, connecting, profit and maintenance in defects liability and any other obligation under this contract.
3. The unit rates will be used to assess the value of additions or omissions arising from authorised variations to the contract works.
4. Where trade names or manufacturer's catalogue numbers are mentioned in the specification, the reference is intended as a guide to the type of article or quality of material required. Alternative brands of **equal** and **approved** quality will be accepted.

SCHEDULE OF MATERIALS:-BASIC PRICES

MATERIALS	UNIT	ORIGIN AND PRICE			TRANSPORT COST FROM SOURCE OF ORIGIN IF ANY	
Cement	Mg					
Lime	Mg					
Pen Grade 80/100 Bitumen	L					
Diesel	L					
Regular Petrol	L					
Super Petrol	L					
Reinforcement steel	Mg					
Oil and Lubricants	L					
MC 30	L					
K70	L					
Aggregate	Ton					
River Sand	Ton					
150mm dia concrete.pipe	m					
300mm dia concrete.pipe	m					
450mm dia concrete.pipe	m					
225mm dia concrete.pipe	m					
Kikuyu grass	SM					
Red soil mixed with manure (1:3)	SM					
457mm dia.x912 road gulley	No.					

Note

Prices of imported materials to be quoted CIF Mombasa as appropriate regardless of whether materials are imported by the tenderer directly or through a local agent.

SCHEDULE OF LABOUR: - BASIC RATES

LABOUR CATEGORY	MONTH/SHIFT/ HOUR	RATE

Categories to be generally in accordance with those used by the Kenya Building Construction and Engineering and Allied Trades Workers' Union.

SECTION I

BILLS OF QUANTITIES

BILLS OF QUANTITIES

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. In accordance with Government policy, the tenderer is required to calculate all government taxes (e.g **VAT**) to be included in the tender amount.

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part.

4. The brief description of the items given in the Bills of Quantities is for the purpose of establishing a standard to which the Contractor shall adhere to. Otherwise alternative brands of **equal** and **approved** quality will be accepted.

5. Should the Contractor install any material not specified herein before receiving **approval** from the Project Manager, the Contractor shall remove the material in question and, **at his own cost**, install the proper material.

6. The grand total of prices in the price summary page must be carried forward to the **Form of Tender**. In case of a discrepancy between the Bill Summary and the Form of Tender, the Form of Tender shall take precedence.

7. Tenderers must enclose, together with their submitted tenders, detailed coloured manufacturer's Brochures detailing Technical Literature and specifications on all the equipment they intend to offer.

CONSTRUCTION OF LEATHER INDUSTRIAL SHEDS FOR LEATHER GOODS MANUFACTURE AND ASSOCIATED INFRASTRUCTURE AT KENANIE LEATHER INDUSTRIAL PARK, KENANIE EPZ SITE, MACHAKOS COUNTY W.P ITEM NO. D117/EN/MKS/1902 JOB NO 10753A

