



THE COUNTY GOVERNMENT OF KISUMU

**DEPARTMENT OF LANDS, HOUSING, PHYSICAL PLANNING & URBAN
DEVELOPMENT**

T E N D E R D O C U M E N T FOR

CONSTRUCTION OF THE PROPOSED MASENO TOWN ROAD

NEGOTIATION NUMBER:833006

TENDER NO: CGK/LHPP&UD/CRF/RFQ/2020-2021/002

**Funded by:
COUNTY DEVELOPMENT FUND,
FY 2020/2021**

Client:

**Chief Officer,
Department of Housing & Urban Development
County Government of Kisumu
P.O BOX 2738-4000
Kisumu**

Project Manager:

**Director-Urban Development
County Government of Kisumu
P.O. Box 2738-40100,
Kisumu**

CLOSING DATE: 16TH DECEMBER 2020

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1. INTRODUCTION

1.1 This standard tender document for procurement of works has been prepared for use by procuring entities in Kenya in the procurement of works (i.e. Road Works and associated Civil Engineering Works).

1.2 The following guidelines should be observed when using the document:-

(a) Specific details should be furnished in the Invitation to tender and in the special conditions of contract (where applicable). The tender document issued to tenderers should not have blank spaces or options.

(b) The instructions to tenderers and the General Conditions of Contract should remain unchanged. Any necessary amendments to these parts should be made through Appendix to instructions to tenderers and special conditions of contract respectively.

1.3

(b) Information contained in the invitation to tender shall conform to the data and information in the tender documents to enable prospective tenderers to decide whether or not to participate in the tender and shall indicate any important tender requirements

(c) The invitation to tender shall be as an advertisement in accordance with the regulations or a letter of invitation addressed to tenderers who have been prequalified following a request for prequalification.

1.4 The cover of the document shall be modified to include:-

I. Tender number.

II. Tender name.

Name of procuring entity

2.INVITATION FOR TENDERS

Tender reference No: **CGK/LHPP&UD/CRF/RFQ/2020-2021/002**

1.1 County Government of KISUMU invites bids from Prequalified and eligible construction companies registered with the National Construction Authority (NCA) or equivalent in the categories mentioned in the tender notice.

**CONSTRUCTION OF THE PROPOSED MASENO TOWN ROAD (0.4Km):
CGK/LHPP&UD/CRF/RFQ/2020-2021/002** situated in **KISUMU WEST** Sub-County
NORTH WEST KISUMU Ward

SCOPE OF WORK

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

QUALIFICATION FOR TENDERING

1.1 MANDATORY REQUIREMENTS

1.2 Tenderers **MUST** include the following information and documents with their Tenders:

- a) **Certified** copy of Certificate of Incorporation,
- b) **Certified** copy of **VALID** Registration Certificate with the National Construction Authority **NCA 8** for Roads, Water and other Civil Works as specified in the tender notice.
- c) VAT and PIN registration,
- d) A copy of **VALID** Tax Compliance Certificate from Kenya Revenue Authority (KRA),
- e) Bid bond – 2% of the tender sum from a reputable bank
- f) **Certified** copy of **RECENT** CR12 FORM (WITHIN 12 MONTHS) from registrar of companies.
- g) **Certified** copy of Single Business Permit preferably from Kisumu County.
- h) Bidders shall serialize all pages for each tender document submitted failure to which the bidder shall be disqualified.
- i) **Certified** copy of Certificate of registration for access to government procurement opportunities from the ministry of National Treasury for tenders in the special categories.

Certification must be by a commissioner for oaths.

Other requirements are as specified in the tender notice and this tender document.

1.3 OTHER REQUIREMENTS

As specified in the tender documents covering the following

- j) Similar previous experience.
 - k) Equipment holding.
 - l) Professional and technical personnel.
 - m) Current workload.
 - n) Litigation history (**Current** Sworn Affidavit).
 - o) Eligibility.
 - p) Bidders with history of Non-performance (eg failure to complete the projects for the last three financial years, Notice of termination or termination of contracts in the last three financial years will be Disqualified.
 - q) Any form of canvassing will lead to automatic disqualification.
 - r) The complete set of tender documents may be downloaded from the County's website www.kisumu.go.ke. Completed Tender Documents are to be enclosed in plain sealed envelopes marked with Tender name and reference number and deposited in the Tender Box located at the **Main Reception, Department of Lands, Housing, Physical Planning & Urban Development, Prosperity House 9th Floor Wing A** or to be addressed to The **Chief Officer Department of Lands, Housing, Physical Planning & Urban Development , County Government of Kisumu, P.O Box 2738-40100 Kisumu** so as to be received on or before **16th December 2020, at 12 noon EAT**
 - s) Prices quoted should be net inclusive of all taxes, must be in Kenya shillings and shall remain valid for **120** days from the closing date of tender.
 - t) Tenders will be opened immediately thereafter in the presence of the candidates or their representatives who choose to attend at **Boardroom Department of Lands, Housing, Physical Planning & Urban Development, Prosperity House, 9th Floor Wing A**. Late bid will be not be accepted.
 - u) **Bidders are advised that this tender will be done purely online, no manual submission will be accepted.**
-

- v) . Tenders must be accompanied by an original **tender Security of 2%** of the tender sum in form of a guarantee acceptable under the Public Procurement and Asset Disposal Act, 2015 and Public Procurement and Disposal Regulations 2006 payable to the County Government of KISUMU.

- w) Interested eligible candidates may obtain further information and inspect **Tender Documents** and the **Design Drawings** at County Government of Kisumu Headquarters, Kisumu City at the Procurement Office during normal working hours.

Section A

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INSTRUCTIONS TO TENDERERS.

1 General

1.4 Tenderers shall include the following information and documents with their Tenders, unless otherwise stated:

1.5 The Employer as defined in the Appendix to Conditions of Contract invites Tenders for the Works Contract as described in the Tender Documents.

a. Procurement shall be based on open tender method and the above will be submitted with the priced bid.

b. The Tenderer shall bear all costs associated with the preparation and submission of the Tender.

c. The Tenderer, at the Tenderer's own expense, responsibility and risk, shall visit and examine the Site of the Works and its surroundings, to obtain all information that may be necessary for the preparation of the Tender and entering into a Contract for the Works as defined in the Specifications. Attendance at a pre-tender site meeting arranged by the Engineer shall be mandatory for the submission of an eligible tender.

1.5 Eligible Tenderers

a) The Invitation to Tender is open to all Tenderers qualified in accordance with to the conditions of the Press Advertisement or otherwise indicated by the Employer. Only Tenders from qualified Tenderers will be accepted.

b) A Tenderer debarred from participating in Public Procurement by the Public Procurement Directorate shall not be eligible to submit a Tender.

c) If the Employer has not undertaken the prequalification of Tenderers, all Tenderers shall include the information required to satisfy the qualification criteria as determined by the Employer.

1.7 SITE VISIT

a). The tenderer is advised to visit and examine the site and its surroundings and obtain for himself on his own responsibility, all information that may be necessary for preparing the tender and entering into a contract. The costs of visiting the site shall be the tenderer's own responsibility.

b)The tenderer and any of his personnel or agents will be granted permission by the Employer to enter upon premises and lands for the purpose of such inspection, but only upon the express condition that the tenderer, his personnel or agents, will release and indemnify the Employer from and against all liability in respect of, and will be responsible for personal injury (whether fatal or otherwise), loss of or damage to property and any other loss, damage, costs and expenses

however caused, which but for the exercise of such permission, would not have arisen.

c) A Mandatory pre-tender site meeting shall be held as specified in the tender notice. A representative of the Employer will be available to meet the intending tenderers at the venue.

d) The Employer will conduct a Site Visit concurrently with the pre-bid meeting referred to in Clause 19, attendance for which is necessary for all bidders. Attendance by the tenderers shall be as specified in the tender notice.

d) Tenderers must provide their own transport. The representative will not be available at any other time for site inspection visits.

e) Each tenderer shall complete the Certificate of Tenderer's Visit to the Site, whether he in fact visits the Site at the time of the organized site visit or by himself at some other time.

1.8 BID SECURING DECLARATION

1.8.1 The bidder shall furnish, as part of his bid, a duly filled and signed bid Securing Declaration Form as shown in the Appendix to instruction to tenderers.

1.8.2 The bid securing declaration shall be in the format and in accordance with bid securing declaration form included in Section 3. The bid securing declaration shall remain valid for a period of thirty (30) days beyond the original validity period for the bid, and beyond any period of extension subsequently requested under Sub-Clause 16.2.

1.8.3 Any bid not accompanied by an acceptable bid securing declaration will be rejected by the Employer as non-responsive.

1.8.4 The bid securing declaration of unsuccessful bidders will expire either 28 days after the expiration of the period of bid validity or upon receipt of copy of notification of award to successful bidder whichever comes earlier.

1.8.5 The bid securing declaration of the successful bidder will be discharged upon the bidder signing the Contract Agreement and furnishing the required performance security.

1.8.6 The bidder shall automatically be suspended from being eligible for bidding in any contract with the Purchaser for the period of time of 5 years starting on the date of expiration of tender validity period, if:

- (a) a bidder withdraws his bid, except as provided in Sub-Clause 24.2. or
- (b) in the case of a successful bidder, if he fails within the specified time limit to:
 - (i) sign the Contract Agreement or
 - (ii) furnish the necessary performance security

2 Tender Documents

- 2.1 The complete set of Tender documents comprises the documents listed below and any addenda issued in accordance with paragraph 2.4
 - (i) Instructions to Tenderers
 - (ii) Form of Tender
 - (iii) Conditions of Contract and Appendix to Conditions of Contract
 - (iv) Specifications
 - (v) Drawings and Road Improvement Plan
 - (vi) Bills of Quantities/Schedule of Rates (whichever is applicable)
 - (vii) Other documents/materials required by the Employer to be completed and submitted in accordance with these Instructions and Conditions
- 2.2 The Tenderer shall examine all Instructions, Forms and Specifications in the Tender documents. Failure to furnish all information required by the Tender documents may result in the rejection of the Tender.
- 2.3 A Tenderer requiring any clarification of the Tender documents may notify the Employer in writing or by electronic means at the address indicated in the letter of Invitation to Tender. The Employer shall respond to any request for clarification received earlier than seven days prior to the deadline for submission of Tenders. Copies of the Employer's response will be forwarded to all persons issued with Tender 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 Tender documents by issuing addenda. Any addenda thus issued shall be part of the Tender documents and shall be communicated in writing or by electronic means to all Tenderers. Tenderers shall acknowledge receipt of each addendum in writing to the Employer.
- 2.5 The Employer may extend, as necessary, the deadline for submission of Tenders in accordance with paragraph 4.5 below, to take account of any addenda issued.
- 2.6 The timescale given for the Completion of Works has been based on the optimum use of labour-based construction.

3 Preparation of Tenders

- 3.1 All documents relating to the Tender and any correspondence shall be in the English Language.
- 3.2 The Tender submitted shall comprise the following:-
 - (a) The Form of Tender;

- (b) Tender Security (as instructed in the Form of Invitation to Tender)
 - (c) Standard Forms and Schedules of Supplementary Information,
 - (d) Priced Bill of Quantities initialled on each page, or Schedule of Rates (whichever is applicable)
 - (e) Any other documents/materials required by the Employer to be completed and submitted by Tenderers.
- 3.3 The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities/Schedule of Rates. Items for which no rate or price is entered shall be deemed covered by the other rates and prices in the Bill of Quantities/Schedule of Rates.
- 3.4 The unit rates and prices shall be in Kenya Shillings.
- 3.5 Tenders shall remain valid for a period of 120 days from the date of submission. However, the Employer may request the Tenderers to extend the period of validity for a specified additional period. Such a request and the Tenderers' responses shall be made in writing.
- 3.6 The Tenderer shall prepare one original of the Tender documents as described in these Instructions to Tenderers, and one copies if required by the Invitation to Tender.
- 3.7 The original shall be typed or written in indelible ink and shall be signed by a person or persons duly authorised to sign on behalf of the Tenderer who shall initial all pages of the Tender where alterations or additions have been made.

4 Submission of Tenders

- 4.1 The Tender duly completed and sealed in an envelope 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 Tenderer as defined in the Invitation to Tender; and
 - (c) provide an instruction 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 not later than the time and date specified in the Invitation to Tender.
- 4.3 The Tenderer shall not submit alternative offers unless they are specifically required in the Tender documents.

Each Tenderer may submit only one Tender. Any Tenderer who fails to comply with this requirement will be disqualified.

- 4.4 Any Tender received after the deadline for submission will be returned to the Tenderer un-opened.
- 4.5 The Employer may extend the deadline for submission of Tenders by issuing an amendment in accordance with paragraph 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.

5 Tender Opening

- 5.2 The Tenders shall be opened in the presence of those Tenderers' representatives who choose to attend at the time and in the place specified in the Invitation to Tender.
- 5.2 The name of the Tenderer, the total amount of each Tender and the status of the Tender Security shall be read out and recorded in a Tender Opening register, a copy of which may on request be made available to any Tenderer. Minutes of the Tender opening, including the information disclosed to those present shall also be prepared by the Employer.

6

Tender Evaluation

- 6.1 Information relating to the examination, clarification, evaluation and comparison of Tenders and recommendations for the award of the 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 will result in the rejection of the Tender.
- 6.2 Prior to the detailed evaluation of Tenders, the Employer shall determine if each Tender:-
- a) Meets the eligibility criteria defined in paragraphs 1.2 and 1.5.
 - b) Has been properly signed;
 - c) Is accompanied by the required Securities;
 - d) Is substantially responsive to the requirements of the Tender documents.

The Employer will reject any Tenders deemed to be non-responsive on the above criteria.

- 6.3 A substantially responsive Tender is one which conforms to all the terms, Conditions and Specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is the 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 Tender documents, the Employer's rights or the Tenderer's obligations under the Contract;

- c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.
- 6.4 Tenders determined to be substantially responsive and within \pm % of Engineers Estimate 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 shall prevail;
 - (b) where there is a discrepancy between the arithmetically correct line item Amount, resulting from the multiplication of the Unit Rate and the Quantity, and the Amount entered, the latter shall prevail and the Unit Rate shall be adjusted accordingly.
 - (c) for Lumpsum items, only the Amount will be considered, disregarding any filled in unit rate.
 - (d) where there is a discrepancy between the Tender Price as stated in the Form of Tender and the Tender total in the main Summary of the Bills of Quantities, the Tender Price shall prevail. The Employer shall notify the Tenderer and request that the Tenderer agrees to the Tender Price. The Unit Rate for the Items where the discrepancy occurs shall be adjusted by the Engineer. If the Tenderer fails to accept the corrected figure the Tender shall be rejected and the Tender Security shall be forfeit. Any discrepancy greater than 15% of the corrected figure shall result in rejection of the Tender and the forfeit of the Tender Security.
- 6.5 The Employer at his discretion may request any Tenderer for clarification of the Tender, including a breakdown of Unit Rates. The request for clarification and the response shall be in writing or electronic means.

7 Award of Contract

- 7.1 The award of the Contract will be made to the Tenderer who has offered the lowest evaluated Tender Price.
- 7.2 The Employer reserves the right to accept or reject any or all Tenders and to cancel the Tendering process at any time prior to the award of the Contract without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer(s) of the grounds for the action.
- 7.3 The Tenderer whose Tender has been accepted will be notified of the award prior to the expiration of the Tender validity period in writing or by electronic means. This notification (called the "Letter of Acceptance") will state the sum (called the "Contract Price") which the Employer will pay the Tenderer in consideration of the execution, completion, and maintenance of the Works as set out in the Contract. The Letter of Acceptance will constitute a binding Agreement, prior to the Tenderer signing the Contract Agreement.

7.4 The Contract Agreement will incorporate all agreements between the Employer and the Tenderer. It will be signed by the Tenderer, not earlier than 21 days following the date of the Letter of Acceptance, and thereafter returned to the Employer within 14 days for signature.

Section B
TENDER EVALUATION CRITERIA

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TENDER EVALUATION CRITERIA

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

1. Determination of Responsiveness
2. Detailed Technical Evaluation

STAGE 1 - DETERMINATION OF RESPONSIVENESS

A) 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. Category of Registration with BUSINESS REGISTRATION.
- II. Classes of Licences with relevant statutory bodies e.g National Construction Authority, Local Authorities, Water Management Bodies and Energy Regulatory Commission.
- III. Proof of payment for tender document
- IV. Provision of Bid Security
- V. Dully filled Form of Tender

Any other conditions included in the advertisement notice/Invitation letter.

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 may seek further clarification/confirmation if necessary to confirm authenticity/compliance of any condition of the tender.

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

2) COMPLETENESS OF TENDER DOCUMENT

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 Standards Forms provided for the purposes of providing the required information. The tenderers may also attach the required information if they so desire.

APPENDIX TO INSTRUCTIONS TO TENDERERS

Notes on the Appendix to Instructions to Tenderers

The following appendix to instructions to tenderers shall complement or amend the provisions of the instructions to tenderers (Section II). Wherever there is a conflict between the provisions of the instructions to tenderers and the provisions of the appendix, the provisions of the appendix herein shall prevail over those of the instructions to tenderers.

(Complete as appropriate)

CLAUSE 2: Eligibility requirements

1. PRELIMINARY EVALUATION (MANDATORY REQUIREMENTS)

#	MANDATORY REQUIREMENTS	Yes/No	Comments
1	Submission of Tender Security of 2% of the tender sum as indicated in the tender documents- Checking its validity, whether it is Original; and acceptable under Public Procurement Law; whether it is strictly in the format required in accordance with the sample Tender Security Form(s).		
2	Form of Tender duly filled and signed		
3	Company or Firm's Incorporation/Registration Certificate attached		
4	Tender Validity period indicated (As per Form of Tender)		

5	Confidential Business Questionnaire is duly filled in and details correspond to the related information in the bid.		
6	Valid KRA Tax compliance Certificate attached		
7	Audited financial statements for the last three years (2017 – 2019) provided. Companies registered within the last one year should submit certified bank statements for at least twelve months or the duration of registration		
8	Appropriate copy of National Construction Authority NCA8 for Roads, Water and other Civil Works registration certificate attached		
9	Trading License/ Single Business Permit attached		
10	Sworn affidavit on litigation history		
11	Signed Ethics and Integrity declaration form		
	COMMENTS (PASS/FAIL)		

TECHNICAL EVALUATION

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

STAGE 2: TECHNICAL EVALUATION

Item	Description	Scoring breakdown	Max Score
1	Tender questionnaire duly filled Properly filled Partially filled Not filled	2 1 0	2
2	Experience as a main contractor in works of a similar nature and size completed over the last five years (Similar works completed in the last five(5) years (Attach completion certificates or any other documentary proof)	(Aggregate score)	15
	5 projects and above successfully completed	15	
	4 projects and above successfully completed	12	
	3 projects and above successfully completed	9	
	2 projects and above successfully completed	6	
	1 projects and above successfully completed	3	
	None or no relevant project	0	
3	Details of work under way or contractually committed i.e. Schedules of on-going similar projects. (Attach award letters or interim certificates or any other documentary proof)	(Aggregate score)	8
	4 projects and above ongoing well	8	
	3 projects and above ongoing well	6	
	2 projects and above ongoing well	4	
	1 projects and above ongoing well	2	
	None or no relevant project	0	

4	PLANT AND EQUIPMENT	Aggregate score	20
	Owned (1No. Motor grader 70hp, 1No. steel drum roller 6.5-9 ton, 1No. excavator 0.8-1.0m ³ rated bucket capacity, 1No. 11-17ton tipper lorry) ***Score for each equipment listed above and for which the bidder to proofs ownership is 5 points	20	
	Leased (1No. pneumatic tyred roller, 1No. bitumen paver maximum paving width 3.6m, 1No. pressure bitumen distributor 3500-4550litres capacity, 1No. mechanical bitumen handspray) **Score for each equipment listed above for which the bidder proofs availability on lease is 2.5 points	10	
	None	0	

No	Description			Score Scale	
5	KEY PERSONNEL			Max 23	
	Site Agent (Max 10 marks)	Qualification	Degree	5	
			Diploma	3	
		Relevant Experience (Degree)	3-5Years	5Years& Above	5
				3-5Years	4
				1-3	3
		Relevant Experience (Diploma)	3-5Years	3-5Years	2
	1-3			1	
	Engineering Surveyor (Max 7 marks)	Qualification	Higher National Diploma	2	
			Diploma	1	
		Relevant Experience (High National Diploma)	3-5 years	5Years& Above	5
				3-5 years	3
				1-3 years	1
		Relevant Experience (Diploma)	3-5Years	5 Years & Above	3
	3-5Years			1	
	Works Inspector (Max 6 marks)	Qualification	Higher National Diploma	2	
			Ordinary Diploma	1	
		Relevant Experience	3-5Years	5 Years & Above	4
				3-5Years	2
				1-3	1
6		FINANCIAL CAPACITY			Max 24
	Audited statements			0-6	
	Line of credit			0-3	
	Bank statements(last 6 months to the date of tender)			0-5	
7	LITIGATION HISTORY			Max 8	
	Without Litigation			8	
	With Litigation			0-5	
	TOTAL			MAX 100	

RECOMMENDATION

The evaluation committee shall recommend to the client for award the lowest bidder among those who achieve a score of 65% and above in **STAGE 2** above

Section C

CONDITIONS OF CONTRACT

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1. Definitions

1.1 In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

“Bill of Quantities” means the priced and completed Bill of Quantities forming part of the tender.

“Compensation Events” are those defined in Clause 24 hereunder.

“The Completion Date” means the date of completion of the Works as certified by the Project Manager, in accordance with Clause 31.

“The Contract” means the agreement entered into between the Employer and the Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works,

“The Contractor” refers to the person or corporate body whose tender to carry out the Works has been accepted by the Employer.

“The Contractor’s Tender” is the completed tendering document submitted by the Contractor to the Employer.

“The Contract Price” is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

“Days” are calendar days; **“Months”** are calendar months.

“A Defect” is any part of the Works not completed in accordance with the Contract.

“The Defects Liability Certificate” is the certificate issued by Project Manager upon correction of defects by the Contractor.

“The Defects Liability Period” is the period named in the Contract Data and calculated from the Completion Date.

“Drawings” include calculations and other information provided or approved by the Project Manager for the execution of the Contract.

“Dayworks” are Work inputs subject to payment on a time basis for labour and the associated materials and plant.

“Employer”, or the **“Procuring entity”** as defined in the Public Procurement Regulations (i.e. Central or Local Government administration, Universities, Public Institutions and Corporations,

etc) is the party who employs the Contractor to carry out the Works.

“Equipment” is the Contractor’s machinery and vehicles brought temporarily to the Site for the execution of the Works.

“The Intended Completion Date” is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.

“Materials” are all supplies, including consumables, used by the Contractor for incorporation in the Works.

“Plant” is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.

“Project Manager” is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract and shall be an “Architect” or a “Quantity Surveyor” registered under the Architects and Quantity Surveyors Act Cap 525 or an “Engineer” registered under Engineers Registration Act Cap 530.

“Site” is the area defined as such in the Appendix to Condition of Contract.

“Site Investigation Reports” are those reports that may be included in the tendering documents which are factual and interpretative about the surface and subsurface conditions at the Site.

“Specifications” means the Specifications of the Works included in the Contract and any modification or addition made or approved by the Project Manager.

“Start Date” is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with the Site possession date(s).

“A Subcontractor” is a person or corporate body who has a Contract with the Contractor to carry out a part of the Work in the Contract, which includes Work on the Site.

“Temporary works” are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

“A Variation” is an instruction given by the Project Manager which varies the Works.

“The Works” are what the Contract requires the Contractor to construct, install, and turnover to the Employer, as defined in the Appendix to Conditions of Contract.

2. Interpretation

- 2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning in English Language unless specifically defined. The Project Manager will provide instructions clarifying queries about these Conditions of Contract.
- 2.2 If sectional completion is specified in the Appendix to Conditions of Contract, reference in the Conditions of Contract to the Works, the Completion Date and the Intended Completion Date apply to any section of the Works (other than references to the Intended Completion Date for the whole of the Works).
- 2.3 The following documents shall constitute the Contract documents and shall be interpreted in the following order of priority;
- (1) Agreement,
 - (2) Letter of Acceptance,
 - (3) Contractor’s Tender,
 - (4) Appendix to Conditions of Contract,
 - (5) Conditions of Contract,
 - (6) Specifications,
 - (7) Drawings,
 - (8) Bill of Quantities,
 - (9) Any other documents listed in the Appendix to Conditions of Contract as forming part of the Contract.