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 01: ACCESS ROADS , PARKING AND FOOTPATHS				
	ROADWORKS AND PARKING				
	SITE CLEARANCE				
1.01	Clear site of all bushes, grass, grub up and cart away	SM	14,300		
	EXCAVATIONS				
1.02	Excavate for driveway , parking and drainage areas to formation level, average depth 1.5m and heap selected materials on site for reuse.	CM	25,740		
1.03	Extra over excavation in rock class II	CM	3,500		
1.04	Cart away excavated material	CM	12,870		
1.05	layers not exceeding 150mm to make up levels, average fill, 0.50m	CM	10,296		
	CONSTRUCTION				
1.06	Trim and compact formation to correct levels, cross-falls, and longitudinal falls	SM	14,300		
1.07	Provide, lay and compact 0.4m thick natural gravel as road sub-base to 98% BS.	CM	6,864		
1.08	Apply approved herbicide to the trimmed surfaces.	SM	14,300		
1.09	Provide, lay and compact 400mm hand packed stones as road base to Specifications.	CM	4,300		
1.10	Provide and lay 50mm thick quarry dust as blinding to receive paving blocks	SM	12,200		
1.11	Provide, lay and compact 80mm thick heavy duty interlocking paving blocks min strength 49N/mm2	SM	12,200		
1.12	Mitigation measures due to road pavement maintenance during construction (Provide a provisional sum of Kenya Shillings Twenty Million, only to be executed as authorised by the Civil Engineer and to be measured and valued in accordance with the contract.	Item			
1.13	Keeping excavations free of water	Item			
1.14	Allow for Provisional sum of Kenya Shillings Five Hundred Thousand for loading access ramps to be expended at the discretion of the Civil Engineer.	Item			
	TOTAL FOR CARRIED TO COLLECTION PAGE CIV/3				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 01: ACCESS ROADS , PARKING AND FOOTPATHS				
	KERBS AND CHANNEL				
1.15	Excavate for kerb and chanel depth not exceeding 200mm, back fill and cart away surpluss excavated material.	CM	150		
1.16	Prepare and pour 350x100mm and 350x100mm concrete class 15, mix 1:3:6 to excavated place as bedding and haunching respectively for the kerb and channel .	CM	60		
1.17	Provide all material and fix sawn timber form work to edges of haunching to the kerb and channel .	SM	1,500		
1.18	Provide, lay and joint along the edge of the road and parking 125x250mm pcc kerb and 125x100mm channel, all to detail (50) 5332 'B'.	LM	900		
1.19	Ditto but curved to varying radii.	LM	90		
	CHANNEL ONLY				
1.20	Excavate for road channel depth not exceeding 300mm, backfill and cart away the surplus excavated material.	CM	170		
1.21	Prepare and pour 475x200mm concrete class 15, mix 1:3:6 to excavated place as edging and haunching respectively for road channel .	CM	140		
1.22	Provide, lay and joint along the the interphase between driveway and loading bay 125x100mm channel all to detail (50) 5332 'C'.	LM	1,245		
	ROAD MARKING				
	Prepare and apply three coats of road marking paint on driveways, parking and road kerbs , surfaces not exceeding 100mm girth.	SM	210		
	FOOT PATHS				
1.23	Excavate 150mm deep to remove vegetable soil and cart away .	SM	1,300		
1.24	Provide, lay and compact 100mm approved gravel filling and level ready to receive paving slabs.	SM	1,300		
1.25	Provide, lay and joint in cement mortar (1:3) 600x600x50mm precast concrete paving slab on 50mm sand or stone dust blinding.	SM	1,300		
1.26	Prepare and apply concrete 100mm wide and 100mm thick class 15- mix 1:3:6- to the edges of footpaths.	CM	165		
	TOTAL FOR CARRIED TO COLLECTION PAGE CIV/3				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 01: ACCESS ROADS , PARKING AND FOOTPATHS				
	Brought forward from page 1				
	Brought forward from page 2				
	TOTAL FOR CARRIED TO SUMMARY PAGE CIV/6				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 02: STORM WATER DRAINAGE **OPEN STORM WATER DRAINAGE** **INVERT BLOCK DRAIN**				
2.01	Excavate trench for 450x225mm external dim. pcc IBD n.e. 1.0m (av. depth 0.6m) incl. trimming sides to slopes and disposal of excess material to detail (50) 5329B.	CM	1,950		
2.02	Ditto but not exceeding 1.5m, (av. depth 1.0m) ditto to detail (50) 5329 'B'.	CM	810		
2.03	Extra over for excavation in rock class II	CM	162		
2.04	Back fill and ram	CM	585		
2.04	Load and cart away surplus excavated material	CM	2,337		
2.04	Provide, lay and compact 100mm approved murram bed and on sloping sides for the invert block drain width to detail (50) 5329 'B'.	SM	3,240		
2.05	Provide, lay and joint 450x225mm external dimensions pcc IBD to detail (50) 5329 'B'.	LM	1,100		
2.06	Extra over for 1x1 side slabs to detail.	LM	110		
2.07	Ditto but 2x2 side slabs ditto.	LM	550		
2.08	Ditto but 3x3 side slabs ditto.	LM	440		
	MITER DRAINS				
2.09	Excavate for Miter drains depth not exceeding 300mm and cart away the excavated material.	CM	36		
2.10	Provide, lay and compact 100mm murram as bedding for the miter drains.	SM	120		