Manager
copies
necessary
copy

Immediately after the execution of the Contract, the Project Manager shall furnish both the Employer and the Contractor with two each of all the Contract documents. Further, as and when the Project Manager shall furnish the Contractor [always with a to the Employer] with three [3] copies of such further drawings or

with details or descriptive schedules as are reasonably necessary either to explain or amplify the Contract drawings or to enable the Contractor to carry out and complete the Works in accordance with these Conditions.

3. Language and Law

- 3.1 Language of the Contract and the law governing the Contract shall be English language and the Laws of Kenya respectively unless otherwise stated.

4. Project Manager's Decisions

- 4.1 Except where otherwise specifically stated, the Project Manager will decide contractual matters between the Employer and the Contractor in the role representing the Employer.

5. Delegation

- 5.1 The Project Manager may delegate any of his duties and responsibilities to others after notifying the Contractor.

6. Communications

- 6.1 Communication between parties shall be effective only when in writing. A notice shall be effective only when it is delivered.

7. Subcontracting

- 7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations.

8. Other Contractors

- 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities etc. as listed in the Appendix to Conditions of Contract and also with the Employer, as per the directions of the Project Manager. The Contractor shall also provide facilities and services for them. The Employer may modify the said List of Other Contractors etc., and shall notify the Contractor of any such modification.

9. Personnel

- 9.1 The Contractor shall employ the key personnel named in the Qualification Information, to carry out the functions stated in the said Information or other personnel approved by the Project Manager. The Project Manager will approve any proposed

replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Qualification Information. If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the Work in the Contract.

10. Works

- 10.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings. The Works may commence on the Start Date and shall be carried out in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

11. Safety and Temporary Works

- 11.1 The Contractor shall be responsible for the design of temporary works. However before erecting the same, he shall submit his designs including specifications and drawings to the Project Manager and to any other relevant third parties for their approval. No erection of temporary works shall be done until such approvals are obtained.
- 11.2 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary works and all drawings prepared by the Contractor for the execution of the temporary or permanent Works, shall be subject to prior approval by the Project Manager before they can be used.
- 11.3 The Contractor shall be responsible for the safety of all activities on the Site.

12. Discoveries

- 12.1 Anything of historical or other interest or of significant value unexpectedly discovered on Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.

13. Work Program

- 13.1 Within the time stated in the Appendix to Conditions of Contract, the Contractor shall submit to the Project Manager for approval a program showing the general methods, arrangements, order, and timing for all the activities in the Works. An update of the program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the

remaining Work, including any changes to the sequence of the activities.

The Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Contract. If the Contractor does not submit an updated program within this period, the Project Manager may withhold the amount stated in the said Appendix from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue program has been submitted. The Project Manager's approval of the program shall not alter the Contractor's obligations. The Contractor may revise the program and submit it to the Project Manager again at any time. A revised program shall show the effect of Variations and Compensation Events.

14. Possession of Site

- 14.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Appendix to Conditions of Contract, the Employer will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.

15. Access to Site

- 15.1 The Contractor shall allow the Project Manager and any other person authorised by the Project Manager, access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

16. Instructions

- 16.1 The Contractor shall carry out all instructions of the Project Manager which are in accordance with the Contract.

17. Extension or Acceleration of Completion Date

- 17.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a variation is issued which makes it impossible for completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining Work, which would cause the Contractor to incur additional cost. The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager in writing for a decision upon the effect of a Compensation Event or variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay caused by such failure shall not be considered in assessing the new (extended) Completion Date.

17.2 No bonus for early completion of the Works shall be paid to the Contractor by the Employer.

18. Management Meetings

18.1 A Contract management meeting shall be held monthly and attended by the Project Manager and the Contractor. Its business shall be to review the plans for the remaining Work and to deal with matters raised in accordance with the early warning procedure. The Project Manager shall record the minutes of management meetings and provide copies of the same to those attending the meeting and the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

19. Early Warning

19.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Work, increase the Contract Price or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.

19.2 The Contractor shall cooperate with the Project Manager in making and considering proposals on how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the Work and in carrying out any resulting instructions of the Project Manager.

20. Defects

20.1 The Project Manager shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a defect and to uncover and test any Work that the Project Manager considers may have a defect. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor, However, if there is no defect found, the cost of uncovering and making good shall be treated as a variation and added to the Contract Price.

20.2 The Project Manager shall give notice to the Contractor of any defects

before the end of the Defects Liability Period, which begins at Completion, and is defined in the Appendix to Conditions of Contract. The Defects Liability Period shall be extended for as long as defects remain to be corrected.

- 20.3 Every time notice of a defect is given, the Contractor shall correct the notified defect within the length of time specified by the Project Manager's notice. If the Contractor has not corrected a defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the defect corrected by other parties and such cost shall be treated as a variation and be deducted from the Contract Price.

21. Bills Of Quantities

- 21.1 The Bills of Quantities shall contain items for the construction, installation, testing and commissioning of the Work to be done by the Contractor. The Contractor will be paid for the quantity of the Work done at the rate in the Bills of Quantities for each item.
- 21.2 If the final quantity of the Work done differs from the quantity in the Bills of Quantities for the particular item by more than 25 percent and provided the change exceeds 1 percent of the Initial Contract price, the Project Manager shall adjust the rate to allow for the change.
- 21.3 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bills of Quantities.

22. Variations

- 22.1 All variations shall be included in updated programs produced by the Contractor.
- 22.2 The Contractor shall provide the Project Manager with a quotation for carrying out the variations when requested to do so. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period as may be stated by the Project Manager and before the Variation is ordered.
- 22.3 If the work in the variation corresponds with an item description in the Bills of Quantities and if in the opinion of the Project Manager, the quantity of work is not above the limit stated in Clause 21.2 or the timing of its execution does not cause the cost per unit of quantity to change, the rate in the Bills of Quantities shall be used to calculate the value of the variation. If the cost per unit of quantity changes, or

if the nature or timing of the work in the variation does not correspond with items in the Bills of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of Work.

- 22.4 If the Contractor's quotation is unreasonable, the Project Manager may order the variation and make a change to the Contract price, which shall be based on the Project Manager's own forecast of the effects of the variation on the Contractor's costs.
- 22.5 If the Project Manager decides that the urgency of varying the Work would prevent a quotation being given and considered without delaying the Work, no quotation shall be given and the variation shall be treated as a Compensation Event.
- 22.6 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.
- 22.7 When the Program is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.

23. Payment Certificates, Currency of Payments and Advance Payments

- 23.1 The Contractor shall submit to the Project Manager monthly applications for payment giving sufficient details of the Work done and materials on Site and the amounts which the Contractor considers himself to be entitled to. The Project Manager shall check the monthly application and certify the amount to be paid to the Contractor within 14 days. The value of Work executed and payable shall be determined by the Project Manager.
- 23.2 The value of Work executed shall comprise the value of the quantities of the items in the Bills of Quantities completed, materials delivered on Site, variations and compensation events. Such materials shall become the property of the Employer once the Employer has paid the Contractor for their value. Thereafter, they shall not be removed from Site without the Project Manager's instructions except for use upon the Works.
- 23.3 Payments shall be adjusted for deductions for retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If the Employer makes a late payment, the Contractor shall be paid simple interest on the late payment in the next payment. Interest shall be calculated on the basis of number of days delayed at a rate three percentage points above the Central Bank of Kenya's average rate for base lending prevailing as of the first day the payment becomes overdue.
- 23.4 If an amount certified is increased in a later certificate or as a result of an award by an Arbitrator, the Contractor shall be paid

interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.

- 23.5 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
- 23.6 The Contract Price shall be stated in Kenya Shillings. All payments to the Contractor shall be made in Kenya Shillings and foreign currency in the proportion indicated in the tender, or agreed prior to the execution of the Contract Agreement and indicated therein. The rate of exchange for the calculation of the amount of foreign currency payment shall be the rate of exchange indicated in the Appendix to Conditions of Contract. If the Contractor indicated foreign currencies for payment other than the currencies of the countries of origin of related goods and services the Employer reserves the right to pay the equivalent at the time of payment in the currencies of the countries of such goods and services. The Employer and the Project Manager shall be notified promptly by the Contractor of an changes in the expected foreign currency requirements of the Contractor during the execution of the Works as indicated in the Schedule of Foreign Currency Requirements and the foreign and local currency portions of the balance of the Contract Price shall then be amended by agreement between Employer and the Contractor in order to reflect appropriately such changes.
- 23.7 In the event that an advance payment is granted, the following shall apply:-
- a) On signature of the Contract, the Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the Contract. The advance shall not be subject to retention money.
 - b) No advance payment may be made before the Contractor has submitted proof of the establishment of deposit or a directly liable guarantee satisfactory to the Employer in the amount of the advance payment. The guarantee shall be in the same currency as the advance.
 - c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the Contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the Contract. It shall have been completed by the time 80% of this amount is reached.

The amount to be repaid by way of successive deductions shall be calculated by means of the formula:

$$R = \frac{A(x^1 - x^{11})}{80 - 20}$$

Where:

- R = the amount to be reimbursed
- A = the amount of the advance which has been granted
- X¹ = the amount of proposed cumulative payments as a percentage of the original amount of the Contract. This figure will exceed 20% but not exceed 80%.
- X¹¹ = the amount of the previous cumulative payments as a percentage of the original amount of the Contract. This figure will be below 80% but not less than 20%.
- d) with each reimbursement the counterpart of the directly liable guarantee may be reduced accordingly.

24. Compensation Events

24.1 The following issues shall constitute Compensation Events:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Appendix to Conditions of Contract.
- (b) The Employer modifies the List of Other Contractors, etc., in a way that affects the Work of the Contractor under the Contract.
- (c) The Project Manager orders a delay or does not issue drawings, specifications or instructions required for execution of the Works on time.
- (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon the Work, which is then found to have no defects.
- (e) The Project Manager unreasonably does not approve a subcontract to be let.
- (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to tenderers

(including the Site investigation reports), from information available publicly and from a visual inspection of the Site.

- (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer or additional work required for safety or other reasons.
- (h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (i) The effects on the Contractor of any of the Employer's risks.
- (j) The Project Manager unreasonably delays issuing a Certificate of Completion.
- (k) Other compensation events described in the Contract or determined by the Project Manager shall apply.

24.2 If a compensation event would cause additional cost or would prevent the Work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

24.3 As soon as information demonstrating the effect of each compensation event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.

24.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Project Manager.

24.5 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Appendix to Conditions of Contract.

24.6 The Contractor shall give written notice to the Project Manager of his intention to make a claim within thirty days after the event giving rise to the claim has first arisen. The claim shall be submitted within thirty days thereafter.

Provided always that should the event giving rise to the claim of continuing effect, the Contractor shall submit an interim claim within the said thirty days and a final claim within thirty days of the end of the event giving rise to the claim.

25. Price Adjustment

- 25.1 The Project Manager shall adjust the Contract Price if taxes, duties and other levies are changed between the date 30 days before the submission of tenders for the Contract and the date of Completion. The adjustment shall be the change in the amount of tax payable by the Contractor.
- 25.2 The Contract Price shall be deemed to be based on exchange rates current at the date of tender submission in calculating the cost to the Contractor of materials to be specifically imported (by express provisions in the Contract Bills of Quantities or Specifications) for permanent incorporation in the Works. Unless otherwise stated in the Contract, if at any time during the period of the Contract exchange rates shall be varied and this shall affect the cost to the Contractor of such materials, then the Project Manager shall assess the net difference in the cost of such materials. Any amount from time to time so assessed shall be added to or deducted from the Contract Price, as the case may be.
- 25.3 Unless otherwise stated in the Contract, the Contract Price shall be deemed to have been calculated in the manner set out below and in sub-clauses 25.4 and 25.5 and shall be subject to adjustment in the events specified thereunder;
- (i) The prices contained in the Contract Bills of Quantities shall be deemed to be based upon the rates of wages and other emoluments and expenses as determined by the Joint Building Council of Kenya (J.B.C.) and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.
 - (ii) Upon J.B.C. determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the Contract Price shall be increased or decreased by the amount assessed by the Project Manager based upon the difference, expressed as a percentage, between the rate set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the J.B.C. and applied to the quantum of labour incorporated within the amount of Work remaining to be executed at the date of publication of such increase or decrease.

- (iii) No adjustment shall be made in respect of changes in the rates of wages and other emoluments and expenses which occur after the date of Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.
- 25.4 The prices contained in the Contract Bills of Quantities shall be deemed to be based upon the basic prices of materials to be permanently incorporated in the Works as determined by the J.B.C. and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.
- 25.5 Upon the J.B.C. determining that any of the said basic prices are increased or decreased then the Contract Price shall be increased or decreased by the amount to be assessed by the Project Manager based upon the difference between the price set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the J.B.C. and applied to the quantum of the relevant materials which have not been taken into account in arriving at the amount of any interim certificate under clause 23 of these Conditions issued before the date of publication of such increase or decrease.
- 25.6 No adjustment shall be made in respect of changes in basic prices of materials which occur after the date for Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.
- 25.7 The provisions of sub-clause 25.1 to 25.2 herein shall not apply in respect of any materials included in the schedule of basic rates.

26. Retention

- 26.1** The Employer shall retain from each payment due to the Contractor the proportion stated in the Appendix to Conditions of Contract until Completion of the whole of the Works. On Completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and the remaining half when the Defects Liability Period has passed and the Project Manager has certified that all defects notified to the Contractor before the end of this period have been corrected.

27. Liquidated Damages

- 27.1 The Contractor shall pay liquidated damages to the Employer at the rate stated in the Appendix to Conditions of Contract for each day that the actual Completion Date is later than the Intended Completion Date. The Employer may deduct liquidated damages

from payments due to the Contractor. Payment of liquidated damages shall not alter the Contractor's liabilities.

- 27.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rate specified in Clause 23.30

28. Securities

- 28.1 The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a reputable bank acceptable to the Employer, and denominated in Kenya Shillings. The Performance Security shall be valid until a date 30 days beyond the date of issue of the Certificate of Completion.

29. Dayworks

- 29.1 If applicable, the Dayworks rates in the Contractor's tender shall be used for small additional amounts of Work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
- 29.2 All work to be paid for as Dayworks shall be recorded by the Contractor on Forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the Work being done.
- 29.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

30. Liability and Insurance

- 30.1 From the Start Date until the Defects Correction Certificate has been issued, the following are the Employer's risks:
- (a) The risk of personal injury, death or loss of or damage to property (excluding the Works, Plant, Materials and Equipment), which are due to:
 - (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works, or
 - (ii) negligence, breach of statutory duty or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.

- (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in Employer's design, or due to war or radioactive contamination directly affecting the place where the Works are being executed.
- 30.2 From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is the Employer's risk except loss or damage due to;
- (a) a defect which existed on or before the Completion Date.
 - (b) an event occurring before the Completion Date, which was not itself the Employer's risk
 - (c) the activities of the Contractor on the Site after the Completion Date.
- 30.3 From the Start Date until the Defects Correction Certificate has been issued, the risks of personal injury, death and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risk are Contractor's risks.
- The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts stated in the Appendix to Conditions of Contract for the following events;
- (a) loss of or damage to the Works, Plant, and Materials;
 - (b) loss of or damage to Equipment;
 - (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract, and
 - (d) personal injury or death.
- 30.4 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation required to rectify the loss or damage incurred.
- 30.5 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
- 30.6 Alterations to the terms of an insurance shall not be made without the approval of the Project Manager. Both parties shall comply with any conditions of insurance policies.

31. Completion and taking over

- 31.1 Upon deciding that the Works are complete, the Contractor shall issue a written request to the Project Manager to issue a Certificate of Completion of the Works. The Employer shall take over the Site and the Works within seven [7] days of the Project Manager's issuing a Certificate of Completion.

32. Final Account

- 32.1 The Contractor shall issue the Project Manager with a detailed account of the total amount that the Contractor considers payable to him by the Employer under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 30 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 30 days a schedule that states the scope of the corrections or additions that are necessary. If the final account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a Payment Certificate. The Employer shall pay the Contractor the amount due in the Final Certificate within 60 days.

33. Termination

- 33.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract. These fundamental breaches of Contract shall include, but shall not be limited to, the following;
- (a) the Contractor stops work for 30 days when no stoppage of work is shown on the current program and the stoppage has not been authorised by the Project Manager;
 - (b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days;
 - (c) the Contractor is declared bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 30 days (for Interim Certificate) or 60 days (for Final Certificate) of issue.

- (e) the Project Manager gives notice that failure to correct a particular defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
 - (f) the Contractor does not maintain a security, which is required.
- 33.2 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under Clause 33.1 above, the Project Manager shall decide whether the breach is fundamental or not.
- 33.3 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 33.4 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible. The Project Manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the Works executed and materials , goods, equipment and temporary buildings on Site.

34. Payment Upon Termination

- 34.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the Work done and materials ordered and delivered to Site up to the date of the issue of the certificate. Additional liquidated damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable by the Contractor.
- 34.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the Work done, materials ordered, the reasonable cost of removal of equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works.
- 34.3 The Employer may employ and pay other persons to carry out and complete the Works and to rectify any defects and may enter upon the Works and use all materials on the Site, plant, equipment and temporary works.
- 34.4 The Contractor shall, during the execution or after the completion of the Works under this clause remove from the Site as and when required, within such reasonable time as the Project Manager may in writing specify, any temporary buildings, plant, machinery,

appliances, goods or materials belonging to or hired by him, and in default the Employer may (without being responsible for any loss or damage) remove and sell any such property of the Contractor, holding the proceeds less all costs incurred to the credit of the Contractor.

Until after completion of the Works under this clause the Employer shall not be bound by any other provision of this Contract to make any payment to the Contractor, but upon such completion as aforesaid and the verification within a reasonable time of the accounts therefore the Project Manager shall certify the amount of expenses properly incurred by the Employer and, if such amount added to the money paid to the Contractor before such determination exceeds the total amount which would have been payable on due completion in accordance with this Contract the difference shall be a debt payable to the Employer by the Contractor; and if the said amount added to the said money be less than the said total amount, the difference shall be a debt payable by the Employer to the Contractor.

35. Release from Performance

- 35.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop Work as quickly as possible after receiving this certificate and shall be paid for all Work carried out before receiving it.

36. Corrupt gifts and payments of commission

The Contractor shall not;

- (a) Offer or give or agree to give to any person in the service of the Employer any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other Contract for the Employer or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for the Employer.
- (b) Enter into this or any other contract with the Employer in connection with which commission has been paid or agreed to be paid by him or on his behalf or to his knowledge, unless before the Contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment thereof have been disclosed in writing to the Employer.

Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without

the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement Regulations issued under The Exchequer and Audit Act Cap 412 of the Laws of Kenya.

37. Settlement Of Disputes

37.1 In case any dispute or difference shall arise between the Employer or the Project Manager on his behalf and the Contractor, either during the progress or after the completion or termination of the Works, such dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed by the Chairman or Vice Chairman of any of the following professional institutions;

- (i) Architectural Association of Kenya
- (ii) Institute of Quantity Surveyors of Kenya
- (iii) Association of Consulting Engineers of Kenya
- (iv) Chartered Institute of Arbitrators (Kenya Branch)
- (v) Institution of Engineers of Kenya

On the request of the applying party. The institution written to first by the aggrieved party shall take precedence over all other institutions.

37.2 The arbitration may be on the construction of this Contract or on any matter or thing of whatsoever nature arising thereunder or in connection therewith, including any matter or thing left by this Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the Contractor may claim to be entitled to or the measurement and valuation referred to in clause 23.0 of these conditions, or the rights and liabilities of the parties subsequent to the termination of Contract.

37.3 Provided that no arbitration proceedings shall be commenced on any dispute or difference where notice of a dispute or difference has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.

37.4 Notwithstanding the issue of a notice as stated above, the arbitration of such a dispute or difference shall not commence unless an attempt has in the first instance been made by the

parties to settle such dispute or difference amicably with or without the assistance of third parties. Proof of such attempt shall be required.

- 37.5 Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:
- 37.5.1 The appointment of a replacement Project Manager upon the said person ceasing to act.
 - 37.5.2 Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions.
 - 37.5.3 Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
 - 37.5.4 Any dispute or difference arising in respect of war risks or war damage.
- 37.6 All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless the Employer and the Contractor agree otherwise in writing.
- 37.7 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.
- 37.8 The Arbitrator shall, without prejudice to the generality of his powers,

have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.
- 37.9 The award of such Arbitrator shall be final and binding upon the parties.

APPENDIX TO CONDITIONS OF CONTRACT

Name of Employer:

**DEPARTMENT OF LANDS, HOUSING, PHYSICAL PLANNING & URBAN DEVELOPMENT
COUNTY GOVERNMENT OF KISUMU
P.O. BOX 2738-40100
KISUMU**

Name of Employer's Representative:

**THE CHIEF OFFICER,
DEPARTMENT OF HOUSING & URBAN DEVELOPMENT
COUNTY GOVERNMENT OF KISUMU
P.O. BOX 2738-40100,
KISUMU**

Name of Project Manager:

**DIRECTOR
URBAN PLANNING DIRECTORATE
DEPARTMENT OF HOUSING & URBAN DEVELOPMENT
COUNTY GOVERNMENT OF KISUMU
P.O. BOX 2738-40100,
KISUMU**

The name of Contract is:

CONSTRUCTION OF THE PROPOSED MASENO TOWN ROAD

Tender No: **CGK/LHPP&UD/CRF/RFQ/2020-2021/002**

Scope of the Works:

SPECIAL SPECIFICATIONS

GENERAL

These Special Specifications are Supplementary to the Standard Specifications and the two must be read in conjunction. **In cases where there appears to be conflicts between the two, the Special Specifications will take precedence.**

Location and Extent of the Works

The project includes construction of **0.4 km** road to bitumen standards. Sections of the road covered under this contract is Maseno Town Road which is to be upgraded to bitumen standards.

Extent of the Works

The major works to be executed under the contract comprise mainly of but are not limited to the following:

- (i) Site Clearance and Top soil stripping
- (ii) Earthworks involving majorly fills to raise the road to sufficient height

- (iii) Preparation of subgrade to receive pavement layers as per the design and specifications
- (iv) Construction of 150mm natural occurring gravel material subbase
- (v) Construction of 150mm base compacted thickness using 2.5% cement improved gravel material
- (vi) Provision of 40mm Type II Asphalt Concrete surfacing to 6m wide carriageway
- (vii) Provision of 25mm Type II Asphalt Concrete surfacing for the shoulders each 0.6m wide
- (viii) Construction of 4 lines of cross and access pipe culverts
- (ix) Construction of stone lined side drains
- (x) Provision of road furniture and road markings.
- (xi) Maintenance of passage of traffic through and around the works
- (xii) Maintenance of works during construction and Defect Liability Period.

MORE DETAILS ARE IN THE BILLS OF QUANTITIES IN THIS TENDER DOCUMENT , AND THE CONTRACT AGREEMENT

The Tender Opening Date and Time will be onat **12 noon EAT Department of Lands, Housing, Physical Planning & Urban Development, Prosperity House 9th Floor Wing A, BOARDROOM**

The Start Date shall be as stated in the Project Manager’s Notice to commence work.

The Intended Completion period for the whole of the Works shall be **12 WEEKS** from the date of commencement.

The Site Possession Date shall be the date site is handed over to the Contractor by the Project Manager.

The Site is located at **KISUMU WEST SUB-COUNTY, NORTH WEST KISUMU WARD**

The Defects Liability Period is **12 MONTHS**

Amount of Tender Security is Kshs..... (2.0% of the Tender Price) in the Form of Tender Security or a Banker’s Cheque, from a reputable Commercial Bank, to the Employer.

The amount of Performance Security is 10% of CONTRACT PRICE in form of a Performance bank Guarantee, from a reputable Commercial Bank, acceptable to the Employer.

Retention Money will be **10%** of the INTERIM CERTIFICATE with a limit of 10% of the Contract Price or such other sum as shall become payable.

BID SECURING DECLARATION FORM

[The Bidder shall complete in this Form in accordance with the instructions indicated]

Date:..... [insert date (as day, month and year) of Bid Submission]

Tender No.[insert number of bidding process]

To:..... [insert complete name of Purchaser]

We, the undersigned, declare that:

- 1 We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.
- 2 We accept that we will automatically be suspended from being eligible for bidding in any contract with the Purchaser for the period of time of 5 years starting on the date of expiration of tender validity period, if we are in breach of our obligation(s) under the bid conditions, because we –
 - (a) have withdrawn our Bid during the period of bid validity specified by us in the Bidding Data Sheet; or
 - (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity,
 - (i) fail or refuse to execute the Contract, if required, or
 - (ii) fail or refuse to furnish the Performance Security, in accordance with the Instruction to tenderers.
- 3 We understand that this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of
 - (i) our receipt of a copy of your notification of the name of the successful Bidder; or
 - (ii) twenty-eight days after the expiration of our Tender.
- 4 We understand that if we are a Joint Venture, the Bid Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Bid Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed:[signature of person whose name and capacity are shown] in the capacity of [insert legal capacity of person signing the Bid Securing Declaration]

Name: [complete name of person signing the Bid Securing Declaration]

Duly authorized to sign the bid for and on behalf of:[complete name of Bidder]

Dated on day of, [date of signing]

Section D

SPOT IMPROVEMENT

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SECTION 1 – PRELIMINARIES

This bill comprises those items that are required at the Commencement and Completion of the Works or that are Provisional Items applicable for the duration of the Works.

01-50- 001 Mobilization and Establishment of the Site

The Contractor shall provide all equipment, tools, materials, temporary offices, stores and housing required to carry out the Works.

The Contractor shall ensure that all possible means of protection are given to the labour force at all times. Such protection shall include provision of high visibility clothing or vests, goggles and masks for workers in potentially dangerous locations or dealing with potentially harmful materials. The Contractor shall also maintain first aid kits with a minimum of the following items:-

- Non Stick wound dressing
- Selection of plaster/band aids
- Crepe bandages
- Gauze and cotton wool
- Antiseptic solution (washing wounds)
- Antiseptic cream – Betadine, Burnol
- Pain killers Panadol, Disprin
- Anti diarrhoea – Immodium, Diadis, Charcoal
- Anti histamine – Piriton, Triludan
- Anti nausea – Stemetil
- Eye ointment
- Oral re-hydration sachets
- Surgical gloves

Measurement and Payment: NA

01-60- 001 Contract Supervision

Provisional sum available for the Engineer for expenses incurred for supervising the contract such as allowances, casual wages and transportation within the project area.

Measurement and Payment:

Provisional Sum: Payable by the Contractor to the Engineer through certification as directed by the Engineer. No mark up is included in this item.

Work Method: NA

01-60- 001 Clearance on Completion

On Completion of the Works, all temporary housing, equipment, signs and tools shall be removed from the site, and the site left in good order to the satisfaction of the Engineer.

Measurement and Payment

The Lump Sum payment will be made upon approval by the Engineer that the Clearance has been satisfactorily carried out.

Work Method: NA

01-60-003 Insurance

The Contractor shall provide Insurance in accordance with the Conditions of Contract as indicated in the Appendix to form of tender for Rehabilitation and Improvement Contracts and Clause 14.1 for small works conditions of contract.

Measurement and Payment

Lump Sum payment for this item will be made upon the production of satisfactory evidence by the Contractor that Insurances have been affected.

Work Method: NA

01-60-004 Quality Control Tests

The Engineer may instruct the Contractor during the progress of the Works to carry out quality control tests to check materials and standards of workmanship, against the Specifications.

Where such tests indicate defective standards the Engineer shall instruct the Contractor to rectify the defects to the Engineer's satisfaction and at the Contractor's expense.

The Engineer shall include a Provisional Sum for this item to be expended only as and when the Contractor is instructed to carry out tests at approved material testing laboratories.

Measurement and Payment

Reimbursable item based on actual costs incurred by the contractor including sampling, transportation and testing.

Work Method: NA

01-60-005 Publicity Sign Boards

The Contractor shall provide Sign Boards as specified on the Drawings or as directed by the Engineer. The Sign Boards shall be placed at the beginning and end of the road or road bill covered by this Contract.

Sign Boards shall be maintained for the duration of the Works, and removed on completion.

Quality Control

The Engineer shall check that Sign Boards have been erected in accordance with Drawings and Specifications.

Measurement: Number

The unit of measurement shall be number of Sign Boards erected

Payment

The unit rate shall be the full compensation for labour, tools, materials and incidental costs required for carrying out the work.

Work Method: NA

01-60- 006 Drinking Water

The Contractor shall provide safe drinking water on site for workers at a reasonable distance from all work locations, for the duration of the Works.

Quality Control

The Engineer shall check regularly that adequate supplies of water are available throughout the Site.

Measurement and Payment

A Lump Sum shall be paid on a Monthly basis upon the approval of the Engineer that adequate supplies have been provided.

Work Method:

LB

01-60-007 Provision of site sanitation facilities

The Contractor shall provide sanitation facilities on site for workers at a reasonable distance from all work locations, for the duration of the Works. This can be in the form of shallow pit latrines that are appropriately covered. All shallow pit latrines shall be filled in after the end of use.

Quality Control

The Engineer shall check regularly that adequate sanitation facilities are available throughout the Site.

Measurement and Payment

A Lump Sum shall be paid on a Monthly basis upon the approval of the Engineer that adequate sanitation facilities have been provided.

Work Method: **LB**

**SECTION 2
MATERIALS AND TESTING OF MATERIALS**

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

**SECTION 3 –
SETTING OUT & TOLERANCES**

**301
SETTING OUT**

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

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

Commencement of the works shall not be permitted until this basic survey data has been provided and approved by the Engineer for at least 2 Kms of the road.

b) **Detailed Setting Out**

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

Chainages, offset and reference elevation shall be clearly indicated to the sides of the peg to the satisfaction of the Engineer.

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

SECTION 4- SITE CLEARANCE AND TOP SOIL STRIPPING

401 SITE CLEARANCE

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

401 REMOVAL OF TOPSOIL

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

403 REMOVAL OF STRUCTURES, FENCES AND OBSTRUCTIONS

When instructed by the Engineer, the Contractor shall demolish or remove any structure and payment for this shall be made on day works basis.

SECTION 5 – EARTHWORK

504 PREPARATION PRIOR TO FORMING EMBANKMENT

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

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

Step construction shall be carried out per layer at the joint where excavating both vertically and perpendicular to the direction of the travel. The step shall be 500mm perpendicular to the direction of the travel and 150mm vertical unless otherwise instructed by the Engineer.

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

505 CONSTRUCTION OF EMBANKMENTS

Only material approved by the Engineer shall be used for fill in embankments. Material with high swelling characteristics or high organic matter content and any other undesirable material shall not be used, unless specifically directed by the Engineer. Unsuitable material shall include:

(i) All material containing more than 5% by weight or organic matter (such as topsoil, material from swamps, mud, logs, stumps and other perishable material)

(ii) All material with a swell of more than 3% (such as black cotton soil) (iii)

All clay of plasticity index exceeding 50.

(iv) All material having moisture content greater than 105% of optimum moisture content (Standard Compaction)

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

Subgrade repair: Where directed by the Engineer, any localized failure in the subgrade shall be repaired by filling in selected soft, hard or natural of minimum CBR 30% and compacted in accordance with clauses in the specifications applying to normal subgrade.

Embankment repair: Where directed by the Engineer, any localized filling in soft, hard or natural; selected material requirements shall be executed in accordance with Clause 505.

508

COMPACTION OF ARTHWORKS

At pipe culverts, all fill above ground level around the culverts shall be compacted to density of 100% MDD (AASHTO T.99) up to the level of the top of the pipes or top of the surround(s), if any and for a width equal to the internal diameter of the pipe on either side of the pipe(s) or surround(s) as applicable.

At locations adjacent to structures, all fill above ground level upto the underside of the subgrade shall be compacted to density of 105% MDD (AASHTO T.99). In case of fill around box culverts this should be carried out for the full width of the fill and for a length bounded by the vertical plane passing through the ends of the wingwalls.

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

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

511 BORROW PITS

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

Fill material which is required in addition to that provided by excavation shall be obtained from borrow pits to be located and provided by the Contractor but to the approval of the Engineer contrary to what has been stated.

51 MEASUREMENT AND PAYMENT

Notwithstanding the provisions of clause 517 of the standard specifications, the rate for compaction of fill in soft material shall allow for the requirements of clause 508 of the special specification and no extra payment shall be made for compaction around pipe culverts (100% MDD AASHTO T.99).

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

601 GENERAL

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

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

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

601 MATERIAL SITES

The information on possible material sites is given for the general guidance of bidders. Bidders are however advised to conduct their own investigation as the information contained therein is neither guaranteed nor warranted

603 PROVISION OF LAND

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

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

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

**605
SAFETY AND PUBLIC HEALTH REQUIREMENTS**

In addition to clause 605, the contractor shall allow for professionals to conduct lectures to the workers regarding the spread of HIV/Aids.

**SECTION 7 EXCAVATION AND FILLING FOR
STRUCTURES**

**703
EXCAVATION OF FOUNDATIONS FOR STRUCTURES**

Unless otherwise instructed by the Engineer, all excavated surfaces in material other than hard material, on which foundations for structures shall be placed, shall be compacted to 100% MDD (AASHTO T.99) immediately before structures are constructed.

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

**707
BACKFILLING FOR STRUCTURES**

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

709 EXCAVATIONS FOR RIVER TRAINING AND NEW WATER COURSES

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

710 STONE PITCHING

Stone pitching to drains, inlets and outlets of culverts to embankments and around structure shall consist of sound unweathered rock approved by the Engineer.

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

The surface to receive the pitching shall be compacted and trimmed to slope and the stone laid, interlocked and rammed into the material to give an even finished surface.

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

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

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

711 GABIONS

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

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

The Works shall involve removal of the damaged gabions / rocks, excavation to the correct levels and grades as directed by the Engineer, and in accordance with Clause 711 of the Standard Specifications and reconstruction with new gabions and other necessary materials as necessary. The damaged gabions shall be recovered and transported to the nearest KURA'S Yard or M.O. R &P.W Department depot.

712 RIP-RAP PROTECTION WORK

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

The surface to receive the pitching shall be compacted and trimmed to slope and the stone hand laid, interlocked and rammed into the material to give an even finished surface. The interstices of the Pitching shall be rammed with insitu material. The insitu material immediately behind the pitching shall be compacted to minimum density of 100% MDD compaction (AASHTO T.99)

714

BACKFILL BELOW STRUCTURES

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

**SECTION 8 –
CULVERTS AND DRAINAGE WORKS**

801

SCOPE OF SECTION

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

In addition, this Section covers: -

- Extending of existing 450mm, 600mm and 900mm diameter pipes to be compatible with the increased road width or access.
- Desilting and cleaning of existing pipes and outfall drains to make them free flowing.

804

EXCAVATION FOR CULVERTS AND DRAINAGE WORKS

In the Standard Specifications, make the following amendments: -

In paragraph 6, line 3, and in paragraph 7, line 5 and in paragraph 11, line 6, delete "95%" and insert "100%".

Removal of Existing Pipe Culverts

Where instructed by the Engineer, the Contractor shall excavate and remove all existing blocked or collapsed culvert pipes of 450mm, 600mm and 900mm diameter including concrete surround, bedding, inlet and outlet structure. The void left after removal of culvert pipes shall be widened as necessary to accommodate new concrete bedding, pipe and haunching.

The payment of this work shall be per linear metre of pipes removed, and the volume in m³ of inlet/outlet structure removed. The void left by removal of these pipes shall be carefully preserved in order to accommodate replacement of 450mm, 600mm or 900mm diameter pipe culverts as shall be directed by the Engineer.

Removal of Other Existing Drainage Structures

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

Excavation for Culverts and Drainage Works

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

805

EXCAVATION IN HARD MATERIAL

In the Standard Specifications, Sub-clauses 805(a) and 805 (b) delete "95%" and insert "100%". In sub-clause 809(a), paragraph 1, line 1, substitute "95%" with "100%".

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

Hard material is material that can be excavated only after blasting with explosives or barring and wedging or the use of a mechanical breaker fitted with a rock point in good condition and operated correctly. Boulders of more than 0.2m³ occurring in soft material shall be classified as hard material.

809

BEDDING AND LAYING OF PIPE CULVERTS

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

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

810

JOINTING CONCRETE PIPES

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

812

BACKFILLING OVER PIPE CULVERTS

In the Standard Specifications, clause 812

a) Wherever the expression "dry density of 95% MDD (AASHTO T. 99)" occurs delete and replace with "dry density of 100% MDD (AASHTO T.99)".

The rates entered for laying of pipe culverts shall allow for backfilling to pipe culverts and compacting to 100% MDD (AASHTO T.99) and these works shall not be measured and paid for separately.

814

SUBSOIL DRAINS

In the event of excavation for repairs exposing local seepage, springs or unacceptably high water table, the Engineer may instruct the provision of counter fort or French drains.

These drains shall consist of a trench excavated to the alignment, width, depth and gradient instructed by the Engineer, and backfilled with approved compacted clean hard crushed rock material as specified in clause 815 of the standard specification. Where these drains lie within the carriageway the carriageway shall be reinstated with compacted stabilised gravel and surfaced with hot asphalt or a surface dressing as instructed by the Engineer.

815

INVERT BLOCK DRAINS AND HALF ROUND CHANNELS

Invert Block Drains and Half Round Channels shall be constructed as shown in the drawings provided in accordance with the Standard Specifications where directed by the Engineer.

817

REPAIRS TO DRAINS

817.1

Cleaning and Repair of Existing Drains

In areas of existing side drains, mitre or outfall drains where such are blocked, the Engineer shall instruct the Contractor to clean and clear the drains to free flowing condition.

The work shall consist of:

(a) Stripping and removal of any extraneous material to spoil including vegetation and roots in the drains to the satisfaction of the engineer.

(b) Spreading of any spoil to the satisfaction of the Engineer.

Shaping the drains to free flowing condition as directed by the Engineer.

Removing any broken side slabs for inverted block drains and replacing with a new removing any broken inverted block drains and replacing with a new one well jointed.

Measurement and Payment for cleaning drains shall be by linear metre of drain cleaned measured as the product of plan area and vertical depth of extraneous material instructed to be removed. No extra payment will be made for removal of vegetation and roots.

817.2 Channels

The Engineer may instruct that the Contractor provides open channels in place of existing subdrains where the latter may be damaged or in any other place. The rates entered by the Contractor in the bills of quantities must include for removal and disposal of any subdrain material, excavation to line and level, backfilling and compaction as directed by the engineer. The channels shall be constructed of precast class 20/20 concrete of minimum 80mm thickness and lengths or widths not exceeding 1000mm. Joints shall be at least 15mm wide filled with 1:2 cement sand mortar.

817.3

Rubble fills for protection work

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

817.4

Stone Pitching

Stone pitching shall be constructed in accordance with clause 710 of the standard Specification.

817.5 Gabions

Gabions shall be constructed in accordance with clause 711 of the standard Specification.

**817.6
Spoil Material**

The Contractor shall be responsible for removal from site of all materials excavated in the course of undertaking works in this section of the specifications, unless suitable for re-use, and deposit of the material in a spoil dump to be approved by the Engineer.

**818
SCOUR CHECKS**

Scour checks are to be constructed in mass concrete in accordance with clause 818 of the standard Specifications and the drawings as shall be provided.

**819
CLEANING AND MAINTENANCE**

**819.1
Desilting of Pipe Culverts**

Where instructed, Contractor shall desilt the existing pipe culverts by removing all the material from the pipe to make them clean and free flowing.

Measurement and payment shall be by the linear metres of pipes de-silted, regardless of diameter size.

**SECTION 9 –
PASSAGE OF TRAFFIC**

**901
SCOPE OF THE SECTION**

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

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

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

The Contractor shall also provide sign posts and maintain to the satisfaction of the Engineer all deviations necessary to complete the works. The contractor should allow for the costs of complying with the requirements of this clause in his rates.

The contractor will be deemed to have inspected the site and satisfied himself as to the adequacy of his bid for these works and no additional payments will be made to the contractor for any expenditure on traffic control or the provision of deviations. The employer shall not be liable for inadequate prior investigations of this nature by the contractor.

903

MAINTENANCE OF EXISTING ROADS

The Contractor shall when instructed, maintain the existing project road ahead of works using compacted asphalt concrete type I in accordance with the provisions in clause 1601B – 1607B of the Special Specifications or gravel material depending on the nature of the wearing course surface.

904

CONSTRUCTION OF DEVIATIONS

General

In addition to requirement of this clause, the Contractor shall when instructed construct and complete deviations to the satisfaction of the Engineer before commencing any permanent work on the existing road. Also during these works the contractor is supposed to provide a detour of adequate pipe culverts for pedestrian and traffic crossing where there is bridge works.

Subject to the approval by the Employer, the Contractor may maintain and use existing roads for deviation. Payment for this, made in accordance with clause 912 (a) (i), shall be by the Kilometre used depending on the type of road used, whether bituminous or earth/gravel. The rates shall include for the provision of materials and the works involved.

b) **Geometry**

The carriageway width of the deviations shall not be less than 6m wide and suitable for 2-way lorry traffic unless otherwise specified.

c) **Construction**

Unless otherwise instructed gravel wearing course for the deviation shall be 150mm compacted thickness complying with section 10 of the Standard Specification. The Contractor shall allow in his rate for removal of any unsuitable material before placing of gravel wearing course, as this will not be paid for separately.

In addition to provision of this clause, Contractor is required to sprinkle water at least 4 times a day at the rate of 1 to 1.4 litres/M² in regular interval to minimise the effects of dust. Latest sprinkling time shall be one hour before the sunset.

Where existing neighbouring roads are used as deviation, Contractor shall carry out repairs and maintenance in parent materials used for the existing base and surfacing of the road being used.

906

PASSAGE OF TRAFFIC THROUGH THE WORKS

The Contractor shall arrange for passage of traffic through the works during construction whenever it is not practicable to make deviations.

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

907

SIGNS, BARRIERS AND LIGHTS

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

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

909

ASSISTANCE TO PUBLIC

In addition to provision of clause 909, Contractor shall maintain close liaison with the relevant authorities to clear any broken down or accident vehicles from the deviations and the main road, in order to maintain smooth and safe flow of the traffic. Further, the Contractor shall provide a traffic management plan to be approved by the Engineer before the commencement of any construction works and execute the same, to the satisfaction of the Engineer, during the entire period of project implementation. A draft traffic management plan shall be submitted with Bid.

912 MEASUREMENT AND PAYMENT

Construct Deviation

Road Deviation

The Contractor shall be paid only 50% of the rate for this when he completes deviation road to the satisfaction of the Engineer. The balance shall be paid in equal monthly instalments over the contract period, as he satisfactorily maintains the deviation (as per clause 904 and 905 above) when it is in operation.

Where existing neighbouring road has been used as deviation, payment shall be by the kilometre rate and shall include the cost of repairs and maintenance of the road carried out in parent base and subbase materials.

Deviation using Pipe Culverts

The Contractor shall be paid only 50% of the rate for this when he completes deviation to the satisfaction of the Engineer. The balance shall be paid in equal monthly instalments over the contract period, as he satisfactorily maintains the deviation when it is in operation. The Contractor shall be paid full amount when the bridge under construction will be in use.

Maintain existing road

Asphalt Concrete or gravel for maintaining the existing road shall be measured by the cubic metre placed and compacted upon the road

Passage of traffic through the works

Payment shall be made on Lump Sum basis.

Assistance to Public

The Contractor will be deemed to have included cost of this item in other items and no separate payment shall be made.

SECTION 10 – GRADING AND GRAVELLING

1001 GENERAL

Grading covers the works involved in the reinstatement of the road carriageway to the camber by removing the high points and filling up gullies, corrugations and wheel ruts to restore smooth running surface. Graveling consists of excavation, loading, hauling, spreading, watering and compaction of gravel or softstone wearing course material on the formation of the road carriageway.

Ditch and Shoulder grading

The activity consists of cutting of a V – ditch and reinstating or reforming of the shoulders of road using either Towed or Motor grader.

Carriageway grading

(i)

Light grading

This consists of trimming of the carriageway to control roughness and corrugations using either a towed grader or a motorized grader.

(ii)

Heavy grading

This consists of scarifying the existing carriageway surface, cutting high spots and moving materials to fill potholes, corrugations and wheel ruts and reshaping of the surface to the specified camber, using either a towed grader or a motorized grader. All loose rocks, roots, grasses shall be removed and disposed well clear off the drains.

Heavy grading will be considered if 70% of the road has potholes, corrugations and wheel ruts of over 200mm deep.

The material shall be bladed toward the center of the road starting from both edges until the specified camber is achieved.

1001 MATERIALS

Gravel shall include lateritic gravel, quartzitic gravel, calcareous gravel, decomposed rock, softstone/quarry waste material, clayey sand and crushed rock.

1003

MATERIAL REQUIREMENTS

Gravel material shall conform to the requirements given below:

GRADING REQUIREMENTS AFTER
COMPACTION

Sieve (mm)	% by weight passing
40	100
28	95 – 100
20	85 – 100
14	65 – 100
10	55 – 100
5	35 – 92
2	23 – 77
1	18 – 62
0.425	14 – 50
0.075	10 - 40

PLASTICITY INDEX REQUIREMENTS PI		
Zone	Min	Max
WET	5	15
DRY	10	25

BEARING STRENGTH REQUIREMENTS		
Traffic Commercial VPD	CBR	DCP Equivalent mm/Blow
Greater than 15	20	11
Less than 15	15	14
CBR at 95% at MDD, Modified AASHTO and 4 days soak		
Lower quality material (CBR 15) may be accepted if no better material can be found		

NB: Wet Zone – mean annual rainfall greater than 500mm
Dry Zone – mean annual rainfall less than 500mm

SECTION 11 – SHOULDERS TO PAVEMENT

1101 GENERAL

Shoulders shall be constructed in accordance with guidelines given in 1101 and as directed by the Engineer.

For sections where shoulders are extremely low and requires fill material before the shoulder is reconstructed, the construction of fill embankment shall be in accordance with Section 5 of this specification.

1101 MATERIAL FOR CONSTRUCTION OF SHOULDERS

The shoulders shall be 1.0m wide both sides and shall be formed of 150mm thick well compacted soft stone material and topsoiled with red coffee soil and planted with grass.

Low shoulder shall be reconstructed by cutting benches, filling and compacting approved fill material to form the formation to the shoulders.

Shoulder reconstruction shall be same in all sections including the slip roads.

1105 SURFACE TREATMENT OF SHOULDERS

The shoulders shall be planted with creeping type kikuyu grass.

1106 MEASUREMENT AND PAYMENT

Payment for shoulder construction shall be in accordance with the relevant clauses in sections 11, 12, 14, 15 and 23 of the relevant Specifications. Payment for fill material on shoulder shall be in accordance with Section 5 of this specification.

SECTION 12 – NATURAL MATERIAL SUBBASE AND BASE

1201 GENERAL

Where instructed by the Engineer, the Contractor shall undertake repairs, widening and reprocessing to the existing carriageway and shoulders in accordance with sections 12 and 14 of the Special Specifications.

Areas to be scarified and reprocessed

The contractor will scarify, add new material and reprocess sections as determined by the Engineer.

Pavement repairs

The Contractor will carry out repairs to base and subbase as directed by the Engineer and according to Specifications given in Sections 12 and 14 of the Standard Specifications.

Pavement widening

The Contractor shall, as directed by the Engineer, bench and compact the subgrade to 100% MDD (AASHTO T99), provide lay and compact material for subbase and base as directed by the Engineer and in accordance with Sections 5 and 12 of the Standard Specifications.

1203

MATERIAL REQUIREMENTS

Natural materials for base and subbase shall conform to the specifications given in Section 12 of the Standard Specifications for Road and Bridge Construction for cement and lime improved base and subbase.

1209

MEASUREMENT AND PAYMENT

Natural material for subbase and base shall be measured by the cubic metre placed and compacted upon the road calculated as the product of the compacted sectional area laid and the length.

1210

HAND PACKED STONE

Hand packed stone base is a layer of hand laid stone of defined size and durable in nature, laid in a manner such that when proof rolled and compacted it forms a stable and dense matrix as a road base.

a) Material for Hand Packed Stone Base

This shall consist of durable stone with nominal base dimensions of 75 mm square and minimum height of 150 mm or when compacted to give a layer of 150 mm. The stone shall be class C with the following requirements:

LAA 45 max

ACV 32 max

SSS 12 max

FI 30 max

CR 60 min.