2.11	Provide all materials and construct meter drains to detail (50)5353.	LM	155		
	SHALLOW INVERT BLOCK DRAINS				
2.12	Provide all materials and construct shallow IBDS to detail (50)5353B.	LM	165		
	CULVERTS **HEADWALLS AND CULVERT PIPES**				
2.13	Excavate for headwalls and culvert pipe to depth n.e 1.2m.	CM	15		
2.14	Backfill and compact after constructing culvert and head walls	CM	11		
2.15	Cart away excess material.	CM	5		
2.16	Prepare and pour concrete class 15/20, mix 1:3:6 as blindig for bedding for culvert pipe and headwalls	CM	2		
2.17	Cut and fix formwork to walling of headwalls.	SM	13		
	SUB-TOTALCARRIED TO COLLECTION PAGE CIV/5				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 02: STORM WATER DRAINAGE				
2.18	Cut and fix BRC A142 to headwalls including spacer blocks .	SM	20		
2.19	Prepare and cast class 25/20 , mix 2:3:6, concrete to headwalls , culvert surround and bedding.	CM	15		
2.20	Prepare and apply plaster to headwalls, sand cement mortar mix 1:3.	SM	44		
2.22	Provide, lay and joint in trench; 450mm dia. Conc. pipe as culvert between headwalls to detail (50) 5310 'C'.	LM	22		
2.23	Provide, lay and joint in trench; 600mm dia. Conc. pipe as culvert between headwalls to detail (50) 5310 'C'.	LM	57		
	STORM WATER TESTING				
2.24	Allow for testing the whole of the storm water drainage system in the presence of the Engineer/Project Manager and make good any defects, re-test as necessary and leave the whole system perfect and to the satisfaction of the Engineer/Project Manager	ITEM			
	DRAINAGE ROUND THE BUILDING				
	Paving around the Building				
2.25	Level the area around the building to receive paving slabs	SM	535		
2.26	Provide, place and compact 100mm thick murram to make up levels round the building.	SM	535		
2.27	Provide and place 50mm thick quary dust as blinding for laying paving slabs.	SM	535		
2.28	Provide, lay and joint 600x600x50mm pcc paving slabs.	SM	535		
	Storm Drain round the buildings				
2.29	Excavate a 1m wide trench for shallow IBD depth not exceeding 300mm, back fill and cart away the surplus excavated material.	CM	135		
2.30	Backfill and ram after laying the IBD	CM	68		
2.31	Cart away excess material	CM	68		
2.32	Provide, place and compact 100mm thick murram to up levels.	SM	450		
2.33	Provide, lay and joint 175x450x500mm pcc Shallow IBD. all to detail (50) 5353.	LM	450		
	STONE PITCHING				
2.34	Provide all materials stonepitch the slopped areas to specifications.	SM	520		
	SUB-TOTALCARRIED TO COLLECTION PAGE CIV/7				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 02: STORM WATER DRAINAGE **MASONRY RETAINING WALL AT LOADING BAY AND STEPPED AREAS**				
2.57	Excavate for Masonry wall, average depth 600mm	CM	25		
2.58	Prepare and pour 50mm thick concrete mix 1:3:6 as blinding.	SM	35		
2.59	Prepare and pour 200mm thick concrete class 20, mix	CM	7		
2.60	Provide all materials and construct 200mm thick masory walling as retaining wall.	SM	80		
2.61	Provide and apply 3 coats of all weather paint to plastered surfaces of walling.	SM	160		
	205mm UPVC Pipe Construction				
2.62	Excavate for 205mm UPVC pipe depth not exceeding 600mm	CM	25		
2.61	Return and ram using the excavated material	CM	15		
2.62	Cart away the surplass excavated material	CM	13		
2.63	Provide and lay 200mm diameter uPVC pipe class 41 to a slope of 1:40 , to details provided.	LM	55		
2.67	Provide all materials and construct form work to sides of the concrete surround	SM	65		
2.68	Provide all materials and place 150mm thick class 20 concrete bedding and surround to to UPVC pipe on areas covered by the road, to detail (50)5310B	CM	5		
	SUB-TOTALCARRIED TO COLLECTION PAGE CIV/7				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 02: STORM WATER DRAINAGE **<u>COLLECTION PAGE</u>** Brought forward from page 4 Brought forward from page 5 Brought forward from page 6				
	SUB-TOTALCARRIED TO SUMMARY PAGE CIV/13				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 03 : F0UL WATER DRAINAGE				
	wide.				
3.01	150mm internal diameter uPVC pipe, depth n.e 1.0m	CM	265		
3.02	Ditto; but depth n.e 1.5	CM	130		
3.03	Ditto; but average 2.0m deep.	CM	130		
3.04	Ditto; but average 2.5m deep.	CM	130		
3.05	Ditto; but average 3.5m deep.	CM	130		
3.06	Extra over for excavation in rock class II	CM	26		
3.07	Backfill and ram after laying of pipe.	CM	406		
3.08	Cart away excess excavated material.	CM	406		
	Pipe Work				
3.09	Provide, lay100mm murram bed under pipe and similar surround 150mm thick after the pipe is laid to detail (50) 5310 “F”.	LM	220		
3.10	Provide, lay and joint 150mm UPVC pipe (class 41 Golden brown)	LM	132		
3.11	Ditto; but 200mm dia. Ditto:	LM	110		
3.12	Provide, lay 100mm concrete class 20, mix 1:2:4 as bedding under pipe and similar surround after the pipe is laid to detail (50) 5310 “B”.	CM	45		
	SUB-TOTALCARRIED TO COLLECTION PAGE CIV/11				

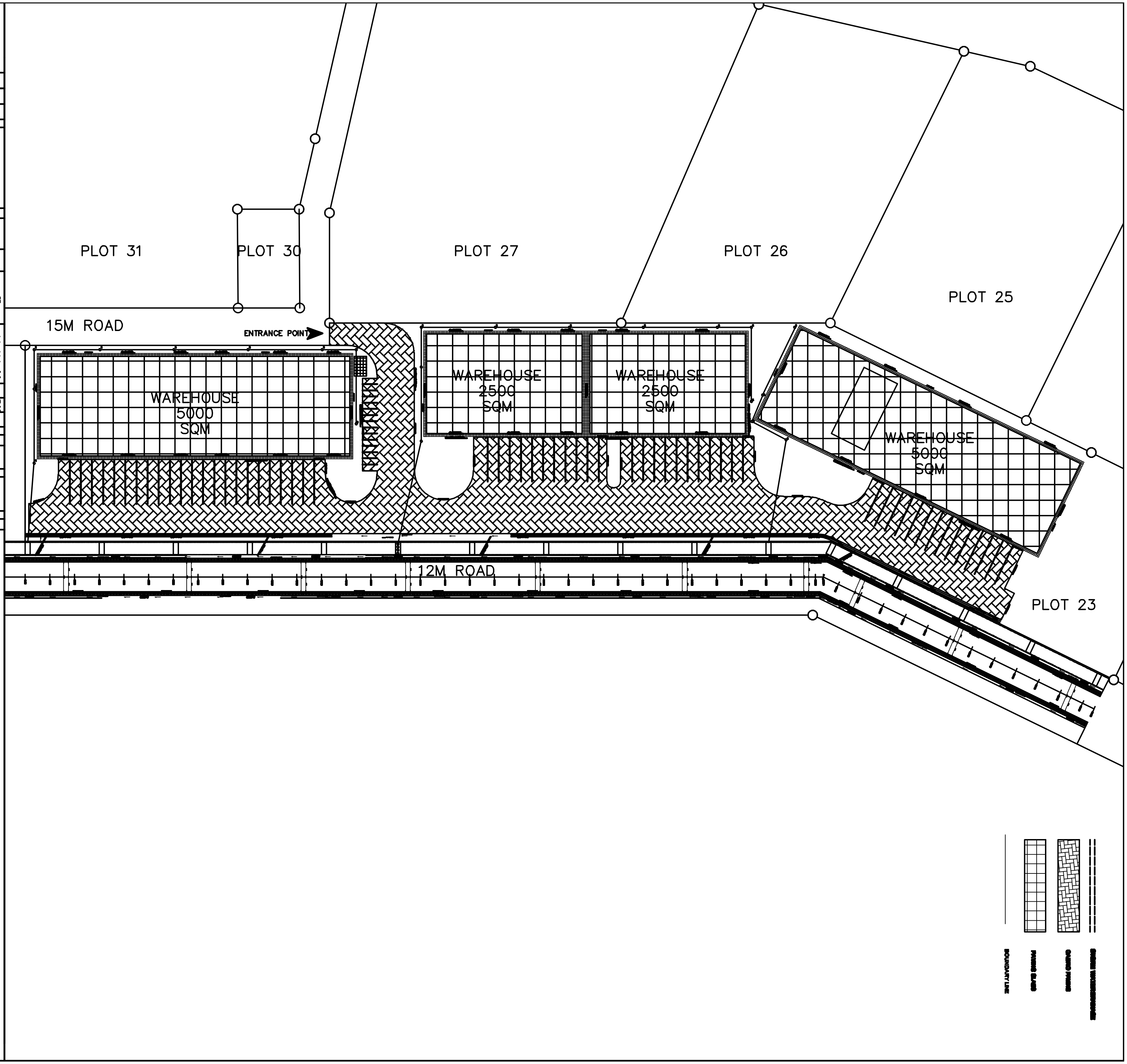
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 03: F0UL WATER DRAINAGE				
	MANHOLES				
	Excavations				
	Manhole Type A&B (5No.)				
3.13	Excavate in pit for rectangular manhole type A&B depth not exceeding 1.0m as per detail (50)5300 and (50)5301.	CM	12		
	Manhole Type C (3No.)				
3.14	Ditto but rectangular Manhole type C to detail (50)5302, depth exceeding 1m but not exceeding 1.5m.	CM	8		
	Manhole Type D (2No.)				
3.15	Ditto but rectangular Manhole type D to detail (50)5303, depth exceeding 1.5 m but not exceeding 2.0m.	CM	5		
	F0UL WATER DRAINAGE				
	Manhole Type E (2No.)				
3.16	Ditto but rectangular Manhole type D to detail (50)5304, depth exceeding 1.8 m but not exceeding 3.0m.	CM	9		
3.17	Extra over excavations in rock class II	CM	2		
3.18	Return and ram after constructing manholes	CM	5		
3.19	Cart away the surplus excavated material.	CM	3		
	MANHOLES CONSTRUCTION				
	Concrete class 16, mix 1:3:6				
3.20	Provide all materials, mix and place 50mm thick as concrete blinding for manholes	SM	27		
	Vibrated Concrete class 20, mix 1:2:4				
3.21	Provide all materials, mix and place 150mm thick to base slab of manholes.	SM	27		
3.22	Ditto for 200mm thick	SM	14		
	SUB-TOTALCARRIED TO COLLECTION PAGE CIV/11				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 03 : F0UL WATER DRAINAGE				
	Vibrated Concrete class 20, mix 1:2:4				
3.23	Provide all materials, mix and place 100mm thick concrete class 20 to suspended cover slab of manholes and benching for 160mm and 205mm diameter UPVC pipes.	SM	275		
3.24	Ditto for 150mm thick.	SM	193		
3.25	Ditto to 200mm thick walling for manhole type E	CM	116		
	Form Work				
3.26	Provide and fix sawn timber form work to the soffit of the suspended cover slab for all manholes and vertical walls for manhole type E	SM	200		
3.27	Provide and fix sawn timber form work to edges of suspended cover slab and boxing for manhole covers not more than 150mm girth width.	LM	20		
	Walling				
3.28	Provide, lay and joint 150mm thick approved natural dressed stone or concrete block as walling to manholes type A and B to details (50)5300 and (50)5301.	SM	20		
3.29	Ditto but 200mm thick for manholes type C and D details (50)5302 and (50)5303.	SM	10		
	High Yield Strength Steel Reinforcement Bars to B.S 4449.				
3.30	Provide, cut, fix assorted high yield strength steel including spacer blocks to suspended cover slabs. And also for base and vertical walls of manhole type E.	Kg	3,000		
	Rendering				
3.31	Provide 12mm thick water proof cement and sand mix 1:3, steel float finished to walls and suspended cover slab.	SM	180		
3.32	Provide 12mm thick water proof cement and sand mix 1:1, rendering trowelled smooth to surface of benching.	SM	72		
	C.I Manhole Cover and Frame to B.S 497 & B.S 556.				
3.33	Provide and fix 600 X 450mm medium duty C.I manhole cover and frame and grease to detail (50)5313.	NO	10		
	Step Iron.				
3.34	Provide and fix deep galvanized malleable iron as step iron to B.S 1247 as per detail attached.	NO	70		
3.35	Allow for testing the whole of the foul drainage system in the presence of the Engineer/Project Manager and make good any defects, re-test as necessary and leave the whole system perfect to the satisfaction of Engineer/Project Manager.	ITEM			
	SUB-TOTAL CARRIED TO COLLECTION PAGE 11				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 04 : F0UL WATER DRAINAGE COLLECTION				
	Brought forward from page 8				
	Brought forward from page 9				
	Brought forward from page 10				
	SUBTOTAL CARRIED TO SUMMARY PAGE CIV/ 13				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	BILL 05: RETAINING WALL **CONCRETE RETAINING WALL**				
2.35	Excavate for retaining wall, average depth 1.8m	CM	960		
2.36	Prepare and pour 50mm thick concrete mix 1:3:6 as blinding.	SM	740		
2.37	Prepare and pour 450mm thick concrete class 25, mix 1:1.5:3 to Base	CM	180		
2.38	Provide all materials and construct 250mm thick concrete class 25/20 Retaining wall walling.	SM	670		
2.39	Provide all materials for formwork to concrete Retaining wall .	SM	1,340		
2.40	Provide and apply 3 coats of all weather paint to plastered surfaces of retaining wall	SM	445		
2.41	Provide for keeping excavations free from collapse	Item			
	Reinforcement works, high yield strength ribbed steel Reinforcement in different sizes in structural concrete work including all cutting, bending, laying and binding wire all in accordance with the Engineer's details and approval to:-				
2.42	Retaining wall base	KG	7500		
2.43	Vertical walls to the retaining wall	KG	19400		
	75mm PVC weep holes				
2.61	Provide and install 75mm PVC pipes as weep holes in a square grid of 6000x600mm	LM	1,200		
	SUB-TOTALCARRIED TO COLLECTION PAGE CIV/13				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT- KShs
	SUMMARY PAGE				
1.00	ACCESS ROAD, PARKING AND FOOTPATHS				
2.00	STORM WATER DRAINAGE				
3.00	FOUL WATER DRAINAGE				
4.00	CONCRETE RETAINING WALL				
	SUB TOTAL 1				
	Add Contingency (Provide a contigency sum of Kenya Shillings Fifteen Million).				
	SUB TOTAL 2				
	TOTAL CARRIED TO GRAND SUMMARY				