It shall be free from foreign matter. The fines passing 0.425 mm sieve shall be **NONPLASTIC**

b) Laying

The stone shall be laid by hand closely together. The stone shall be carefully bedded and tightly

wedged with suitable spalls. The base of the stone shall alternate with the apex in all directions or as directed by the Engineer. The layer shall be proof rolled with a loaded scrapper or truck with a minimum axle load of 8 tonnes in the presence of the Engineer who shall approve of its stability before compaction.

c) Compaction

This shall be by a steel wheeled roller of at least five tonnes per metre width of roll. It shall

consist of four static runs or until there is no movement under the roller. There shall follow vibratory compaction until an average dry density of 85% minimum of specific gravity of stone has been achieved. No result shall be below 82% of specific gravity. The surface of the compacted layer shall then be levelled by quarry dust (0/6 mm). The dust shall have the following specifications:

The stone shall be class C

GradingS	% Passing
10	100
6.3	90-100
4	75-95
2	50-70
1	33-50
0.425	20-33
0.300	16-28
0.150	10-20
0.075	6-12

The dust shall be free from foreign matter and fines passing 0.425 mm sieve shall be **NON-PLASTIC**. The maximum layer shall be 40 mm or as directed by the Engineer

d) Measurement and Payment

Payment shall be by the cubic metre laid (m3). Measurement of volume shall be determined as the product of length and compacted thickness laid. The rate quoted for this item should include the cost for laying the levelling quarry dust layer, as no extra payment shall be made for this layer.

1211 REPROCESSING EXISTING PAVEMENT LAYERS

General

The existing surfacing and the base shall be reprocessed with additional material and the composite mixture shall be compacted to form the subbase layer. Before commencement of the work the Contractor shall propose plants and equipments he proposes to use for this activity.

The Contractor after approval of his proposal shall carry out test section in accordance with

Section 3 of the Standard Specifications.

The existing surfacing and base course shall be broken up to specified depth and reprocessed in place, where required. The underlying layers shall not be damaged, and material from one layer may normally not be mixed with that of another layer. Where unauthorized mixing occurs or where the material is contaminated in any way by the actions of the Contractor, and the contaminated material does not meet the specified requirements of for the particular layer, he shall remove such material and replace it with other approved material, all at his own expense.

Any mixture composition of the new layer must not contain more than 30% of the bituminous material by volume. The mixture must not contain pieces of bound bituminous material larger than 37.5mm, and any such material shall be removed at the Contractor's cost.

The requirements for imported material used in the respective pavement layers shall comply with the limitations, norms, sizes and strengths specified in the Standard Specifications clause 1203(b) and (d) and shall be worked as per Section 14 of the Standard Specification.

Material reworked in-situ or that obtained from existing pavement is not expected to comply with the material requirements but the reworking should achieve the specified requirements. Where the thickness of any existing pavement layer requires to be supplemented within reprocessing and the thickness of the additional material after compaction will be less than 100mm, the existing layer shall be scarified to a depth that will give a layer thickness of at least 100mm after compacting the loosened existing and the additional material.

Controlling the Reworked Depth

The Contractor shall submit a proven method to method to control the depth of excavation, or layer to be reworked, to the Engineer for approval. The Engineer may order a trial section to be reprocessed before any major length of the road is rehabilitated.

Excavations

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

Step construction shall be carried out per layer at the joint when excavating, both longitudinally (if appropriate) and perpendicular to the direction of travel. The step width shall be 500mm perpendicular to the direction of travel, and 150mm long longitudinally, unless otherwise instructed by the Engineer.

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

Measurement and Payment

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(a Item: In-situ reprocessing of existing pavement layers as subbase compacted to specified density (95% MDD AASHTO T180) and thickness.

Unit: M³

The tendered rate shall include full compensation for breaking up the existing pavement layer to specified depth, breaking down and preparing the material and the spreading and mixing in of any additional material

Item: The addition of extra gravel to

subbase. Unit: M³

The tendered rate shall include full compensation for procuring and addition of the material to the in-situ scarified layers and the transportation of the material over unlimited free-haul distance. The tendered rates will also include full compensation for prospecting for materials and any payments necessary to acquire the specified quality material.

Excavation of existing bituminous pavement materials including unlimited free-haul.

Unit: M³

The tendered rates shall include full compensation for excavating the existing bituminous material from the pavement layers and for loading, transporting the material for unlimited free-haul, off-loading and disposing of the materials as specified.

Excavation of the existing pavement

Unit: M³

The tendered rate shall include full compensation for excavating the existing material from the pavement layers and for loading, transporting the material for unlimited free-haul distance, off-loading and disposing of the material as specified.

Payment will only be made for breaking up and excavating existing pavement layers to the specified depth if the material is to be removed to spoil.

SECTION 14: CEMENT TREATED MATERIALS

1401. Cement Treatment

Cement for stabilization will be CEM 1 Portland cement conforming to KS 1262. The cement content of the stabilized material shall be as indicated by the Engineer and will normally be about 4%. The Engineer shall exercise his discretion to any variation in the rate of application of the cement, which he may see fit, to order from time to time.

Moisture Content

The moisture content of the stabilized material shall be as directed by the Engineer but nevertheless within the range of 85% to 100% of the optimum Moisture Content (AASHTO T.180)

Mixing and Placing

The material to be stabilized and the cement shall be mixed by an approved mixing plant, which will either be a mix-in-place pulvimixer or a stationary mixing plant for material to be used for pavement reconstruction, widening and shoulders.

1403. Lime Improvement

Lime improvement shall be carried out in accordance with Section 14 of the Standard Specification.

1409. Protection & Curing

Protection and curing shall be carried out in accordance with the provisions of Clause 1409(i) of the Standard Specification but provision shall be made to wet the surface from time to time as directed by the Engineer.

1410. Traffic

The requirements of clause 1410 of the Standard Specification will not apply to improved natural material utilized for patching and repair works but will apply in case reprocessing of reconstruction and widening of the existing base and shoulders.

SECTION 15 BITUMINOUS SURFACE TREATMENTS

1501B

PREPARATION OF SURFACE

In addition to requirements of Clause 1503B of the Standard Specifications, the contractor shall prepare and Repair Cracks, Edges, Potholes and Other Failures as follows: -

a) **Cracks 3.0mm or less in width**

The entire crack area shall be cleaned by brushing with a wire brush and then blowing with a compressed air jet and the crack sealed with 80/100 cutback bitumen using a pouring pot or pressure lance and hand squeegee. The surface shall then be dusted with sand or crushed dust.

b) **Cracks greater than 3.0mm in width**

Before these cracks are filled a steel wire brush or router shall be used to clean them and then a compressed air jet shall be used to clean and remove any foreign or loose material in the crack until the entire crack area is clean.

When the crack and surrounding area have been thoroughly cleaned, dry sand shall be forced into the crack until it is sealed in the manner specified for cracks less than 3.0mm width.

c) **Potholes, edges and other repair areas**

Where instructed, the Contractor shall prepare areas for the repair of potholes, road edges and other repair areas by excavating off unsuitable or failed material and debris, trimming off excavated edges, cleaning and compacting the resulting surfaces and applying MC 30 or MC

70 cut-back bitumen prime coat at a rate of 0.8-1.2 litres/m², all as directed by the Engineer.

Measurement and payment shall be made under the relevant item of Bill No 15.

Where the surface repair on potholes and edges are to be carried out, Asphalt Concrete Type I (0/14 gradation) shall be used. Bituminous material for repair of failures and other repair areas shall be paid for under the relevant item of Bill No 16

PART B – PRIME COAT

1501B

MATERIALS FOR PRIME COAT AND TACK COAT.

For prime coat, the binder shall be a medium-curing cutback MC 70 unless otherwise directed by the Engineer.

The rate of spray of bituminous prime coat refers to the gross volume of the cutback bitumen, that is to say the volume of the bitumen plus diluents.

Prime coat shall be applied to gravel areas that are to receive bituminous mixes as directed by the Engineer.

The tack coat shall consist of bitumen emulsion KI-60 unless otherwise directed by the Engineer.

The rates of spray of the binder shall be as instructed by the Engineer and shall generally be within the range 0.8-1.2 litres/square metre.

1511C MEASUREMENT AND PAYMENT

Seal coat

Seal coats shall be measured by the litre, for each type of bituminous binder for each seal coat, calculated as the product of the area in square metres sprayed and the rate of application in litres/square metres, corrected to 15.6 ° C

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

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

Part A General

Part B Asphalt Concrete for carriageway

PART A – GENERAL

1601A SCOPE OF PART A

Part A comprises all the general requirements for bituminous mixes, which apply to Part B as well.

1601A REQUIREMENTS FROM OTHER SECTIONS

The following sections of this Specification apply to Part B of this section and shall be read in conjunction therewith:-

Section 2	Materials and Testing of Materials
Section 3	Setting Out and Tolerances
Section 6	Quarries, Borrow Pits, Stockpile and Spoil Areas
Section 15	Bituminous Surface Treatments and Surface Dressing

1603A CONSTRUCTION PLANT

(a) **General**

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

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

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

(b) **Mixing Plant**

Bituminous materials shall be mixed in a plant complying with ASTM Designation D995 and shall be located on the Site unless otherwise agreed by the Engineer. It shall be equipped with at least three bins for the storage of heated aggregates and a separate bin for filler. All bins shall be covered to prevent the ingress of moisture.

The plant may be either the batch-mix type or the continuous-mix type and shall be capable of regulating the composition of the mixture to within the tolerances specified in Clause 1614A of this Specification.

The bitumen tank shall be capable of maintaining its contents at the specified temperature within a tolerance of 50C and a fixed thermometer easily read from outside the tank. Any bitumen that has been heated above 1800C or has suffered carbonisation from prolonged heating shall be removed from the plant and disposed of.

(c) **Laying Plant**

Bituminous materials shall be laid by a self-propelled spreader finisher equipped with a hopper, delivery augers and a heated adjustable vibrating screed. It shall be capable of laying bituminous materials with no segregation, dragging, burning or other defects and within the specified level and surface regularity tolerance. Delivery augers shall terminate not more than 200mm from the edge plates.

(d) **Compaction Plant**

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

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

(a) The roller is set up to have the optimum amplitude and frequency of vibration for the particular material being laid

(b) That the roller does not cause breakdown of the aggregate particles.

(c) That the optimum compaction temperatures are established which allow compaction without causing ripple effects or other distortions of the surfacing.

**1604A
PREPARATION OF SURFACE**

Immediately before placing the bituminous mix in the pavement, the existing surface shall be cleaned of all material and foreign matter with mechanical brooms or by other approved methods. The debris shall be deposited well clear of the surface to be covered.

Any defect of the surface shall be made good and no bituminous mix shall be laid until the Engineer has approved the surface.

A tack coat shall be applied in accordance with Section 15 of this Specification. If the Engineer

considers a tack coat is required prior to laying the bituminous mix or between layers of the bituminous mix, due solely to the Contractor's method of working, then such tack coat shall be at the Contractor's expense.

1605A
DESIGN AND WORKING MIXES

At least two months prior to commencing work using a bituminous mix, the Contractor shall, having demonstrated that he can produce aggregates meeting the grading requirements of the Specification, submit samples of each constituent of the mix to the Engineer. The Engineer will then carry out laboratory tests in order to decide upon the proportion of each constituent of the initial design mix or mixes to be used for site trials to be carried out in accordance with Clause 1606A of this Specification.

Should the Engineer conclude from the site trials that the mix proportion or aggregate grading are to be changed, the Contractor shall submit further samples of the constituents and carry out further site trials all as directed by the Engineer.

The Engineer may instruct the alteration of the composition of the -75 micron fraction of the aggregates by the addition or substitution of mineral filler. The Engineer may also instruct the alteration of all or part of the -6.3mm fraction of the aggregates by the addition or substitution of natural sand.

The Contractor shall make the necessary adjustments to his plant to enable the revised mix to be produced.

Following laboratory and site trials the Engineer will determine the proportions of the working mix and the Contractor shall maintain this composition within the tolerances given in Clause 1614A.

Should any changes occur in the nature or source of the constituent materials, the Contractor shall advise the Engineer accordingly. The procedure set out above shall be followed in establishing the new mix design.

1606A
SITE TRIALS

Full scale laying and compaction site trials shall be carried out by the Contractor on all asphalt pavement materials proposed for the Works using the construction plant and methods proposed by the Contractor for constructing the Works. The trials shall be carried out with the agreement, and in the presence of the Engineer, at a location approved by the Engineer.

The trials shall be carried out to:

-

Test materials, designed in the laboratory, so that a workable mix that satisfies the specification requirements can be selected.

To enable the Contractor to demonstrate the suitability of his mixing and compaction equipment to provide and compact the material to the specified density and to confirm that the other specified requirements of the completed asphalt pavement layer can be achieved.

Each trial area shall be at least 100 metres long and to the full construction width and depth for the material. It may form part of the Works provided it complies with this Specification. Any areas that do not comply with this Specification shall be removed.

The Contractor shall allow in his programme for conducting site trials and for carrying out the appropriate tests on them. The trial on any pavement layer shall be undertaken at least 21 days ahead of the Contractor proposing to commence full-scale work on that layer.

The Contractor shall compact each section of trial over the range of compactive effort the Contractor is proposing and the following data shall be recorded for each level of compactive effort at each site trial: -

The composition and grading of the material including the bitumen content and type and grade of bitumen used.

The moisture content of aggregate in the asphalt plant hot bins.

The temperature of the bitumen and aggregate immediately prior to entering the mixer, the temperature of the mix on discharge from the mixer and the temperature of the mix on commencement of laying, on commencement of compaction and on completion of compaction. The temperature of the mixture is to be measured in accordance with BS 598, Part 3, Appendix A.

The type, size, mass, width of roll, number of wheels, wheel load, tyre pressures, frequency of vibration and the number of passes of the compaction equipment, as appropriate for the type of roller.

The target voids and other target properties of the mix together with the results of the laboratory tests on the mix.

The density and voids achieved.

The compacted thickness of the layer.

Any other relevant information as directed by the Engineer.

At least eight sets of tests shall be made by the Contractor and the Engineer on each 100 metres of trial for each level of compactive effort and provided all eight sets of results over

the range of compactive effort proposed by the Contractor meet the specified requirements for the material then the site trial shall be deemed successful. The above data recorded in the trial shall become the agreed basis on which the particular material shall be provided and processed to achieve the specified requirements.

**1607A
MIXING OF AGGREGATES AND BITUMEN**

The bitumen shall be heated so that it can be distributed uniformly and care shall be taken not to overheat it. The temperature shall never exceed 170° C for 80/100-penetration grade bitumen.

The aggregates shall be dried and heated so that they are mixed at the following temperatures:

-
125-165°C when 80/100 bitumen is used

The dried aggregates shall be combined in the mixer in the amount of each fraction instructed by the Engineer and the bitumen shall then be introduced into the mixer in the amount

specified. The materials shall then be mixed until a complete and uniform coating of the aggregate is obtained.

The mixing time shall be the shortest required to obtain a uniform mix and thorough coating. The wet mixing time shall be determined by the Contractor and agreed by the Engineer for each plant and for each type of aggregate used. It shall normally not exceed 60 seconds.

1608A TRANSPORTING THE MIXTURE

The bituminous mix shall be kept free of contamination and segregation during transportation. Each load shall be covered with canvas or similar covering to protect it from the weather and dust.

1609A LAYING THE MIXTURE

Immediately after the surface has been prepared and approved, the mixture shall be spread to line and level by the laying plant without segregation and dragging.

The mixture shall be placed in widths of one traffic lane at a time, unless otherwise agreed by the Engineer. The compacted thickness of any layer shall be at least 2.5 times the maximum size of the aggregate for wearing course and at least 2 times for binder course. The minimum thickness shall be 25mm.

Only on areas where irregularities or unavoidable obstacles make the use of mechanical laying impracticable, may the mixture be spread and compacted by hand.

1610A COMPACTION

Immediately after the bituminous mixture has been spread, it shall be thoroughly and uniformly compacted by rolling.

The layer shall be rolled when the mixture is in such a condition that rolling does not cause undue displacement or shoving.

The number, weight and type of rollers furnished shall be sufficient to obtain the required compaction while the mixture is in a workable condition. The sequence of rolling operations shall be as agreed with the Engineer and proved during site trials. Initial rolling

with steel tandem or three-wheeled roller shall follow the laying plant as closely as possible. The rollers shall be operated with the drive roll nearest the laying plant, at a slow and uniform speed (not exceeding 5 Km/Hr).

Rolling shall normally commence from the outer edge and proceed longitudinally parallel to the centreline, each trip overlapping one half of the roller width. On super elevated curves, rolling shall begin at the low side and progress to the high side. Where laying is carried out in lanes care must be taken to prevent water entrapment.

Intermediate rolling with a pneumatic-tyred or vibratory roller shall follow immediately. Final rolling with a steel-wheeled roller shall be used to eliminate marks from previous rolling.

To prevent adhesion of the mixture to the rollers, the wheels shall be kept lightly moistened with water.

In areas too small for the roller, a vibrating plate compactor or a hand tamper shall be used to achieve the specified compaction.

1611A FINISHING, JOINTS AND EDGES

Any mixture that becomes loose and broken, mixed with dirt or foreign matter or is in any way defective, shall be removed and replaced with fresh hot mixture, which shall be compacted to conform to the surrounding area.

Spreading of the mixture shall be as continuous as possible. Transverse joints shall be formed by cutting neatly in a straight line across the previous run to expose the full depth of the course. The vertical face so formed shall be painted lightly with hot 80/100 penetration grade bitumen just before the additional mixture is placed against it.

Longitudinal joints shall be rolled directly behind the paving operation. The first lane shall be placed true to line and level and have an approximately vertical face. The mixture placed in the abutting lane shall then be tightly crowded against the face of the previously placed lane. The paver shall be positioned to spread material overlapping the joint face by 20-30mm. Before rolling, the excess mixture shall be raked off and discarded.

When the abutting lane is not placed in the same day, or the joint is destroyed by traffic, the edge of the lane shall be cut back as necessary, trimmed to line and painted lightly with hot

80/100 penetration grade bitumen just before the abutting lane is placed.

Any fresh mixture spread accidentally on the existing work at a joint shall be carefully removed by brooming it back on to uncompacted work, so as to avoid formation of irregularities at the joint. The finish at joints shall comply with the surface requirements and shall present the same uniformity of finish, texture and density as other sections of the work.

The edges of the course shall be rolled concurrently with or immediately after the longitudinal joint. In rolling the edges, roller wheels shall extend 50 to 100mm beyond the edge.

1612A SAMPLING AND TESTING OF BITUMINOUS MIXTURES

The sampling of bituminous mixtures shall be carried out in accordance with AASHTO T168 (ASTM Designation D979).

1613A QUALITY CONTROL TESTING

During mixing and laying of bituminous mixtures, control tests on the constituents and on the mixed material shall be carried out in accordance with Clause 1612A and Section 2 of this Specification.

If the results of any tests show that any of the constituent materials fail to comply with this Specification, the Contractor shall carry out whatever changes may be necessary to the materials or the source of supply to ensure compliance.

If the results of more than one test in ten on the mixed material show that the material fails to comply with this Specification, laying shall forthwith cease until the reason for the failure has been found and corrected. The Contractor shall remove any faulty material laid and replace it with material complying with this Specification all at his own expense.

1614A TOLERANCES

Surfacing courses and base shall be constructed within the geometric tolerances specified in Section 3 of this Specification.

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The Contractor shall maintain the composition of the mixture as determined from the laboratory and site trials within the following tolerances, per single test: -

Bitumen Content	0.3% (by total weight of total mix)
Passing 10mm sieve and larger sieves	6% (by total weight of dry aggregate including mineral filler)
Passing sieves between 10mm and 1.0mm sieves	4% (by total weight of dry aggregate including mineral filler)
Passing sieves between 1.0mm and 0.075mm sieve	3% (by total weight of dry aggregate including mineral filler)
Passing 0.075mm sieve including mineral filler)	2% (by total weight of dry aggregate

The average amount of bitumen in any length of any layer, calculated as the product of the bitumen contents obtained from single tests and the weight of mixture represented by each test, shall not be less than the amount ordered.

The average amount of bitumen for each day's production calculated from the checked weights of mixes shall not be less than the amount ordered.

The average amount of bitumen in any length of any layer, calculated as the product of the bitumen contents obtained from single tests and the weight of mixture represented by each test, shall not be less than the amount ordered.

The average amount of bitumen for each day's production calculated from the checked weights of mixes shall not be less than the amount ordered.

The final average overall width of the upper surface of a bituminous mix layer measured at six equidistant points over a length of 100m shall be at least equal to the width specified. At no point shall the distance between the centreline of the road and the edge of the upper surface of a bituminous mix layer be narrower than that specified by more than 13mm.

**1615A
MEASUREMENT AND PAYMENT**

No separate measurement and payment shall be made for complying with the requirements of Clauses 1601A to 1614A inclusive and the Contractor shall be deemed to have allowed in his rates in Parts B and C of Section 16 of this Specification for the costs of complying with the requirements of Part A of Section 16 of this Specification

PART B –

ASPHALT CONCRETE FOR SURFACING

1601B DEFINITION

Asphalt concrete means a thoroughly controlled, hot-mixed, hot-laid, plant mixture of well- graded dried aggregate and penetration grade bitumen, which, when compacted forms a dense material.

A distinction is drawn between asphalt concrete Type I (High Stability) and asphalt concrete

Type II (Flexible). The asphalt concrete type to be used will be Type I.

1601B MATERIALS FOR ASPHALT CONCRETE TYPE 1

a) **Type of bituminous material**

The type of material to be used on severe sites will be of the continuously graded type similar to Asphaltic Concrete or Close Graded Macadam. It is essential that these materials are sealed with a single or double surface dressing or a Cape seal.

b) **Penetration Grade Bitumen**

Bitumen shall be 80/100 penetration grade since material is being laid at an altitude of more than 2,500m.

c) **Aggregate**

Coarse aggregate (retained on a 6.3mm sieve) shall consist of crushed stone free from clay, silt, organic matter and other deleterious substances. The aggregate class will be specified in the Special Specification and it shall comply with the requirements given in Table 16B-1(b). The grading for 0/20 mm for carriageway and 0/14mm for shoulders for binder course is as specified below:

Sieve size	0/20	0/14
28	100	-
20	90-100	100
14	75-95	90-100
10	60-82	70-90
6.3	47-68	52-75
4	37-57	40-60
2	25-43	30-45
1	18-32	20-35

0.425	11-22	12-24
0.300	9-17	10-20
0.150	5-12	6-14
0.075	3-7	4-8

TABLE 16B-1(b) - REQUIREMENTS FOR COARSE AGGREGATE

Coarse Aggregate (Retained on a 6.3mm Sieve)	
Test	Maximum Value
LAA	30
ACV	25
SSS	12
FI	25

Fine aggregate (passing a 6.3mm sieve) shall be free from clay, silt, organic and other deleterious matter and shall be non-plastic. Unless otherwise specified in the Special Specification it shall consist of entirely crushed rock produced from stone having a Los Angeles Abrasion of not more than 40. The Sand Equivalent of the fine aggregate shall not be less than 40 and the SSS not more than 12.

Mineral Filler

Mineral Filler shall consist of ordinary Portland Cement

1603B GRADING REQUIREMENTS

The grading of the mixture of coarse and fine aggregate shall be within and approximately parallel to the grading envelopes given in Table 16B-1(b), for 0/14mm as specified for binder course, as described below.

GRADING REQUIREMENTS

To arrive at a suitable design it is necessary to investigate a number of gradings so that a workable mix, which also retains a minimum of 3 % voids at refusal density, is identified.

The largest particle size used should not be more than 25mm so that the requirements of the Marshall test method can be complied with.

Although the complete range of nominal maximum particle sizes is shown in the Tables, the total thickness of material laid should not be more than 75mm.

1604B REQUIREMENTS FOR ASPHALT CONCRETE TYPE 1

The mixture shall comply with the requirements given in Table 16B-2 as specified in the Specification. In addition, minimum Marshall Stability for 2 x 75 blows shall be 9 kN and maximum 18 kN and at compaction to refusal shall have 3% VIM.

The proportion, by weight of total mixture, of bitumen shall be 5.0 – 6.5 % for 0/14 mm and

4.5 – 6.5 % for 0/20mm. This shall be termed the nominal binder content. The binder

content of the working mix will be instructed by the Engineer following laboratory and site trials.

In order to determine the suitability of a coarse aggregate source a Marshall test programme shall be carried out. It will be advantageous to use a crushed rock which is known from past experience to give good results in this test procedure. A grading conforming to the Type I Binder Course detailed in Table 16B-1(a) 0/20 of this Specification should be tested (but with

100% passing the 25mm sieve) and it shall meet the requirements of Table 16B-2 of this Specification.

Having established the suitability of the aggregate source several gradings shall be tested in the laboratory, including that used for the Marshall test, to establish relationships between bitumen content and VIM at refusal density. For each mix, samples will be made up to a range of bitumen contents and compacted to refusal using a gyratory compactor and a vibratory hammer in accordance with the procedure described in BS 598 (Part 104 : 1989), with one revision.

It should first be confirmed that compaction on one face of the sample gives the same refusal density as when the same compaction cycle is applied to both faces of the same sample. The procedure, which gives the highest density, must be used.