NOTES

1. This drawing must be read in conjuction with architectural and any other relevant drawings.
2. The Contractor must confirm all dimensions on site before commencing any work.
3. All dimensions are in millimetres unless specified otherwise
4. Concrete cover to reinforcement steel
   - Foundations = 50mm
   - Columns = 40mm
   - Slabs = 20mm
   - Beam = 25mm
5. Concrete strength for structural concrete members to be class 20/20.
6. Use ribbed steel reinforcement denoted " T ".
7. Mild steel reinforcement bars to B.S.4449 are denoted " R ".
8. All steel reinforcement MUST be approved by the Structural Engineer before casting.
9. All excavation work to be inspected and approved by the Structural Engineer before concreting.
10. Assumed bearing Capacity=125KN/M2
11. Minimum crushing strength of masonry stones or building blocks to be 7N/mm2
12. All black cotton soil shall be removed during excavation of foundation.
13. Minimum lap length for all reinforcement bars shall be 50 x bar diameter.

ISSUES

REVISIONS

REFERENCE DRAWINGS

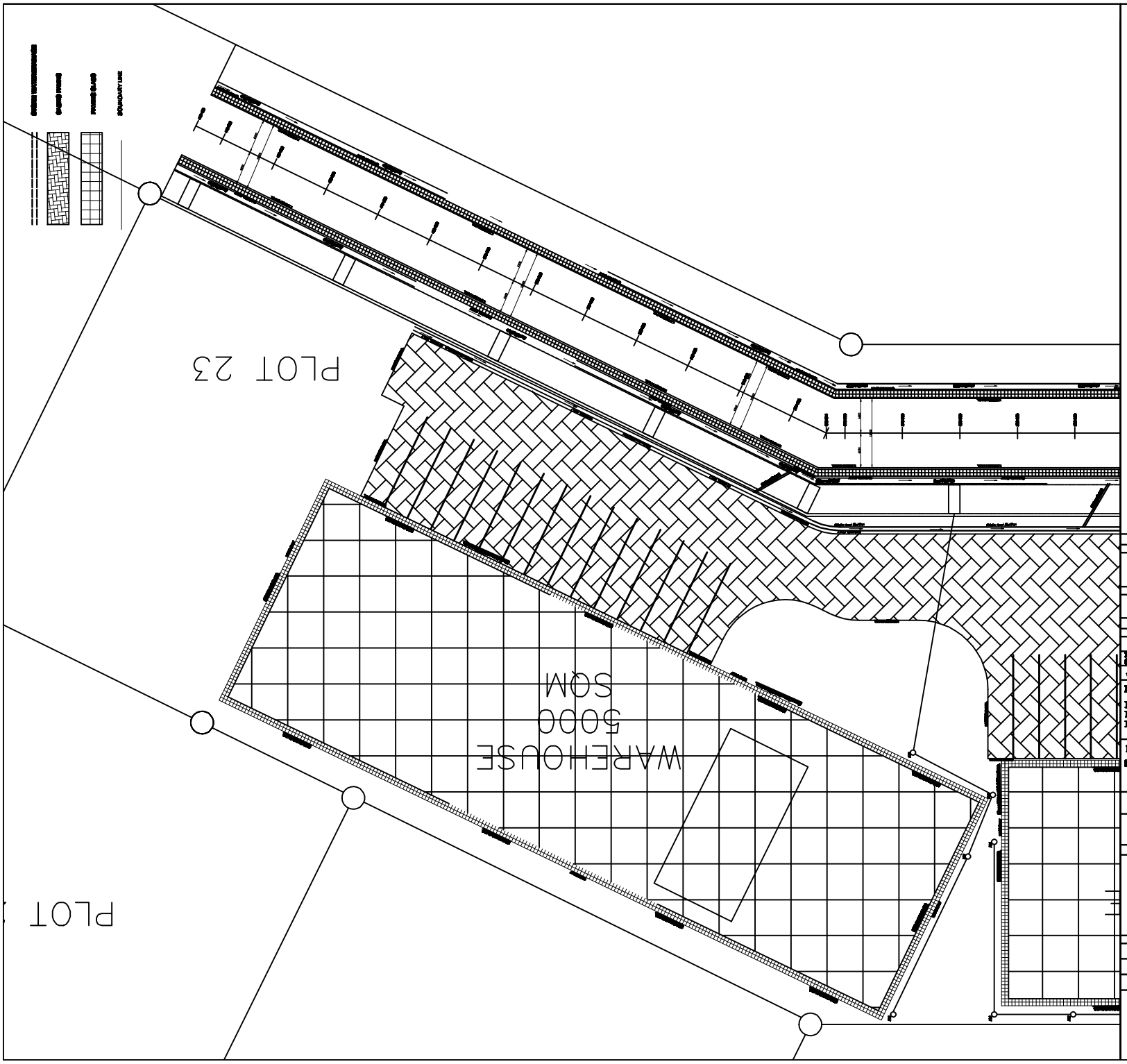
PROJECT TITLE:
PROPOSED WAREHOUSE AT PROPOSED KINANIE LEATHER PARK,
MACHAKOS COUNTY

DRAWING TITLE
SITE LAYOUT DRAWINGS

CI/Sb		
S.D.P.W.	DRG No	SD/10753A/001
	FILE No	

APPROVED BY

REPUBLIC OF KENYA
MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
State Department of Public Works



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   Columns = 40mm
   Slabs = 20mm
   Beam = 25mm
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8. All steel reinforcement MUST be approved by the Structural Engineer before casting.
9. All excavation work to be inspected and approved by the Structural Engineer before concreting.
10. Assumed bearing Capacity=125KN/M2
11. Minimum crushing strength of masonry stones or building blocks to be 7N/mm2
12. All black cotton soil shall be removed during excavation of foundation.
13. Minimum lap length for all reinforcement bars shall be 50 x bar diameter.

ISSUES

REVISIONS

REFERENCE DRAWINGS

[illegible]

W.P ITEM NO. D15/[illegible] | [illegible]

PROJECT TITLE.

PROPOSED WAREHOUSE AT PROPOSED KINANIE LEATHER PARK.
MACHAKOS COUNTY

DRAWING TITLE

SITE LAYOUT DRAWINGS

CI/Sfb		
S.D.P.W.	DRG No	SD/10753A/001A
	FILE No	

APPROVED by

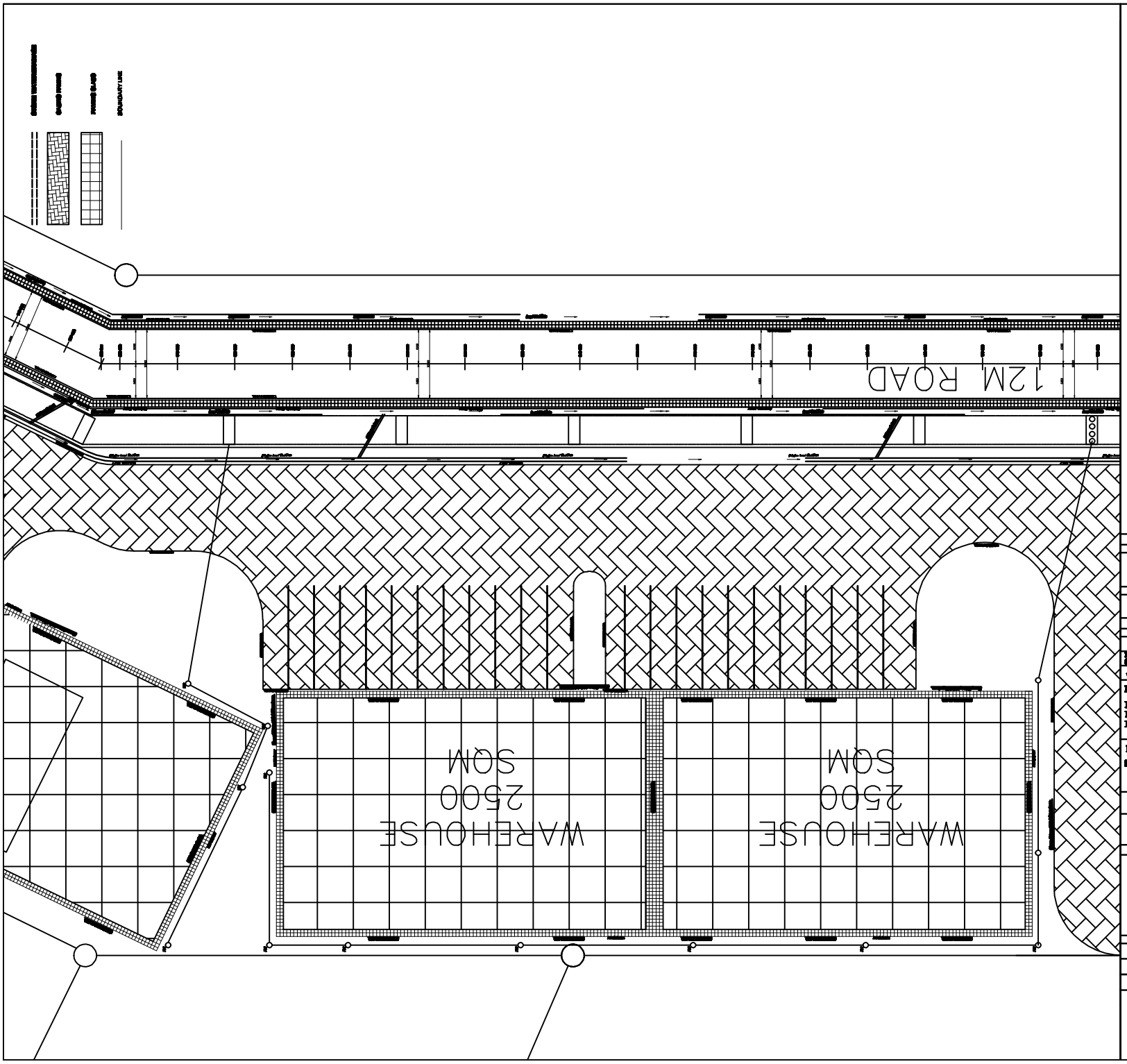
THE CHIEF ENGINEER (STRUCTURAL)-D.O.P.W

DESCRIPTION	NAME	SIGNATURE	DATE
Designed by:	ENG. S.A. OKINYI		
SIZE	ENG. E.M. ONCHONGA		

REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department of Public Works



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8. All steel reinforcement MUST be approved by the Structural Engineer before casting.
9. All excavation work to be inspected and approved by the Structural Engineer before concreting.
10. Assumed bearing Capacity=125KN/M2
11. Minimum crushing strength of masonry stones or building blocks to be 7N/mm2
12. All black cotton soil shall be removed during excavation of foundation.
13. Minimum lap length for all reinforcement bars shall be 50 x bar diameter.

ISSUES

REVISIONS

REFERENCE DRAWINGS

[illegible]

W.P ITEM NO. D1D/IN/A/SG/1/01 W.P ITEM NO. D1D/IN/A/SG/1/01 ITEM NO. 1/01A

PROJECT TITLE.