From the bitumen content-VIM relationship it will be possible to identify a bitumen content which corresponds to a VIM of 3 - 7%. If it is considered that the workability of the mix may be difficult then compaction trials should be undertaken. It is advisable to establish two or more gradings for compaction trials.

The mixes identified for compaction trials should be manufactured to the laboratory design bitumen content and to two other bitumen contents of +0.5% and +1% additional bitumen. Cores will be cut to determine the density of the compacted material, having completed this the core will then be reheated to 145+/-5°C in the appropriate mould and compacted to refusal in the vibrating hammer test. To be acceptable the cores cut from the compaction trial must have a density equivalent to at least 95% of refusal density.

The compaction trials will identify a workable mix which can be made to a bitumen content which gives 3% VIM at refusal density.

1605B MIXING AND LAYING HEAVY DUTY ASPHALT

The temperature of the bitumen and aggregates when mixed shall be 110+/-3°C above the softening point (R&B) of the bitumen.

Compaction should commence as soon as the mix can support the roller without undue displacement of material and completed before the temperature of the mix falls below 90°C. The minimum thickness of individual layers should be as follows:-

a)	For the 37.5mm mix	65mm
b)	For the 25.0mm mix	60mm
c)	For the 19.0mm mix	50mm
d)	For the 12.5mm mix	40mm

1606B COMPACTION

Rolling shall be continued until the voids measured in the completed layer are in accordance with the requirement for a minimum density of 98% of Marshall optimum, or, a minimum mean value of 95% of refusal density (no value less than 93%) as appropriate.

1607B MEASUREMENT AND PAYMENT

a) Item : Asphalt Concrete

Unit : m³ of Asphalt Concrete Used

Asphalt concrete shall be measured by the cubic metre compacted on the road calculated as the product of the length instructed to be laid and the compacted cross-sectional area shown on the Drawings or instructed by the Engineer.

The rate for asphalt concrete shall include for the cost of providing, transporting, laying and compacting the mix with the nominal binder content and complying with the requirements of Parts A and B of Section 16 of this Specification.

SECTION 17

CONCRETE WORKS

1703 MATERIALS FOR CONCRETE

This work shall consist of placing selected approved material of 250mm minimum diameter on the foundation put after excavation to receive levelling concrete in accordance with these specifications and in conformity with the lines, grades and cross sections shown on the Drawings as directed by the Engineer.

(a) Materials

Selected rock: The selected rock builders to be placed for this work shall be hard, sound, durable quarry stones as approved by the Engineer. Samples of the stone to be used shall be submitted to and approved by the Engineer before any stone is placed.

The maximum size of the stone boulders shall be
300mm.

(b) Construction Method

After completion of the structural excavation the surface of the loose soil shall be levelled and compacted. Then the stone of the above sizes shall be placed in one layer of 250mm over the compacted bed where the bottom slab will rest. Coarse sand shall be spread to fill up the voids in the stone boulders, and compaction with vibratory compactors should be performed to make this layer dense whereon a concrete of levelling course shall be placed.

(c) Measurement and payment

Measurement for the bedding materials shall be made in cubic metres for the completed and accepted work, measured from the dimension shown on the Drawings, unless otherwise directed by the Engineer.

Payment for the bedding Materials for Levelling Concrete Works shall be full compensation for furnishing and placing all materials, all labour equipment, tools and all other items necessary for proper completion of the work in accordance with the Drawings and specifications and as directed by the Engineer.

1703(A)LEVELLING CONCRETE (CLASS 15/20) FOR BOTTOM SLAB INCLUSIVE OF COST OF FORM WORKS

This work shall consist of placing and levelling lean concrete class 15/20 over the prepared bed of stone boulders in the foundation for bottom slab and wingwalls in accordance with these specifications and which conformity with the lines, grades, thickness and typical cross- sections shown on the drawings unless otherwise directed by the Engineer.

(a) Materials for Levelling Concrete

Requirement for the concrete class 15/20 is specified as follows:-

Design compressive strength (28) days : 15N/mm²

Maximum size of coarse aggregate : 20mm Maximum

cement content : 300 kg/m³. Maximum

water/cement ration of 50% with slump of 80mm.

(b) Construction Method

The bed of stone boulders upon which the levelling concrete will be placed shall be smooth, compacted and true to the grades and cross-section shall be set to the required lines and grades.

(c) Measurement and payment

Measurement for levelling concrete (class 15/20) shall be made in cubic metres completed and accepted levelling concrete work measured in place which is done in accordance with the Drawings and the Specifications.

Payment for this work shall be the full compensation for furnishing and placing all materials, labour, equipment and tools, and other incidentals to Specifications and as directed by the Engineer.

Pay item No. 17/01 Levelling Concrete Works (Class 15/20) for Box Culvert and wingwalls inclusive of Cost of Form works.

1703(C) FORMWORK FOR CULVERT WALLS

This work shall consist of all temporary moulds for forming the concrete for culvert walls and slabs together with all temporary construction required for their support. Unless otherwise directed by the Engineer all formworks shall be removed on completion of the walls and slabs.

(a) Materials

Forms shall be made of wood or metal and shall conform to the shape, lines and dimensions shown on the Drawings.

All timber shall be free from holes, loose material, knots, cracks, splits and warps or other defects affecting the strength or appearance of the finished structure.

Release Agents – Release agents shall be either neat oils containing a surface activating agent, cream emulsions, or chemical agents to be approved by the Engineer.

(b) Construction Method

(i) Formworks

Formworks shall be designed to carry the maximum loads that may be imposed, and so be rigidly constructed as to prevent deformation due to load, drying and wetting, vibration and other causes. After forms have been set in correct location, they shall be inspected and approved by the Engineer before the concrete is placed.

If requested, the contractor shall submit to the Engineer working drawings of the forms and also, if requested, calculations to certify the rigidity of the forms.

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

This work shall consist of furnishing, mixing, delivering and placing of the concrete for the construction of culvert walls and slabs, in accordance with these Specifications and in conformity with the requirements shown on the Drawings.

Concrete class 20/20 shall be used for Culvert walls and slabs.

(a) Concrete Materials

(i) Cement: Cement shall be of Portland type and shall conform to the requirements of BS 12 or equivalent.

The contractor shall select only one type or brand of cement or others. Changing of type or brand of cement will not be permitted without a new mix design approved by the Engineer. All cement is subject to the Engineer's approval; however, approval of cement by the Engineer shall not relieve the Contractor of the responsibility to furnish concrete of the specified compressive strength.

Conveyance of cement by jute bags shall not be permitted. Storage in the Contractor's silo or storehouse shall not exceed more than two (2) months, and age of cement after manufacture at mill shall not exceed more than four (4) months. The Contractor shall submit to the Engineer for his approval the result of quality certificate prepared by the manufacturer.

Whenever it is found out that cement have been stored too long, moist, or caked, the cement shall be rejected and removed from the project.

(b) Aggregates

Fine and coarse aggregates must be clean, hard, strong and durable, and free from absorbed chemicals, clay coating, or materials in amounts that could affect hydration, bonding, strength and durability of concrete.

Grading of aggregates shall conform to the following requirements:

Grading of Fine Aggregates

Sieve Size	Percentage by Weight Passing
10 mm	100
7.5 mm	89-100
4.75 mm	60-100
2.5 mm	30-100
1.2 mm	15- 54
0.6 mm	5- 40

Grading of Coarse Aggregates

Size of Coarse Aggregate	Amounts finer than each standard sieve percentage by weight						
	40	30	25	20	15	10	5
2.5							

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	100	~	~	90-100	~	30-69	0-10
	~						

Other requirements for aggregates are as follows:

(iii) Fine Aggregates

Fitness Modulus, AASHTO M-6 : 2.3 – 3.1
 Sodium Sulphate Soundness, AASHTO T104: Max. 10% loss
 Content of Friable Particles AASHTO 112 : Max 1% by weight
 Sand Equivalent, AASHTO T176 : Min. 75

(iv) Coarse Aggregate

Abrasion, AASGTO T96 : Max. 405 loss
 Soft Fragment and shale, AASHTO M80 : Max. 5% by weight
 Thin and elongated Pieces, AASHTO M80 : Max. 15%

(v) Water

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

(vi) Admixture

Only admixture, which have been tested and approved in the site laboratory through trial mixing for design proportion shall be used. Before selection of admixture, the Contractor shall submit to the Engineer the specific information or guarantees prepared by the admixture supplier.

The contractor shall not exclude the admixture from concrete proportions.

Concrete class 20/20

Concrete class 20/20 shall be used for culvert walls and slabs. The requirements of Concrete class 20/20 are provided as follows unless otherwise the Engineer will designate any alteration.

Design compressive strength (28 days) : 20N/mm²
 Maximum size of coarse aggregates : 20mm
 Maximum water/cement ratio of 45% with slump of 80mm

(d) Proportioning Concrete

The Contractor shall consult with the Engineer as to mix proportions at least thirty (30) days prior to beginning the concrete work. The actual mix proportions of cement, aggregates, water and admixture shall be determined by the Contractor under supervision of the Engineer in the site laboratory.

The Contractor shall prepare the design proportions which has 120% of the strength requirement specified for the designated class of concrete.

No class of concrete shall be prepared or placed until its job-mix proportions have been approved by the Engineer.

(e) **Concrete Work**

Batching

Batching shall be done by weight with accuracy of:

Cement	: ½ percent
Aggregate	: ½ percent
Water and Admixture	: 1 percent.

Equipment should be capable of measuring quantities within these tolerances for the smartest batch regularly used, as well as for larger batches.

The accuracy of batching equipment should be checked every month in the presence of the Engineer and adjusted when necessary.

Mixing and delivery

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

Concrete in hot weather

No concrete shall be placed when the ambient air temperature is expected to exceed thirty three degrees celsius (33C) during placement operations).

Concreting at night

No concrete shall be mixed, placed or finished when natural light is insufficient, unless an adequate approved artificial lighting system is operated; such night work is subject to approval by the engineer.

Placing

In preparation of the placing of concrete, the interior space of forms shall be cleaned and approved by the engineer prior to placing concrete. All temporary members except tie bars to support forms shall be removed entirely from the forms and not buried in the concrete. The use of open and vertical chute shall not be permitted unless otherwise directed by the engineer.

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

(f) Measurement and Payment

Measurements for the Concrete Works Class 20/20 of culvert walls and slabs shall be made in cubic metres for the walls and slabs actually constructed, measured from their dimensions shown on the Drawings. Payment for the Concrete Works (Class 20/20) of culvert walls and slabs shall be the full compensation for furnishing all materials of the concrete mixing, delivering, placing and curing the concrete, equipment and tools, labour and other incidental necessary for the completion of the work in accordance with the Drawings and these Specifications and as directed by the Engineer.

**SECTION 20 –
ROAD FURNITURE**

**2001
ROAD RESERVE BOUNDARY POSTS**

Road reserve boundary posts shall be provided as directed by the Engineer and in compliance with Standard Specification clause 2001. They shall be placed at 50m. intervals along the boundary of the road reserve.

**2003
EDGE MARKER POST**

Edge marker post shall be provided as directed by the Engineer and in compliance with Standard Specification clause clause 2003

2004

PERMANENT ROAD SIGNS

Permanent Road Signs shall be provided as directed by the Engineer and in compliance with the requirements of the "Manual for Traffic Signs in Kenya" Part II and standard Specification clause 2004.

2004B

EXISTING ROAD SIGNS

Where directed by the Engineer, the Contractor shall take down road signs including all posts, nuts, bolts and fittings, and remove and dispose of the concrete foundation and backfill the post holes. The signs shall be stored as directed by the Engineer.

Measurement and payment for taking down road signs shall be made by the number of signs of any type and size taken down, cleaned and stored as directed.

2005

ROAD MARKING

Paint for road marking shall be internally reflectorised hot applied thermoplastic material in accordance with Clause 219 of the Standard Specification.

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

2005A

RAISED PAVEMENT MARKERS – ROAD STUDS MATERIAL

Road studs are moulded of acrylonitrile butadiene styrene (ABS) conforming to ASTM Specification D1788 – 68, class 5-2-2 shell filled with inert, thermosetting compound and filler. The lens portion of the marker of the marker is of optical menthly methacrylic.

CONSTRUCTION

The road studs shall be constructed of high impact ABS containing a multi-biconvex glass lens reflector system. It shall be of monolithic construction, and not less than 98.5. m2. The height of the marker shall not exceed 17mm and the underside shall contain a non-honeycomb base (flat).

Requirement

The markers shall conform to the following requirements

Colour

Shall be white, yellow or red as specified and the Retro – reflectance values should conform to the testing procedures of ASTM E 809.

Impact resistance

The marker shall not crack or break when tested using a 1000-gram weight from a height of 1 metre. (ASTM D 2444) or BS 3900 Part E3.

Resistance to Water Penetration

Shall not have water penetration behind the lens after submerged in a water bath at 70 + 50 oF for 10 minutes. And it should still meet the reflectance Requirement. BS 998.

Heat Resistance

Shall comply with the initial brightness as per BS 873 Part IV of 1978

Night Visibility

The marker shall be bright as per BS 873 Part IV of 1978

Compression Resistance

There shall be no cracking sound at a pressure lower than 25 tones as per BS 873 Part IV of 1978.

Corrosion Resistance

After immersing a sample of Road stud in a solution containing 30g/1 of sodium chloride for 30 days, there shall not be any signs of corrosion -(BS998).

NOTE: These markers are intended for application directly to pavement surfaces and are compatible with raised pavement markers. These adhesives should be of high quality and tested for conformance to customer requirements.

ADHESIVES

They shall be of Resin Type–Epoxy of 2 different components part 1 and 2 i.e Adhesive and Reactor without any volatile solvents in both.

Pot life: not less than 20 minutes at 20 °C
Rotational cure time: between 20 and 30 minutes at 20 °C
Hard cure: Between 40 and 60 minutes at 20 °C

APPLICATION

INSTRUCTION Preparation of Pavements

Make sure that the road surface is absolutely dry and free of oil and grease.

Mixing of Adhesive

Pour component B into the container of component A. Stir mixture by hand with a wooden or metal stick until uniform Grey Tint without a striae is obtained.

Installation

Pour the mixture on to the underside of the road stud. Then place the road stud firmly on the road surface. Adhesive should stand out for about 5mm to 10 mm over the edges of the stud.

Protection from the Traffic

Protect studs from traffic for 2 hours until the adhesive has properly hardened. Try by touching the adhesive.

NUMBER OF STUDS NEEDED FOR LABORATORY TESTS.

In order to approve a particular type of road stud, 4 sample road studs of each colour shall be submitted.

2006 GUARDRAILS

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

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

KERBS

a) **Vertical Joints**

Vertical joints between adjacent Kerbs shall not be greater than 5 mm in width and shall be filled with a mortar consisting of 1:3 cement: sand by volume.

b) **Transition between flush and raised kerbs**

The transition between flush and raised kerbs (e.g. at bus bays) shall be termed as ramped kerbs. The transition between flush and raised kerbs shall occur within a length of 2.0 m.

2008

KILOMETRE MARKER POSTS

Kilometre marker posts shall be provided as directed by the Engineer and in compliance with Standard Specification clause 2008.

2009

RUMBLE STRIPS

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

2011

MEASUREMENT AND PAYMENT

Road reserve boundary posts

Road reserve boundary posts shall be measured by the number erected

Permanent road signs

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

Road marking

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

Road Studs

Road studs shall be measured by the number of each particular size erected.

Guardrails

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

Kerbs

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

SECTION 22-DAYWORKS

2201

MEASUREMENTS AND PAYMENT

Plant

Where items of major plant listed in the schedule of Day works are specified by type (e.g. Concrete mixer etc.) the power rating if such items of plant are provided by the Contractor shall not be lower than the power ratings of such plant manufactured within the last two years prior to the date of BID. Any item of major plant employed upon Dayworks that has a power rating lower than specified above shall be paid for at rates lower than those in the schedule of Dayworks. The reduction in the rate payable shall be in proportion to the reduction in power rating below that specified above.

SECTION 23: CONCRETE PAVING BLOCKS

This works shall consist of providing, laying and fixing of concrete paving blocks and concrete paving slabs on a sand base on the driveway and walkways and other areas as directed by the Engineer.

Concrete Paving Blocks

The paving blocks shall be of type S of any shape fitting within a 295 mm square coordinating space and a work size thickness of at least 30 mm. The blocks shall conform to the requirements of BS 6717:Pt. 1:1986 or Kenya standard equivalent.

The laying shall be broken at intervals of 50 m by concrete ribs of class 25 concrete.

The blocks shall be laid on a 40 mm minimum sand base whose specifications are as in section

(b) of this specification.

Sand
For Sand Base

Sand used as bedding for paving blocks and slabs shall be natural sand either pit or river sand. The grading shall conform and be parallel as much as possible to KS01 – 95 Parts 1 & 2: 1984 for zones 1, 2 or 3. The other requirements shall be as specified in section 1703 (c) of Standard Specifications.

Measurement
and Payment

Payment for paving blocks and paving slabs shall be by square metre laid. The rate quoted would include the cost of haulage to site of the blocks, slabs and sand, as no extra payment shall be made for haulage

BILL 25: HIV/AIDS AWARENESS AND PREVENTION CAMPAIGN

This BILL sets out the Contractor's obligations with regard to on-site HIV / AIDS awareness campaign and preventive measures that are to be instituted.

25-50-001 HIV / AIDS Awareness and Prevention Campaign

The Contractor shall institute an HIV / AIDS awareness and prevention campaign amongst his workers for the duration of the Contract. The awareness campaigns shall be carried out in consultation and guidance of Ministry of Public Health or Local service providers approved by the Ministry of Public Health.

The Contractor shall display AIDS awareness posters in all buildings frequented by workers employed on the Contract, where such buildings fall under the control of the Contractor.

In addition at least two of the Contractor's vehicles regularly used on site shall display HIV / AIDS awareness posters. The posters shall be printed on gloss paper and shall be at least A1 size on buildings and A3 size or other approved size on vehicles. The message on the posters shall be supplied by the Employer through the Engineer.

Aids awareness shall also be included in the orientation process of all workers employed on the Contract.

As part of the campaign the Contractor will be required to make condoms available to his workers.

Measurement Unit: month

The measurement shall be the calendar month or part thereof, measured over the duration of the campaign.

Payment:

The rate shall include full compensation for equipment; labour and material required for the provision of the item.

25-50-001 Soil Erosion Mitigation Measures

Soil Erosion problems must be identified and appropriate mitigation measures included during the preparation of the contract document. However the Engineer shall provide a Provisional Sum for Soil Erosion Mitigation Measures that were foreseen during the preparation of the document.

Measurement

A Provisional Sum shall be included in the Bill of Quantities for this item.

25-50-003 Baraza's for Cross-cutting Issues

The Contractor shall arrange and conduct meetings and/or training sessions for workers and staff on cross-cutting issues, including Community Participation, Environmental Mitigation, Gender Rights, HIV/AIDS, Workers Rights at times and locations directed by the Engineer.

Measurement

A Provisional Sum shall be included in the Bill of Quantities for this item payable on documented expenditure.

Section E

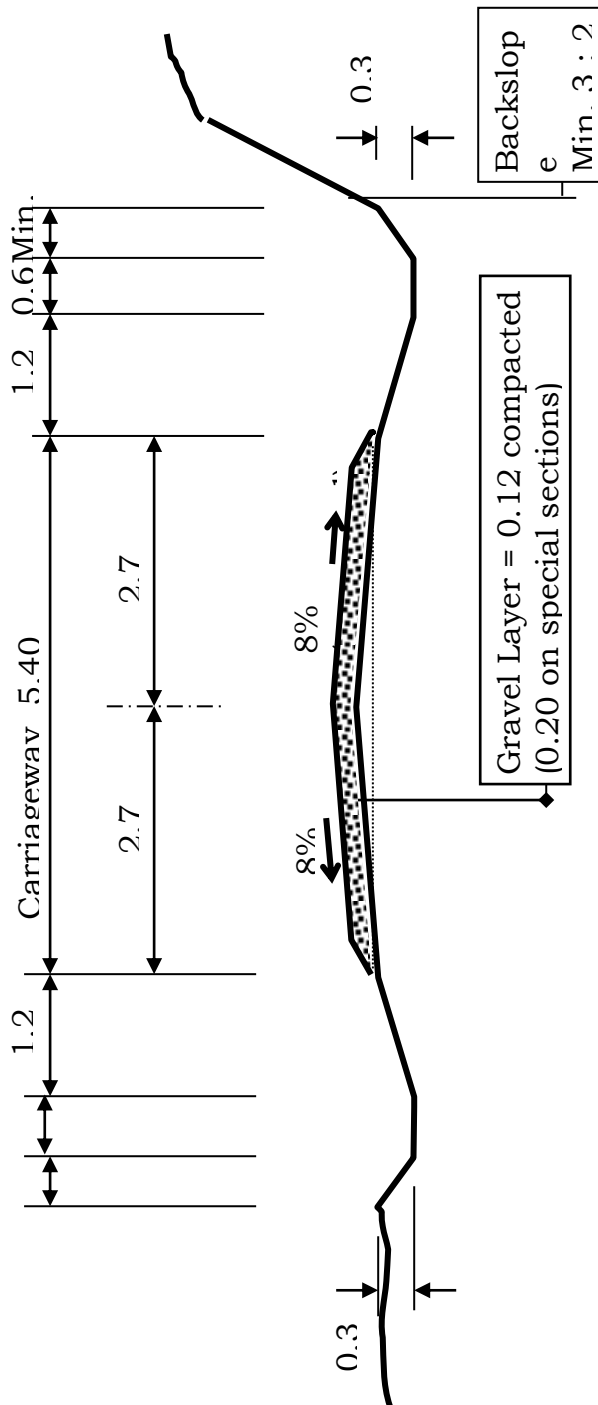
DRAWINGS

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FIGURE C.1 - CROSS SECTION A (MINOR ROAD STANDARD CROSS-SECTION)



NOTE:
 - ALL SPECIFIED DIMENSIONS IN m.
 - TRAFFIC LEVELS OF MORE THAN 200 VPD MAY

FIGURE C.2 - CROSS SECTION B (REDUCED CROSS-SECTION)