PROPOSED WAREHOUSE AT PROPOSED KINANIE LEATHER PARK.
MACHAKOS COUNTY

DRAWING TITLE

SITE LAYOUT DRAWINGS

CI/Sfb		
S.D.P.W.	DRG No	SD/10753A/001B
	FILE No	

APPROVED By

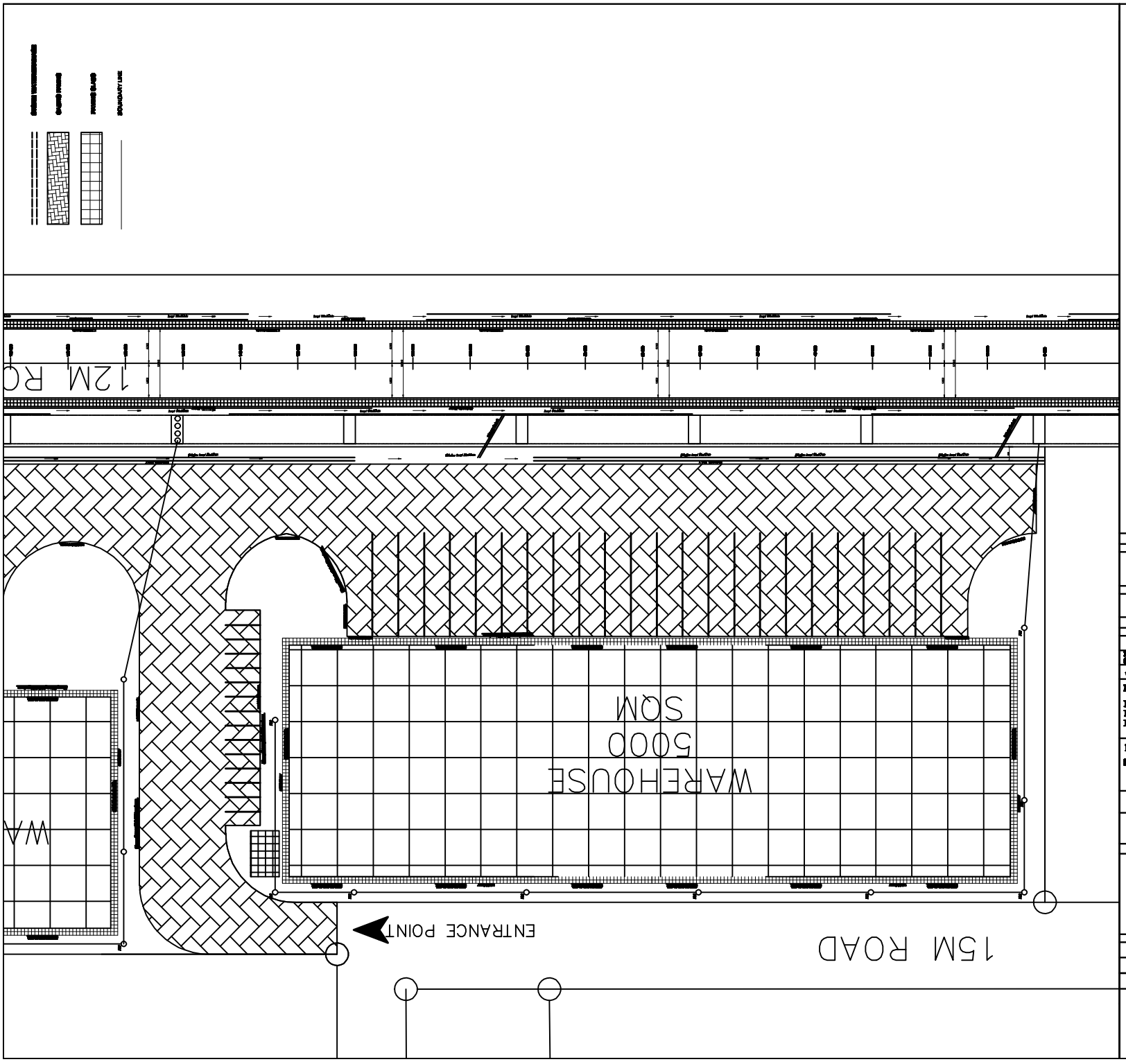
THE CHIEF ENGINEER (STRUCTURAL)-D.O.P.W

DESCRIPTION	NAME	SIGNATURE	DATE
Designed by:	ENG. S.A. OKINYI		
SIZE	ENG. E.M. OKOKONYA		

REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department of Public Works



NOTES

1. This drawing must be read in conjuction with architectural and any other relevant drawings.
2. The Contractor must confirm all dimensions on site before commencing any work.
3. All dimensions are in millimetres unless specified otherwise
4. Concrete cover to reinforcement steel

   Foundations = 50mm
   Columns = 40mm
   Slabs = 20mm
   Beam = 25mm
5. Concrete strength for structural concrete members to be class 20/20,
6. Use ribbed steel reinforcement denoted " T ".
7. Mild steel reinforcement bars to B.S.4449 are denoted " R ".
8. All steel reinforcement MUST be approved by the Structural Engineer before casting.
9. All excavation work to be inspected and approved by the Structural Engineer before concreting.
10. Assumed bearing Capacity=125KN/M2
11. Minimum crushing strength of masonry stones or building blocks to be 7N/mm2
12. All black cotton soil shall be removed during excavation of foundation.
13. Minimum lap length for all reinforcement bars shall be 50 x bar diameter.

ISSUES

REVISIONS

REFERENCE DRAWINGS

[illegible]

W.P ITEM NO. D15/[illegible] | [illegible]

PROJECT TITLE.