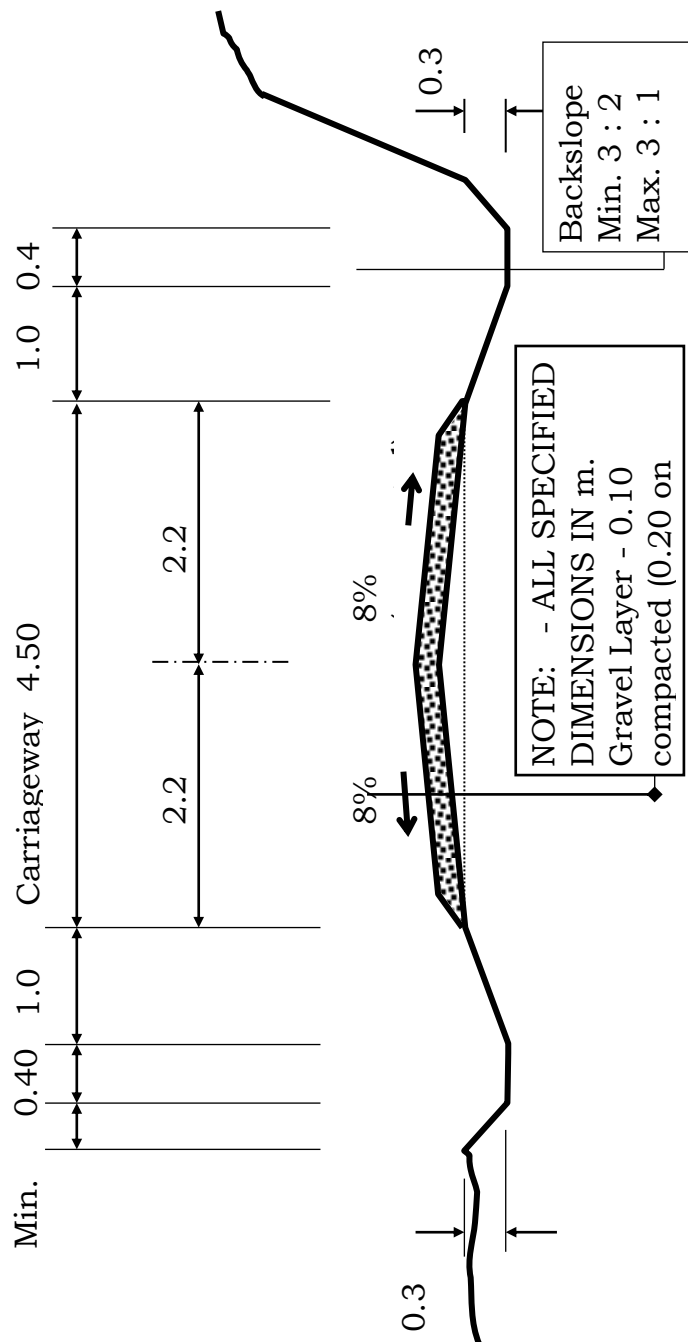


FIGURE C.3 - MITRE DRAINS

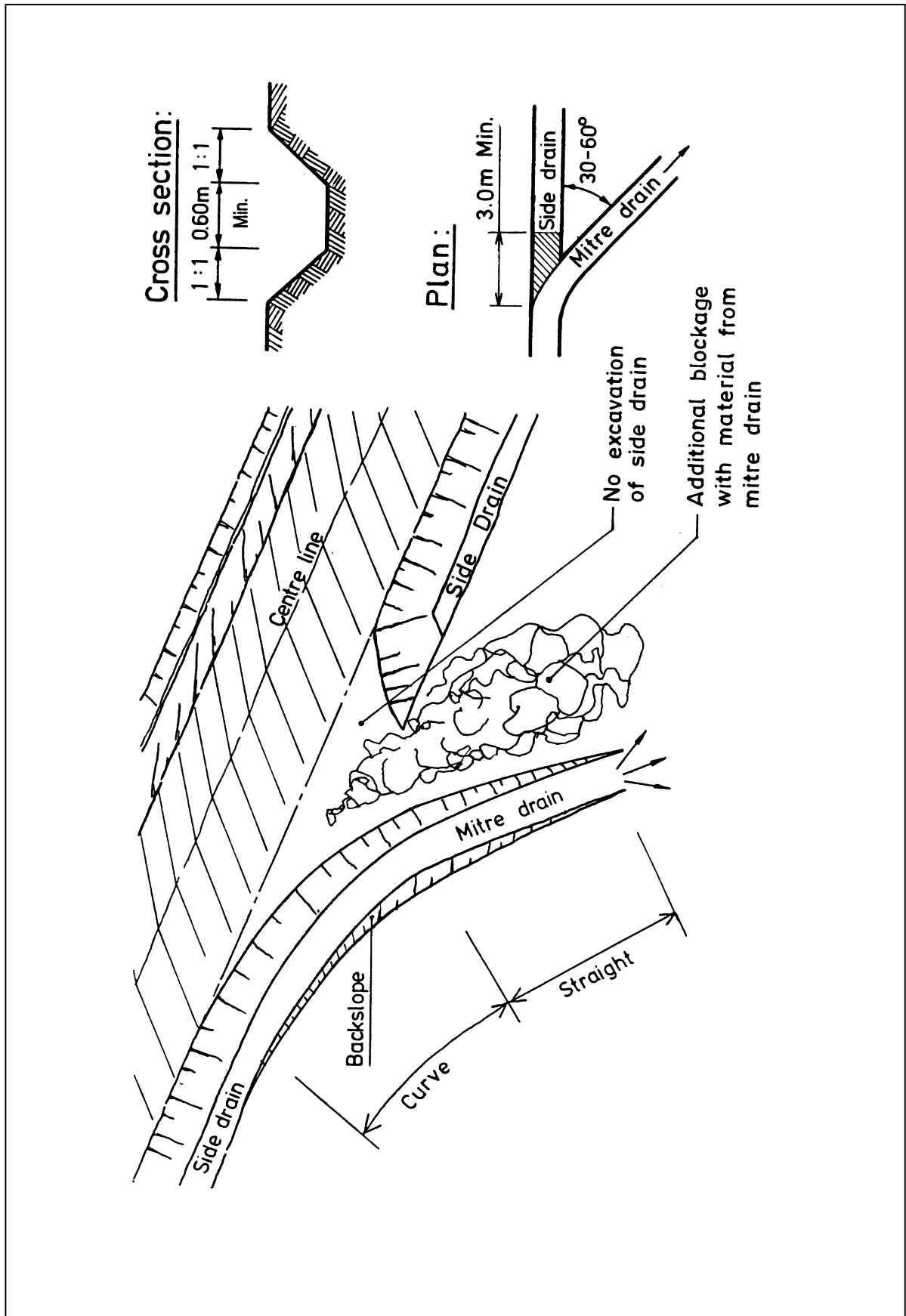


FIGURE C.4 - SCOUR CHECKS

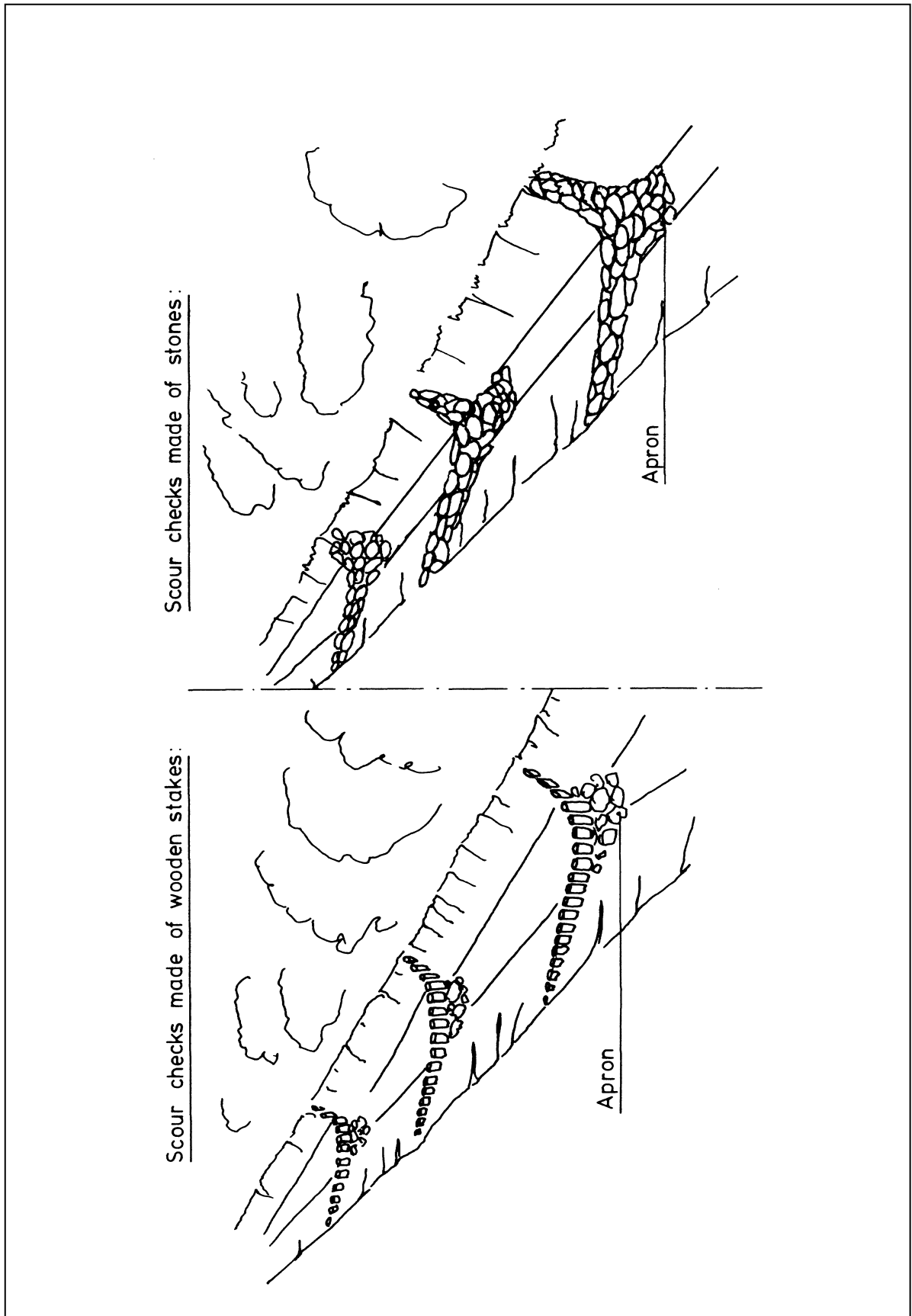


FIGURE C.5 - DIMENSIONS OF SCOUR CHECKS FOR STANDARD DRAIN

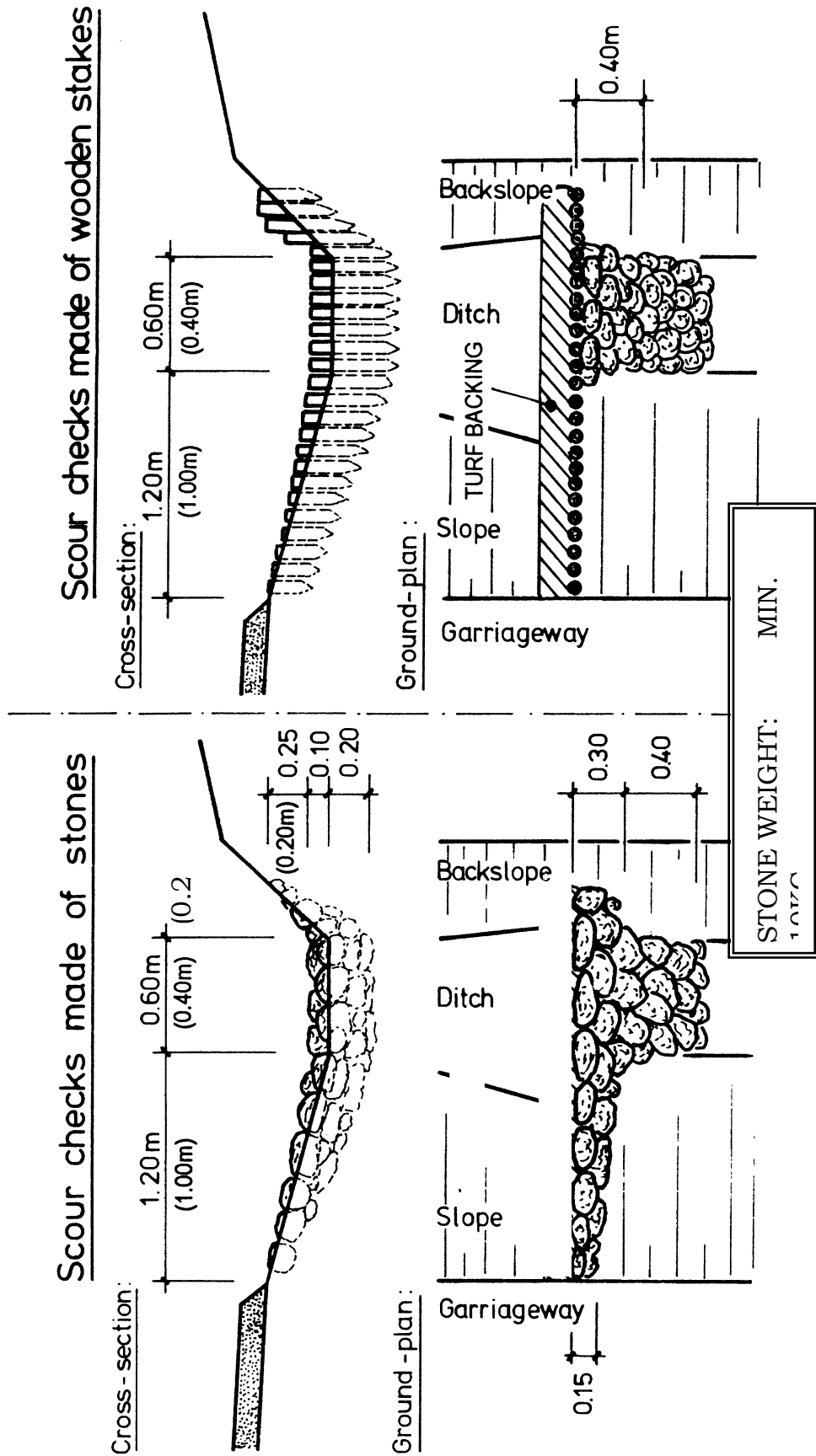
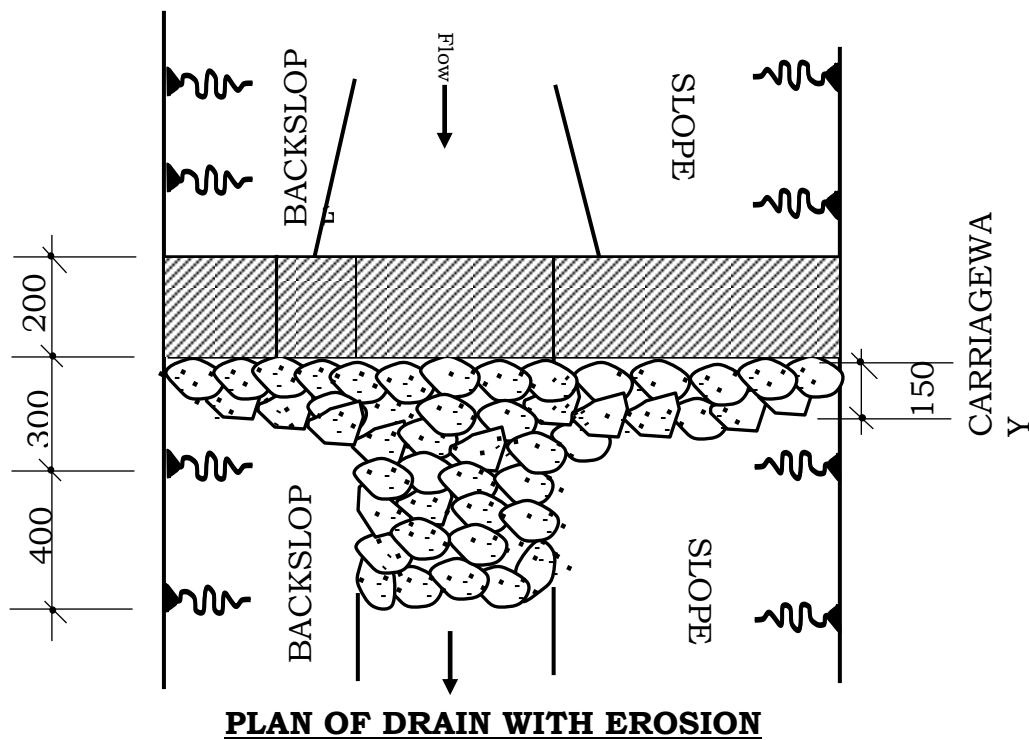
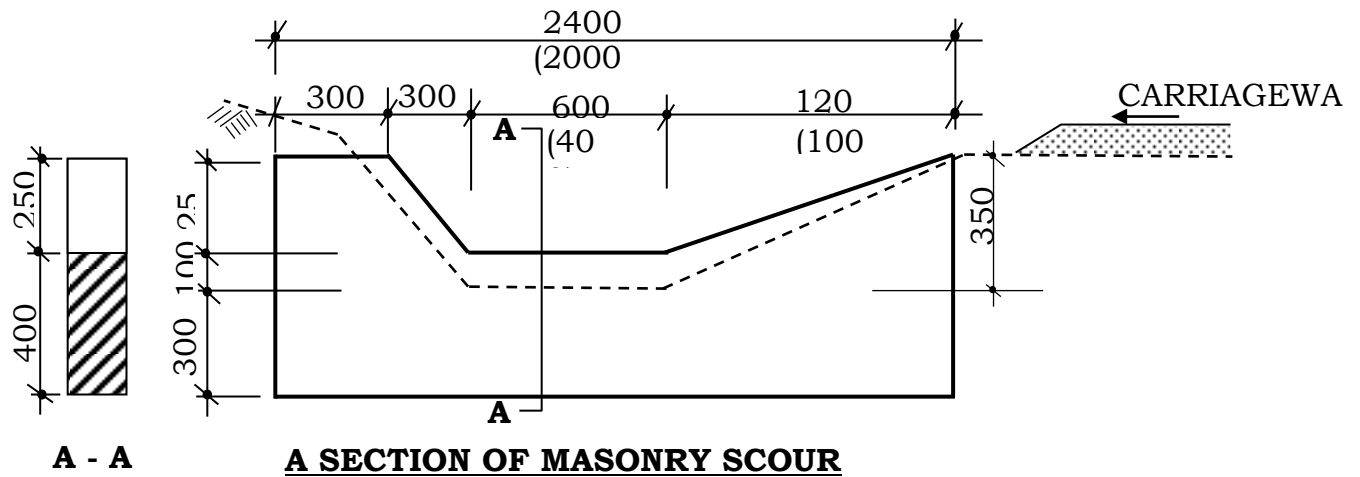


FIGURE C.6 - MASONRY SCOUR CHECKS

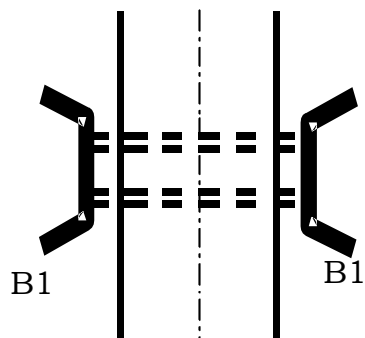


QUANTITIES

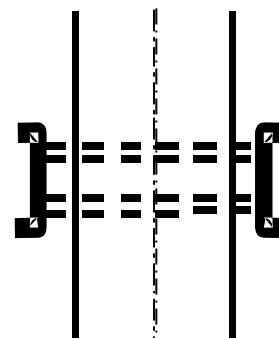
Cross-Section	Sizes in mm			Excav. (m ³)	Stone masonry (m ³)	Apron stone pitching (m ³)
	Length	Width	Depth			
A	2400	200	550	0.22	0.25	0.18
B	2000	200	500	0.18	0.2	0.14

FIGURE C.7 - CULVERT ENTRY / EXIT STRUCTURE TYPES

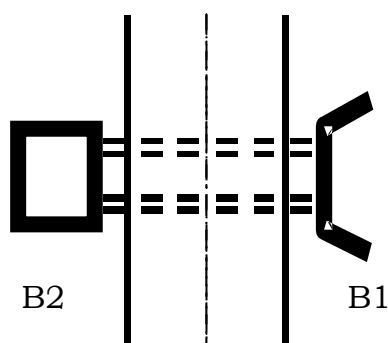
TYPE 1 (ENTRY AND EXIT)



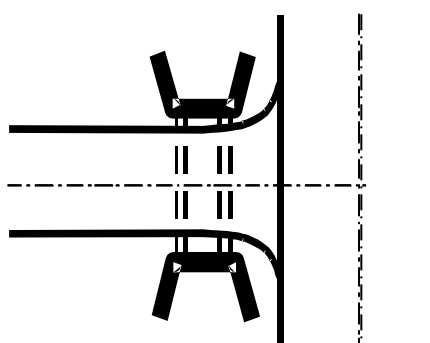
TYPE 3 (ENTRY AND EXIT)



TYPE 2 (ENTRY ONLY!)



TYPE 4 (ENTRY AND EXIT ON ACCESS)



NOTE

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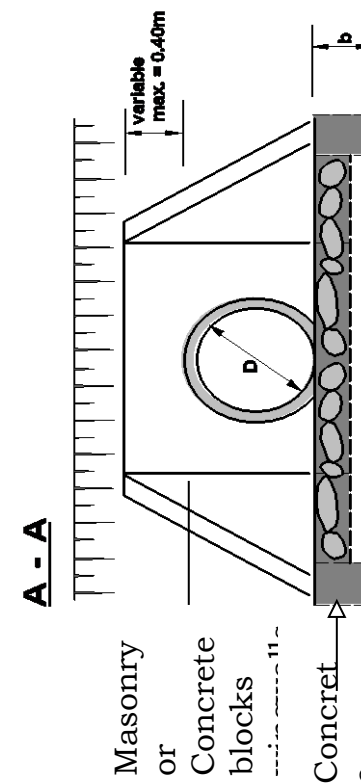
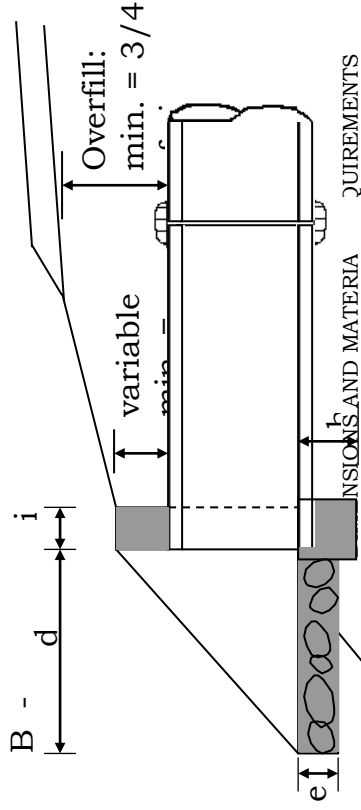
Coding system has been used in describing the standardised designs of the various culvert entry and exit structures. The code names consist of a number to specify shape and function as elaborated in above while the used construction materials are identified through an alphabetic symbol as follows:

- A = Concrete block**
- B = Stone masonry**
- C = Dressed stones**

An example code of “B2” would therefore stand for a drop inlet type structure to be built in stone masonry.

FIGURE C.8 - HEADWALL TYPE 1

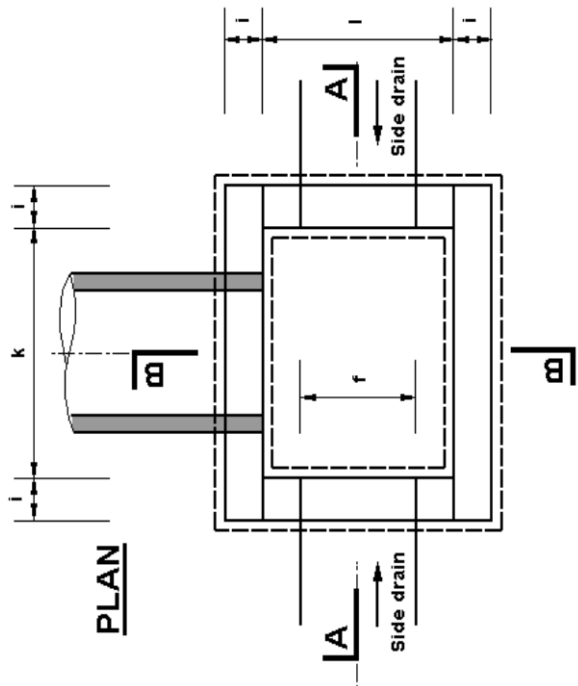
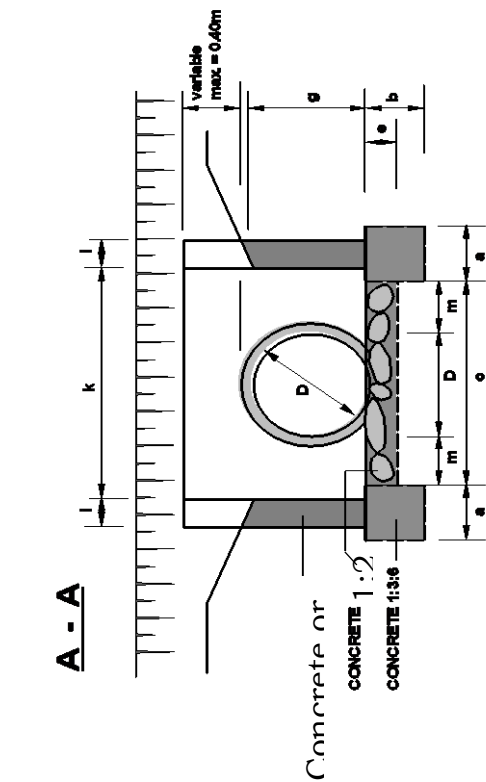
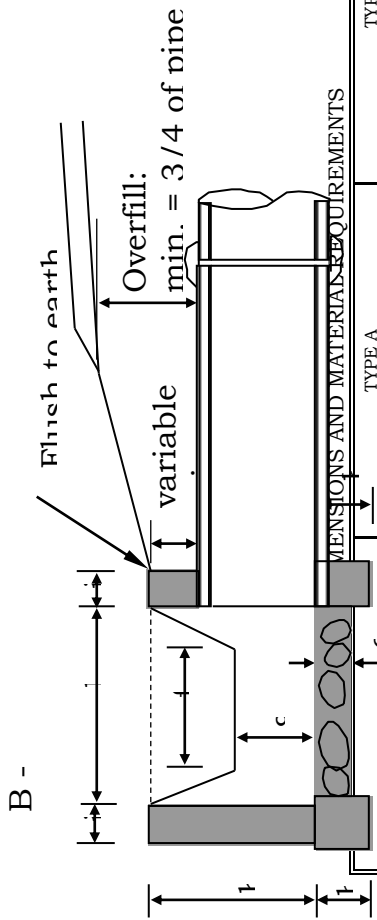
(HEAD AND WINGWALLS)



Concrete	ETER IN (M)	TYPE A (CONCRETE BLOCKS)			TYPE B (STONE MASONRY)			UNIT
		450	600	900	450	600	900	
a	FOUNDATION	0.30	0.30	0.30	0.40	0.40	0.60	m
b	FOUNDATION	0.30	0.30	0.40	0.30	0.30	0.40	m
c	FOUNDATION	2.20	2.35	2.89	2.20	2.35	2.89	m
d	APRON	1.00	1.00	1.20	1.00	1.00	1.20	m
e	APRON	0.20	0.20	0.20	0.20	0.20	0.20	m
f	WALL	0.20	0.20	0.20	0.40	0.40	0.40	m
g	WALL	0.30	0.30	0.30	0.30	0.30	0.30	m
h	WALL	1.15	1.15	1.39	1.15	1.15	1.39	m
I	WALL	0.20	0.20	0.20	0.40	0.40	0.40	m
k	APRON	1.05	1.20	1.50	1.05	1.20	1.50	m

CULVERT PIPES X-SECTION WIDTH	Nc. of Pipes	MATERIAL REQUIREMENT		
		FOUNDATION	HEAD/WINGWALLS	APRON
4.50	6.00	0.3 (Concrete)	0.32	0.33
5.50	7.00	0.4 (Concrete/Masonry)	0.47	0.53
6.50	8.00	0.4 (Concrete)	0.36	0.53

**FIGURE C.9 -
HEADWALL TYPE
2 (DROP INLET)**



DIMENSION	UNIT	TYPE A (CONCRETE BLOCKS)			TYPE B (STONE MASONRY)		
		450	600	900	450	600	900
a	m	0.30	0.30	0.30	0.40	0.40	0.40
b	m	0.30	0.30	0.30	0.30	0.30	0.30
c	m	1.10	1.10	1.40	1.20	1.20	1.50
d	m	0.90	0.90	0.90	1.00	1.00	1.00
e	m	0.20	0.20	0.20	0.20	0.20	0.20
f	m	0.60	0.60	0.60	0.60	0.60	0.60
g	m	0.30	0.40	0.60	0.30	0.40	0.60
h	m	0.60	0.80	1.20	0.60	0.80	1.20
I	m	0.20	0.20	0.20	0.40	0.40	0.40
k	m	1.20	1.20	1.50	1.20	1.20	1.50
l	m	1.00	1.00	1.00	1.00	1.00	1.00
m	m	0.38	0.30	0.30	0.38	0.30	0.30
MATERIAL REQUIREMENT							
FOUNDATION (Concrete)		0.47	0.47	0.52	0.72	0.72	0.79
HEAD/WINGWALLS (Concrete/Masonry)		0.53	0.69	1.11	1.24	1.63	2.61
APRON (Concrete)		0.24	0.24	0.30	0.24	0.24	0.30

FIGURE C.10 - HEADWALL TYPE 3A (CONCRETE BLOCK HEADWALLS)

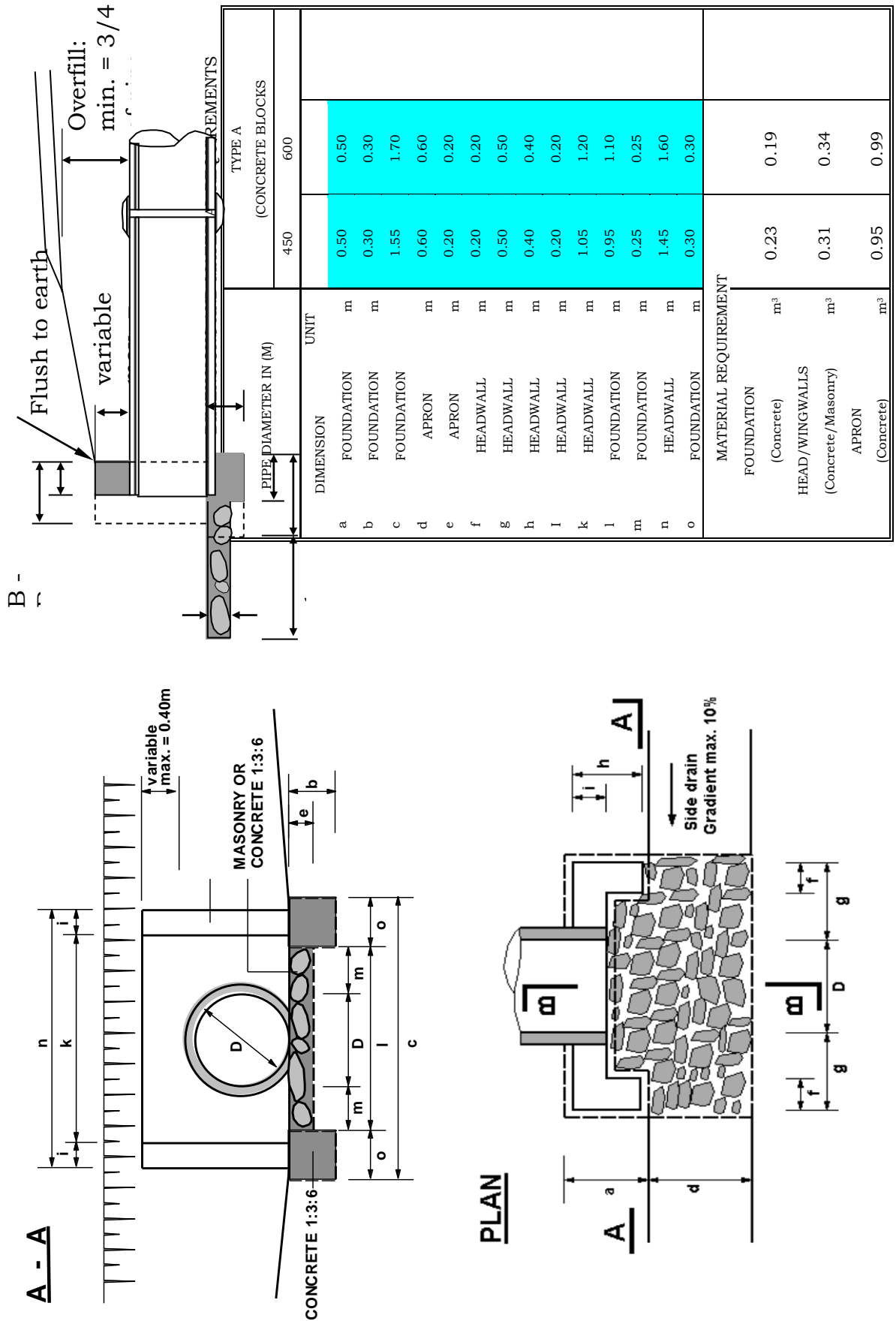


FIGURE C.11 - HEADWALL TYPE 3B (STONE MASONRY HEADWALLS)

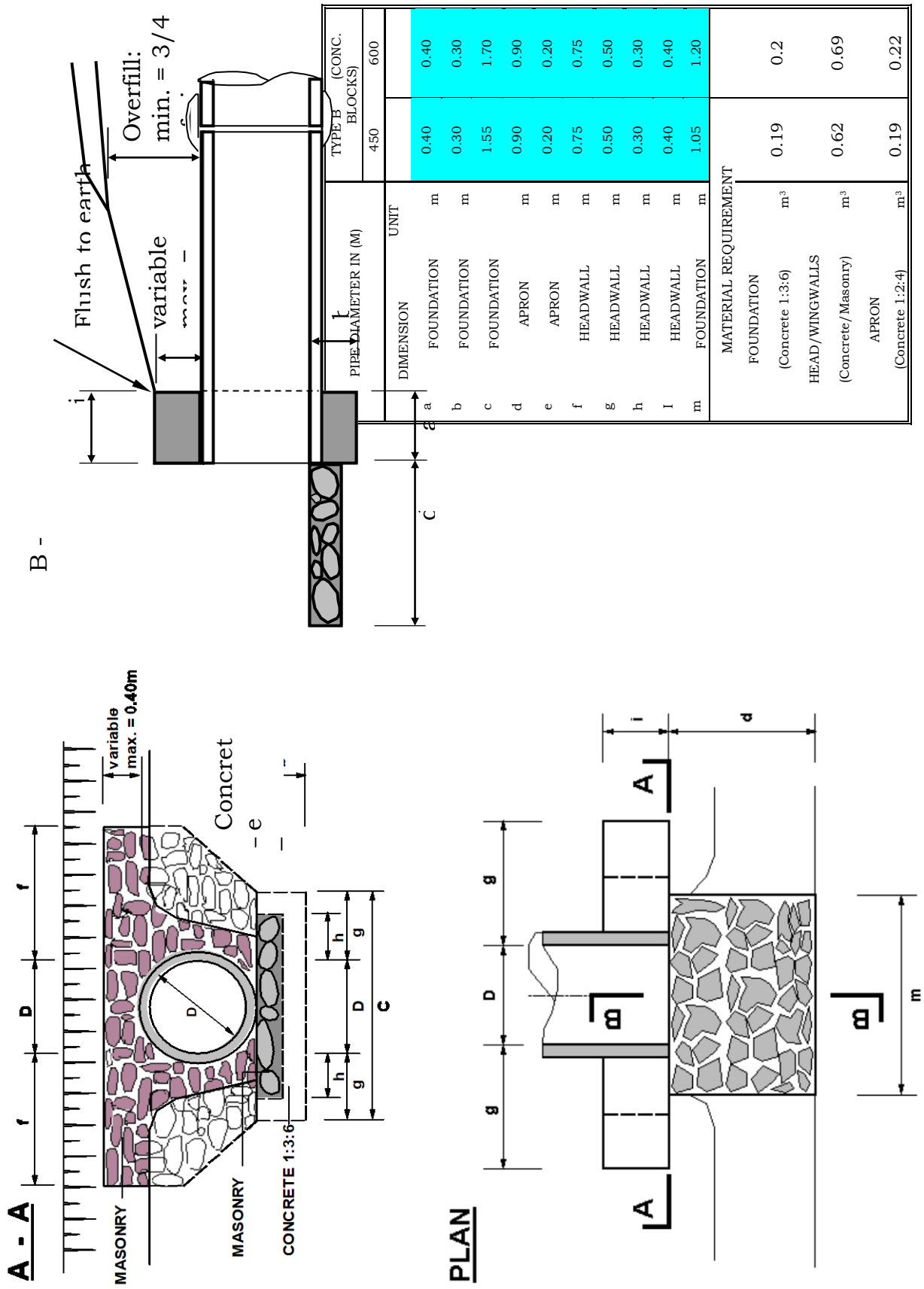


FIGURE C.12 - HEADWALL TYPE 4 (FOR ACCESS CULVERTS)

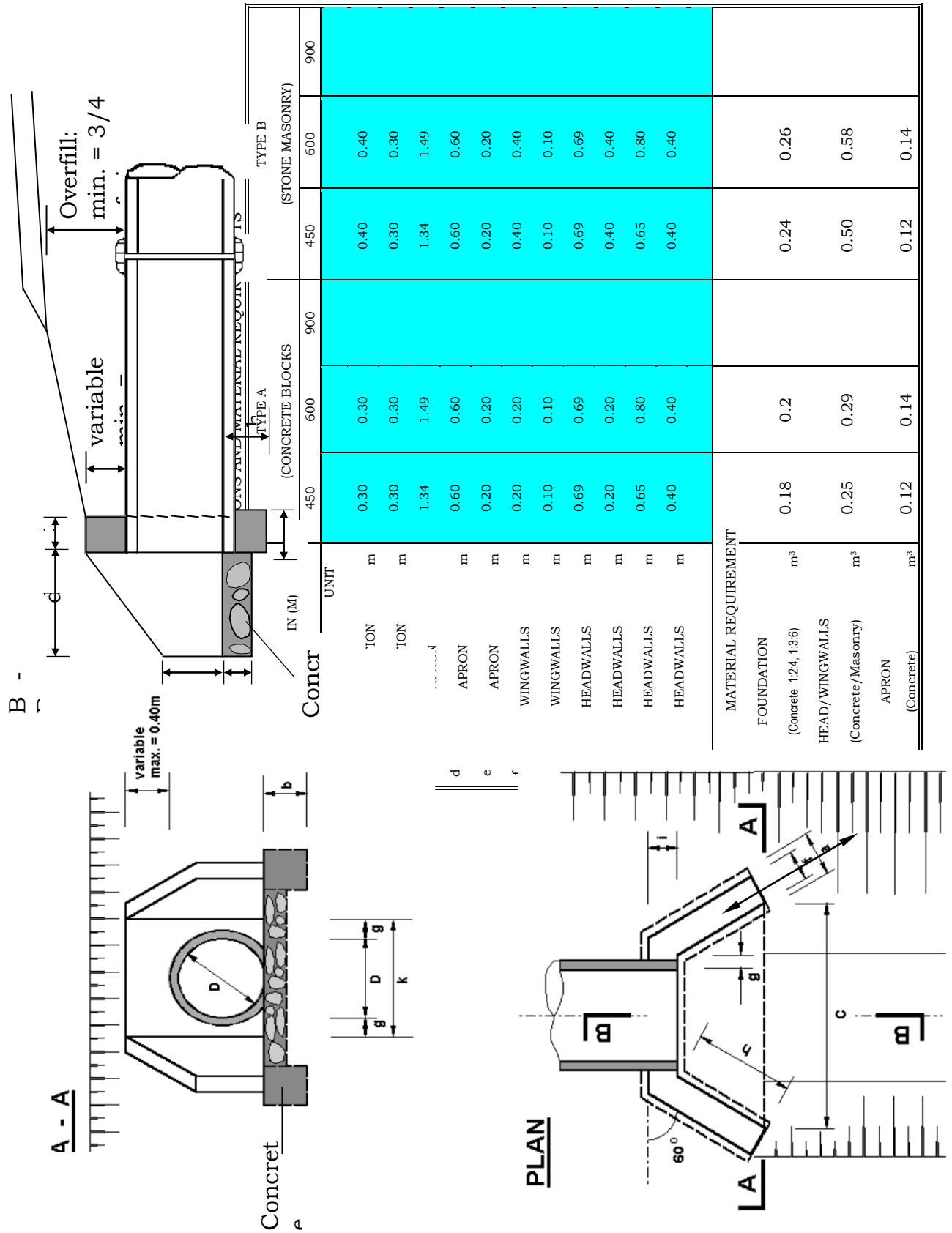
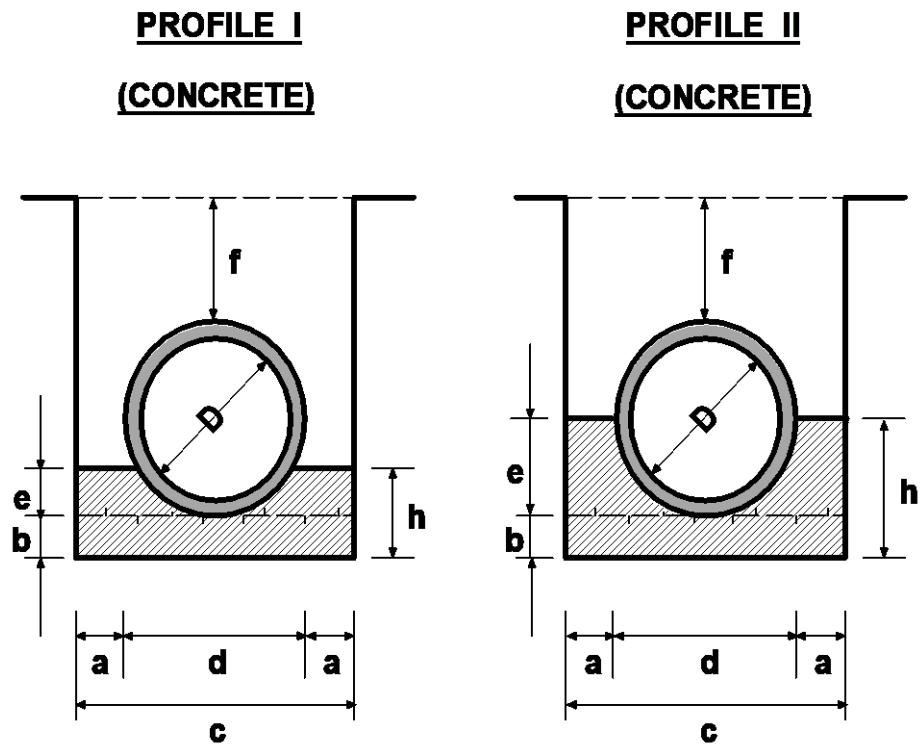


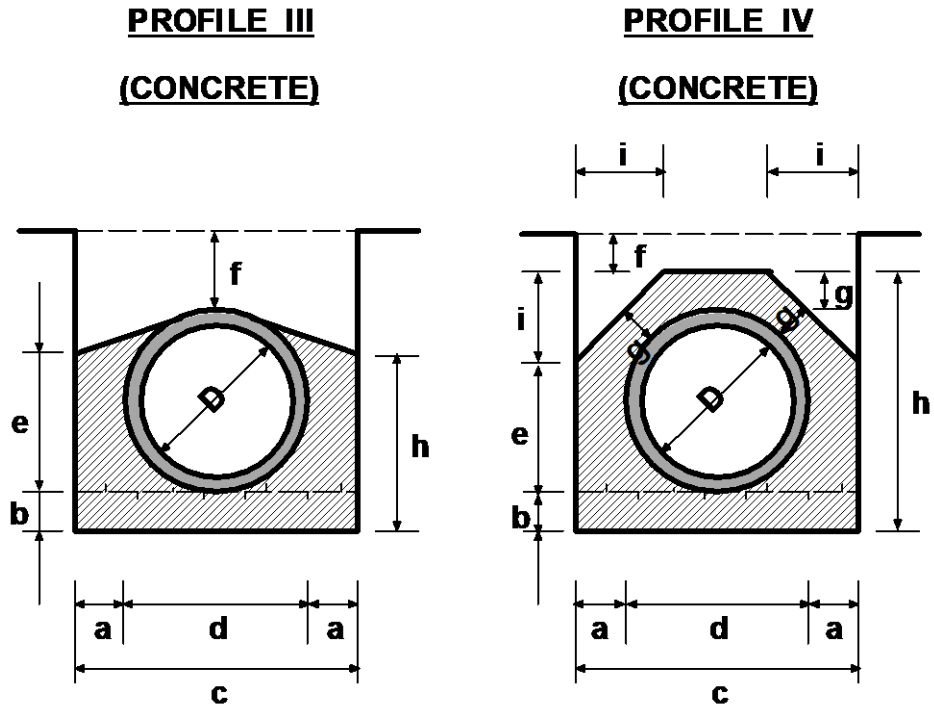
FIGURE C.13- BEDDING AND HAUNCH PROFILES TYPES I & II



Diameter (D)	450 (mm)	600 (mm)	900 (mm)
Dimensions in (m)			
a	0.15	0.2	0.2
b	0.1	0.15	0.15
c	0.86	1.12	1.48
d	0.56	0.72	1.08
e	0.14	0.18	0.27
f (min.)	0.34	0.45	0.68
g	-	-	-
h	0.24	0.33	0.42
i	-	-	-
Concrete Volume in (m ³ /m)			
	0.16	0.3	0.48
Application	- Fair subgrade condition; - Overfill > ¾ Diameter; - Seasonal waterflow only.		
Remarks	- Use gravel material for back/overfill.		

450 (mm)	600 (mm)	900 (mm)
Dimensions in (m)		
0.15	0.2	0.2
0.1	0.15	0.15
0.86	1.12	1.48
0.56	0.72	1.08
0.28	0.36	0.54
0.34	0.45	0.68
-	-	-
0.38	0.51	0.69
-	-	-
Volume in (m ³ /m)		
0.2	0.37	0.56
- Fair to poor subgrade Condition; - Overfill > ¾ Diameter; - Seasonal waterflow only.		
- Use gravel material for back/overfill.		

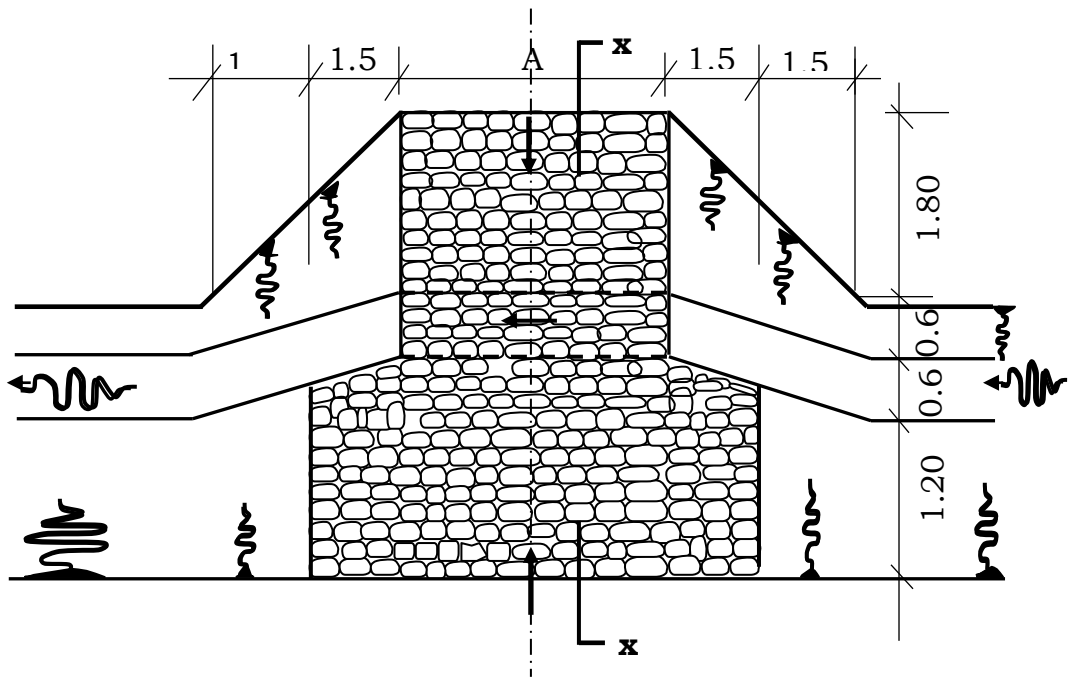
FIGURE C.14 - BEDDING AND HAUNCH PROFILES TYPES III & IV



Diameter (D)	450 (mm)	600 (mm)	900 (mm)
Dimensions in (m)			
a	0.15	0.2	0.2
b	0.1	0.15	0.15
c	0.86	1.12	1.48
d	0.56	0.72	1.08
e	0.42	0.54	0.81
f (min.)	0.23	0.3	0.45
g	-	-	-
h	0.52	0.69	0.96
i	-	-	-
Concrete	Volume in (m ³ /m)		
	0.26	0.47	0.71
Application	- Fair subgrade condition; - Overfill > ¾ Diameter; - Seasonal waterflow only.		
Remarks	- Use gravel material for back/overfill.		

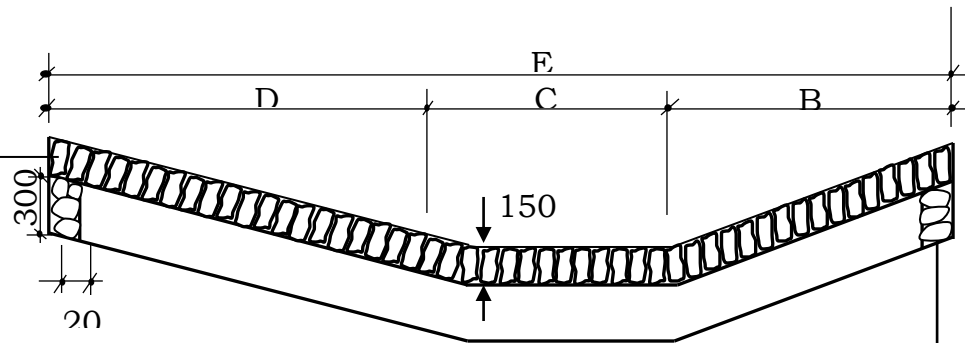
	450 (mm)	600 (mm)	900 (mm)
Dimensions in (m)			
	0.15	0.2	0.2
	0.1	0.15	0.15
	0.86	1.12	1.48
	0.56	0.72	1.08
	0.46	0.52	0.78
	0.15	0.15	0.15
	0.15	0.15	0.15
	0.81	1.01	1.38
	0.28	0.35	0.45
	Volume in (m ³ /m)		
	0.37	0.61	0.92
	- Fair to poor subgrade Condition; - Overfill > ¾ Diameter; - Seasonal waterflow only.		
	- Use gravel material for back/overfill.		