PROPOSED WAREHOUSE AT PROPOSED KINANIE LEATHER PARK.
MACHAKOS COUNTY

DRAWING TITLE

SITE LAYOUT DRAWINGS

CI/Sfb		
S.D.P.W.	DRG No	SD/10753A/001C
	FILE No	

APPROVED [illegible]

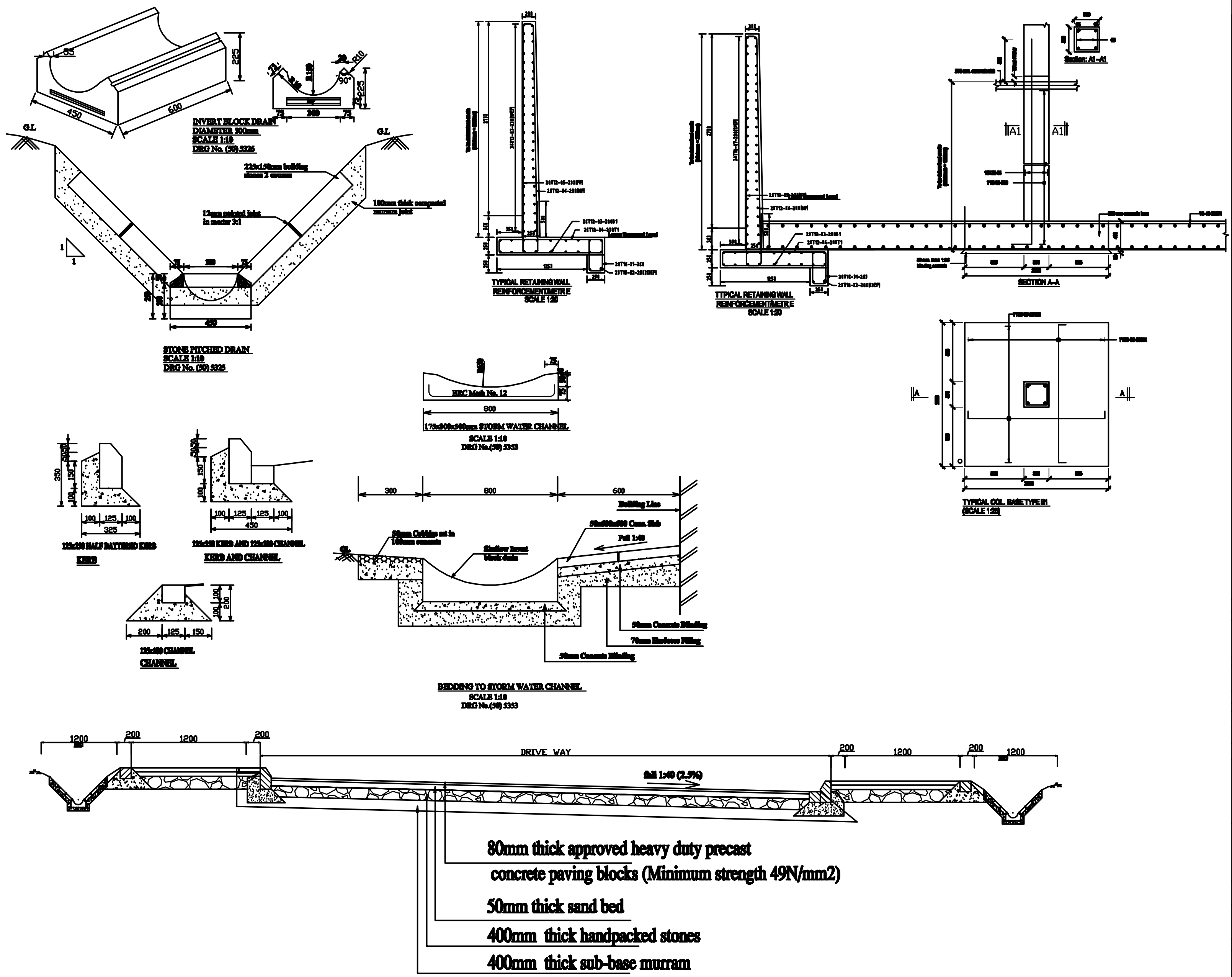
THE CHIEF ENGINEER (STRUCTURAL) - D.O.P.W

DESCRIPTION	NAME	SIGNATURE	DATE
Designed by:	ENG. S.A. OKINYI		
SIZE	ENG. E.M. ONCHONGA		

REPUBLIC OF KENYA

MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department of Public Works



Notes:

1. All work to be carried out in accordance with MOW General Specification (1976) or British Standard specification where required.
2. Base shall be of the material specification on the drawing or the material available locally as agreed between the contractor and Client on site
3. The above construction will be used as access roads and car parks.

SECTION C-C

PRECAST CONCRETE PAVING BLOCKS ROAD

NOTES

1. This drawing must be read in conjuction with architectural and any other relevant drawings.
2. The Contractor must confirm all dimensions on site before commencing any work.
3. All dimensions are in millimetres unless specified otherwise.
4. Concrete cover to reinforcement steel
   - Foundations = 50mm
   - Columns = 40mm
   - Slabs = 20mm
   - Beam = 25mm
5. Concrete strength for structural concrete members to be class 20/20,
6. Use ribbed steel reinforcement denoted " T ".
7. Mild steel reinforcement bars to B.S.4449 are denoted " R ".
8. All steel reinforcement MUST be approved by the Structural Engineer before casting.
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12. All black cotton soil shall be removed during excavation of foundation.
13. Minimum lap length for all reinforcement bars shall be 50 x bar diameter.

ISSUES

REVISIONS

REFERENCE DRAWINGS

MINISTRY OF INDUSTRIALIZATION, TRADE AND ENTERPRISE DEVELOPMENT (KENYA LEATHER DEVELOPMENT COUNCIL)

PROJECT TITLE

PROPOSED WAREHOUSE AT PROPOSED KINANIE LEATHER PARK. MACHAKOS COUNTY

DRAWING TITLE

LAYOUT DRAWINGS
DETAILED SECTIONS

CI/Sfb		
S.D.P.W.	DRG No	SD/10753A/002
	FILE No	

APPROVED BY:

THE CHIEF ENGINEER (STRUCTURAL)-D.O.P.W

DESIGNATION	NAME	SIGNATURE	DATE
Designed by:	ENG. S.A. OKINYI		
SSE	ENG. E.M. ONCHOMBA		

REPUBLIC OF KENYA
MINISTRY OF TRANSPORT, INFRASTRUCTURE, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT
State Department of Public Works