FIGURE C.15 ACCESS DRIFT



PLAN

150mm
GROUTED

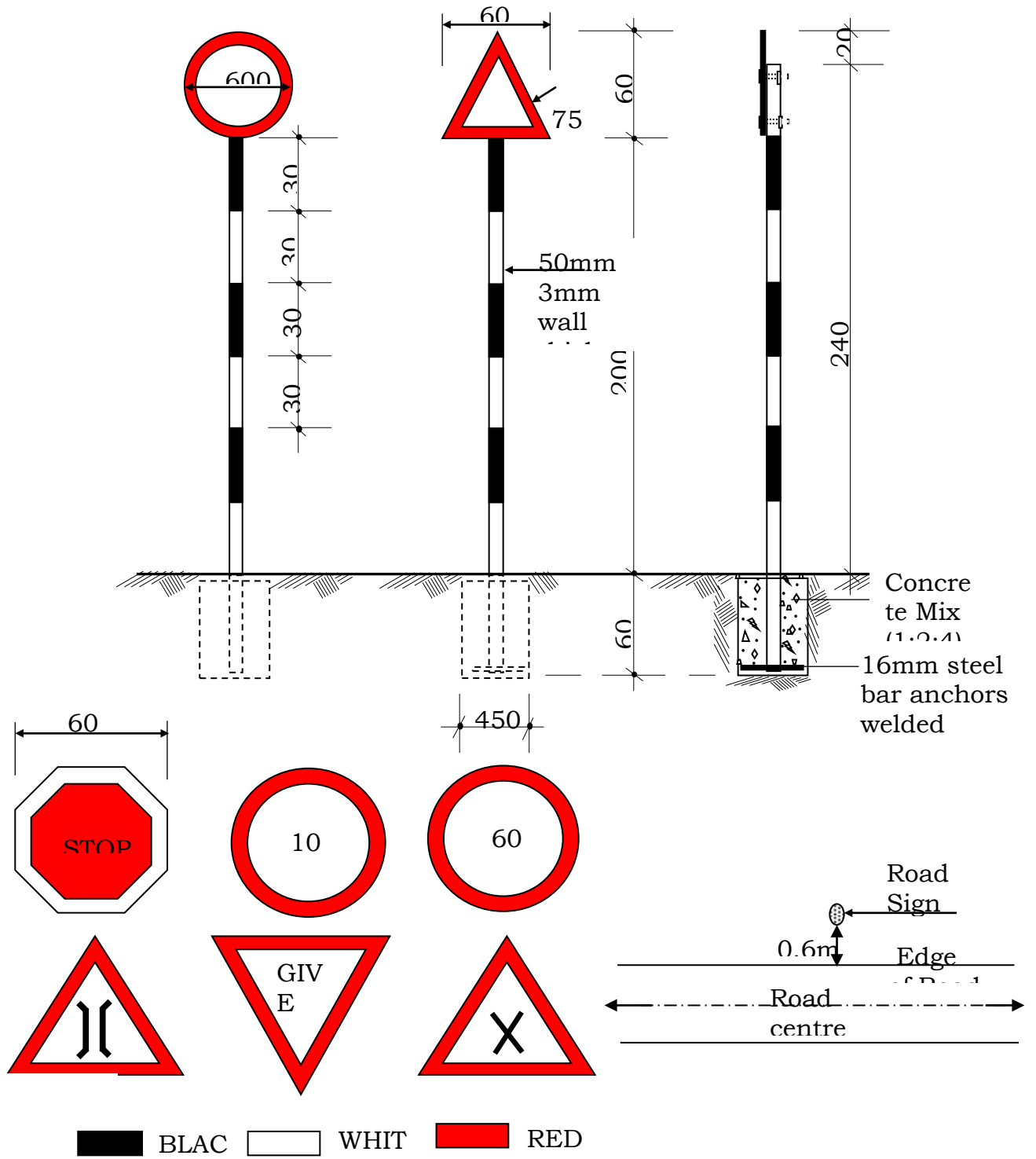


X-SECTION X-X

STONE MASONRY
TOES
ON FOUR SIDES OF

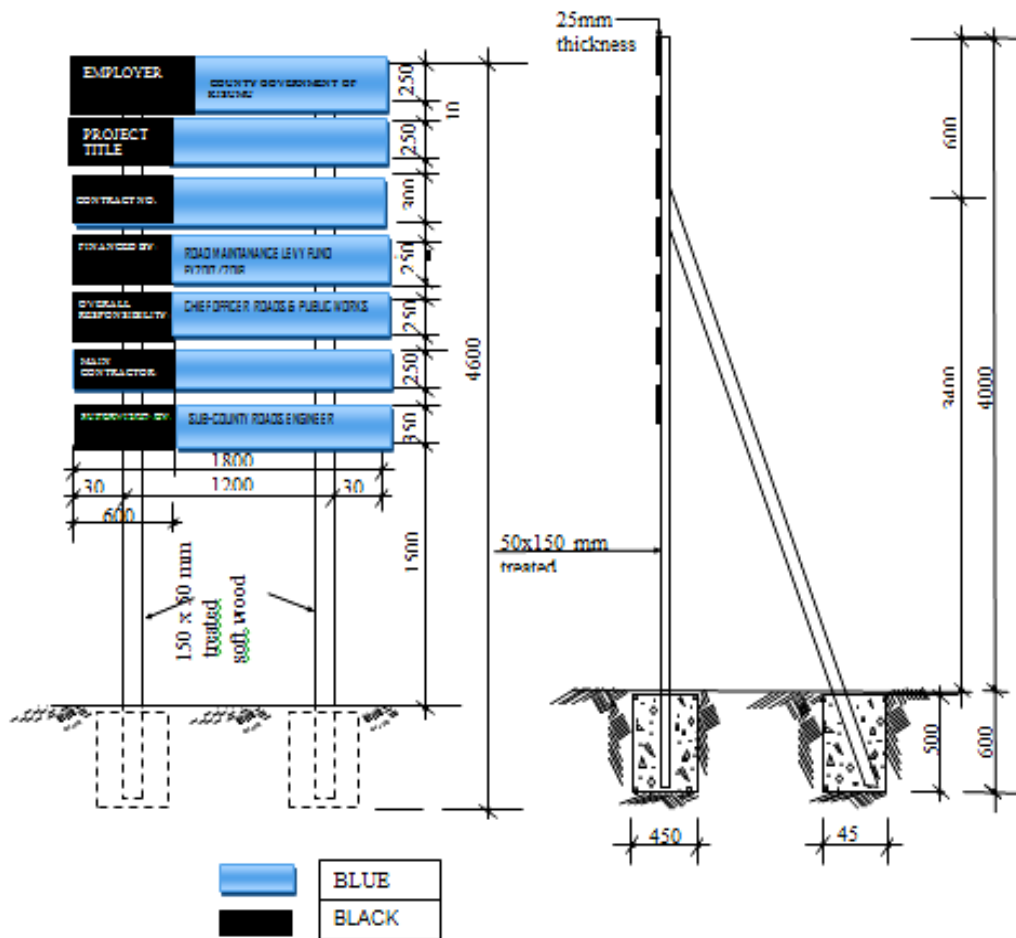
QUANTITIES TABLE						STRUCTURE (200X300mm)		
Cross section	DIMENSIONS					Excavation (m3)	Stone masonry (m ³)	150mm Grouted stone pitching (m ³)
	A	B	C	D	E			
A	4000	1800	600	1800	4200	7.50	1.30	21.75
	6000	1800	600	1800	4200	10.00	1.60	30.15
B	4000	1400	400	1800	3400	7.00	1.20	18.30
	6000	1400	400	1800	3600	9.00	1.50	25.50

FIGURE C.16 - TRAFFIC SIGN



1. The type of sign required and their location shall be as shown on the improvement plan and as directed by the Engineer
2. Sign plate to be 2 mm thick mild steel plate
3. Sign post to be 50 mm internal diameter steel pipe with wall thickness of 3 mm.
4. Sign plate to be fixed to steel tube by 4 Nos M10 bolts and 2 Nos 50 mm fixing clamps/brackets.
5. Sign paints shall be reflective.

FIGURE C.17 - PUBLICITY SIGNBOARD



NOTES

1. The wording of the project signboard and the location to be installed to be as directed by the Engineer
2. Materials to be used for fabrication of signboard shall be pressure impregnated treated softwood timber sizes as indicated in the drawing
3. Wording boards to be nailed to the posts using nails.

Quantities Tables

A Parabolic waterway

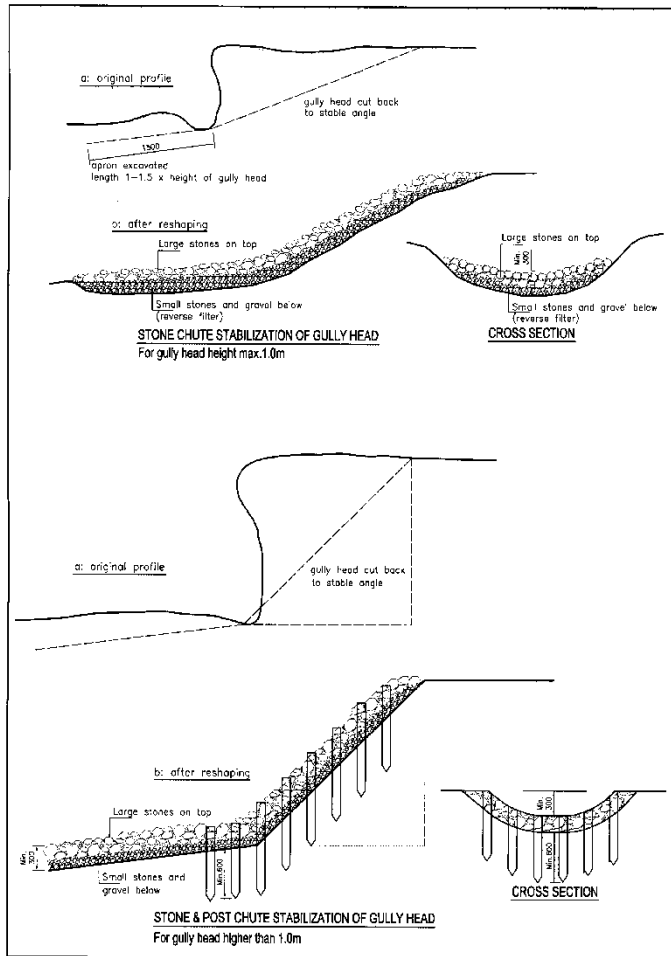
Top width (m)	Depth	Excavation volume (m ³ /m)
1.50	0.6	0.6
2.00	0.6	0.8
3.00	0.75	1.5

B At level scour check

Top width (m)	Excavation volume (m ³)	Hardcore volume (m ³)
1.50	0.10	0.10
2.00	0.15	0.15
3.00	0.25	0.25

Figure C9c- At level Scour checks

Construction of the Proposed Maseno Town Road Specifications



Quantities Tables

A. Gully head shaping and stone lining

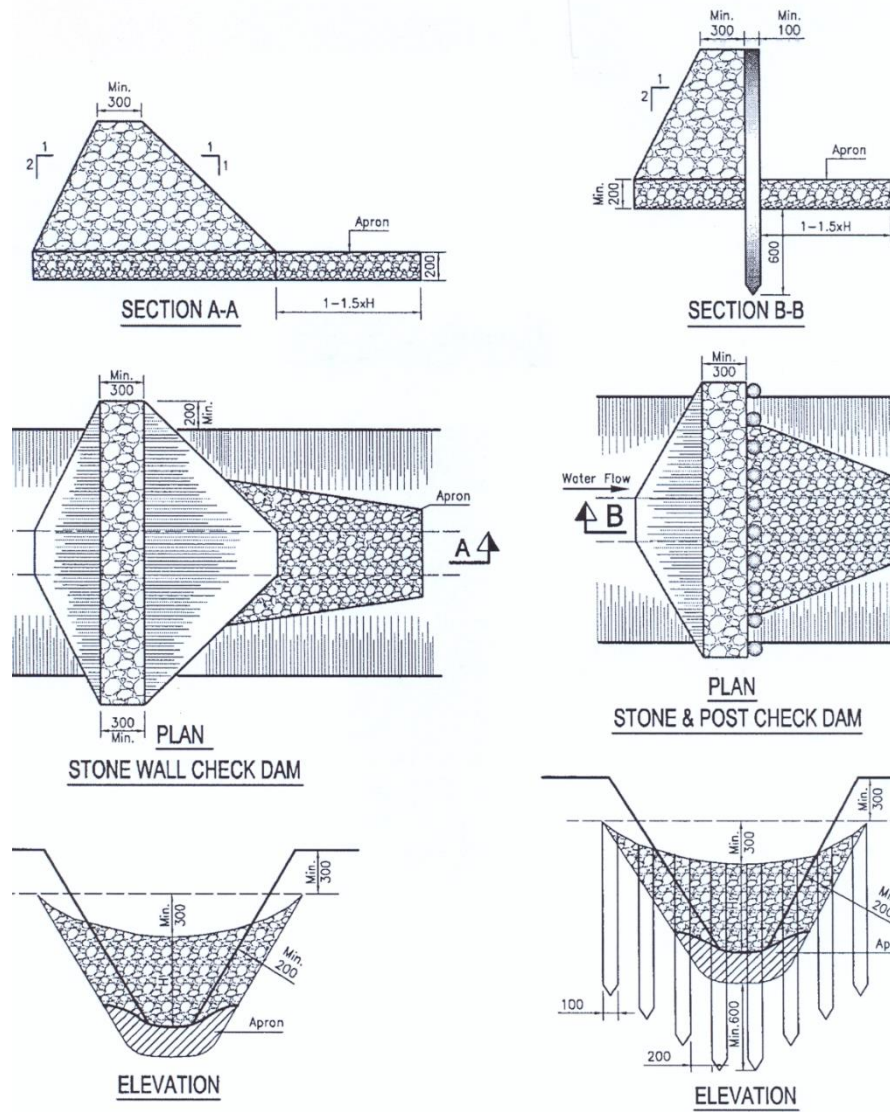
Top width (m)	Depth (m)	Length (m)	Excavation volume (m3/)	Hardcore Volume (m3)
1.50	0.3	3.20	0.80	1.0
1.50	0.3	3.20	1.20	1.5
2.00	0.3	3.20	1.60	2.0

B. Gully Head shaping, stone & posts lining

Top width (m)	Depth (m)	Length (m)	Excavation volume (m3/)	Hardcore Volume (m3)
2.0	0.3	3.00	1.50	1.80
2.0	0.3	3.40	2.40	2.0
2.0	0.3	4.50	4.60	2.70
2.0	0.3	6.70	10.20	4.0

Figure C9d – Gully head and stone and post protection C-9d

Construction of the Proposed Maseno Town Road Specifications



Spacing in metres between check dams

% slope	Height of check dam spillway (m)				
	0.15	0.25	0.50	0.75	1.00
5	15.0	25.0			
7	5.0	8.7	17.5	25	35
10	2.5	4.2	8.4	12.6	16.8
15	1.4	2.3	4.6	6.9	9.2
20	0.9	1.6	3.2	4.8	6.4
25		1.3	2.5	3.8	5.0
30		1.0	2.0	3.0	4.0
40			1.6	2.4	3.2
50			1.2	1.8	2.0

Figure C9e – Stone and post dam checks

Section E

BILLS OF QUANTITIES

PREAMBLE TO BILL OF QUANTITIES

1. The Bills of Quantities forms part of the Contract Documents and are to be read in conjunction with the Instructions to Bidders, Conditions of Contract Parts I and II, Specifications and Drawings.
2. The brief description of the items in the Bills of Quantities is purely for the purpose of identification, and in no way modifies or supersedes the detailed descriptions given in the conditions of Contract and Specifications for the full direction and description of work and materials.
3. The Quantities set forth in the Bills of Quantities are estimated , representing substantially the work to be carried out, and are given to provide a common basis for bidding and comparing of Bids. There is no guarantee to the Contractor that he will be required to carry out all the quantities of work indicated under any one particular item or group of items in the Bill of Quantities. The basis of payment shall be the Contractor's rates and the quantities of work actually done in fulfillment of his obligation under the Contract.
4. The prices and rates inserted in the Bills of Quantities will be used for valuing the work executed, and the Engineer will only measure the whole of the works executed in accordance with this Contract.
5. A price or rate shall be entered in ink against every item in the Bills of Quantities with the exception of items that already have Provisional sums affixed thereto. The bidders are reminded that no "nil" or "included" rates or "lump-sum" discounts will be accepted. The rates for various items should include discounts if any. Bidders who fail to comply will be disqualified.
6. Provisional sums (including Dayworks) in the Bills of Quantities shall be expended in whole or in part at the discretion of the Engineer.
7. The price and rates entered in the Bills of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional plant to be used, labour, insurance, supervision, compliance testing, materials, erection, maintenance of works, overheads and profits, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract, transport, electricity and telephones, water, use and replenishment of all consumables, including those required under the contract by the Engineer and his staff.
8. Errors in the pricing of the Bills of Quantities will be corrected in accordance with Clause (6) of instructions to bidders

Section F **STANDARD FORMS**

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(I) FORM OF INVITATION FOR TENDER

_____ [date]

To: _____ [name of Contractor]
_____ [address]

Dear Sirs:

Reference: _____ [Contract Name]

You have been prequalified to tender for the above project.

We hereby invite you and other prequalified tenderers to submit a tender for the execution and completion of the above Contract.

A complete set of tender documents may be purchased by you from _____

_____ [mailing address, cable/telex/facsimile numbers].

Upon payment of a non-refundable fee of Kshs _____

All tenders must be accompanied by _____ number of copies of the same and a security in the form and amount specified in the tendering documents, and must be delivered to

_____ [address and location]

at or before _____ (time and date). Tenders will be opened immediately thereafter, in the presence of tenderers' representatives who choose to attend.

Please confirm receipt of this letter immediately in writing by cable/facsimile or telex.

Yours faithfully,

_____ Authorized Signature

_____ Name and Title

(II) FORM OF TENDER

TO: _____ [Name of Employer] _____ [Date]
_____ [Name of Contract]

Dear Sir,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct, install and complete such Works and remedy any defects therein for the sum of Kshs. _____ [Amount in figures] Kenya Shillings _____ [Amount in words]
2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Project Manager's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Appendix to Conditions of Contract.
3. We agree to abide by this tender until _____ [Insert date], and it shall remain binding upon us and may be accepted at any time before that date.
4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us.
5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _____ day of _____ 2017

Signature _____ in the capacity of _____

duly authorized to sign tenders for and on behalf of

_____ [Name of Tenderer]

of _____ [Address of Tenderer]

Witness; Name _____

Address _____

Signature _____

Date _____

(III) APPENDIX TO FORM OF TENDER

(This Appendix forms part of the Tender)

CONDITIONS OF CONTRACT	CLAUSE	AMOUNT
Bid Security (Bank Guarantee Only)		2% of the tender sum
Amount of Performance Security (Unconditional Bank Guarantee)	10.1	10% of accepted Contract Price
Submission of Performance Security		Submitted by the 14 days from the date of the Letter of Acceptance
Work Programme to be submitted	14.1	Not later than 14 (fourteen) days after issuance of Order to Commence
Cash flow estimate to be submitted	14.3	Not later than 14 (fourteen) days after issuance of Order to Commence
Minimum amount of Contractors All Risk Insurance Cover	23.2	10% of the Contract Price
Submission of Contractors All Risk Insurance Cover		Not later than 14 (fourteen) days after issuance of the Order to Commence
Period for commencement, from Engineer's order to commence	41.1	7 days
Time for completion	43.1	12 Weeks
Advance Payment	60.12	No Advance payment
Amount of liquidated damages	47.1	0.1 % of the contract price per day.
Limit of liquidated damages	47.1	5% of Contract Value
Defects Liability period	49.1	12 months
Percentage of Retention	60.3	10% of Interim Payment Certificate
Limit of Retention Money	60.3	10% of Contract Price
Minimum amount of interim certificates	60.2	KES 14,000,000
Appointer of Arbitrator	67(3)	The Chartered Institute of Arbitrators – Kenya Chapter.
Notice to Employer and Engineer	68.2	The Employer's address is: The Chief Officer Department of Housing & Urban Development County Government of Kisumu P.O. Box 2378-40100 KISUMU The Engineer's address is: Director Urban Development County Government of Kisumu P.O. Box 2378-40100 KISUMU

Signature of Tenderer..... Date.....

(IV) OTHER SUPPLEMENTARY INFORMATION

1. Financial reports for the last three years, balance sheets, profit and loss statements, auditors' reports etc. List them below and attach copies.
.....
.....

2. Evidence of access to financial resources to meet the qualification requirements. Cash in hand, lines of credit etc. List below and attach copies of supporting documents (bank to fill attached form).
.....
.....

3. Name, address, telephone, telex, fax numbers of the Tenderer's Bankers who may provide reference if contacted by the Employer.
.....
.....

- Submit copies of audited profit and loss statements and balance sheet for the last three calendar years and estimated projection for the next two years with certified English translation where appropriate.
- Give turnover figures for each of the last three (3) financial years. Quote in millions and decimal thereof.

Type of Work	Year	Year	Year
	Kshs.	Kshs.	Kshs.
Roadworks			
Other civil engineering works			
Other (specify)			
Total			

SUMMARY OF ASSETS AND LIABILITIES OF THE AUDITED FINANCIAL STATEMENTS OF THE LAST THREE (3) FINANCIAL YEARS

	Year	Year	Year
	Kshs.	Kshs.	Kshs.
1.Total Assets			
2.Current Assets			
3.Bank credit Line Value			
4.Total Liabilities			
5.Current Liabilities			
6.Net worth (1-4)			
7.Working capital (2+3-4)			

Name/Address of Commercial Bank providing credit line
Total amount of credit line KShs.....

Attach certified copies of financial bank statements of the last three years.

Attach a certified copy of Undertaking of the Bank to providing the credit.

Information on current litigation in which the Tenderer is involved.

OTHER PARTY (IES)	CAUSE OF DISPUTE	AMOUNT INVOLVED (KSHS)

I certify that the above information is correct.

.....
Name/Title

.....
Signature

.....
Date

(V) QUALIFICATION INFORMATION

1. Individual Tenderers or Individual Members of Joint Ventures

- 1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate);
Place of registration: _____

Principal place of business _____

Power of attorney of signatory of tender _____

- 1.2 Total annual volume of construction work performed in the last five years

YEAR	VOLUME	
	CURRENCY	VALUE

- 1.3 Work performed as Main Contractor on works of a similar nature and volume over the last five years. Also list details of work under way or committed, including expected completion date.

[Fill in the Details as described in the Table attached on Pages S-6 and S-7]

- 1.4 Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested in the table provided.

[Fill in the Details as described in the Table attached on Page S-

10]

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

[Fill in the Details as described in the Table attached on Page S-

8]

- 1.6 .

- 1.7 Statement of compliance with the requirements of Clause 1.2 of the Instructions to Tenderers.

- 1.8 Proposed program (work method and schedule) for the whole of the Works. Attached a detailed proposed work plan for the execution of the Works described.

2 Joint Ventures

- 2.4 The information listed in 1.1 – 1.10 above shall be provided for each partner of the joint venture.
- 2.5 The information required in 1.11 above shall be provided for the joint venture.
- 2.6 Attach the power of attorney of the signatory(ies) of the tender authorizing signature of the tender on behalf of the joint venture
- 2.7 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that:
 - a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
 - b) one of the partners will be nominated as being in charge, authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture; and
 - c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

2. **LETTER OF CREDIT**

To
The Chief Officer
Department of Housing & Urban Development,
County Government of Kisumu,
P.O. Box 2738-40100
Kisumu

RE: LINE OF CREDIT FOR (CONTRACT DETAILS)

Reference is made to inquiry from our Customer of
P.O. Box

..... in regard to line of Credit for financing above tender.
We wish to state as following.

1. M/S(name of tender) has satisfactorily conducted an account dominated in Kenya Shillings with us for a period of more than one year.
2. Currently the above named Customer enjoys
 1. A Bank Overdraft facility of Kshs
 2. A bank loan of Kshs
3. As per the prudential norms for Financing which MUST be fulfilled by our customer, we are in a position to provide a line of credit to M/s
(tenderer name) for Kshs

This information is given in strict confidence, and without any guarantee or liability on the part of the bank or any of its officers.

Yours Faithfully

Bank Authorised Signatory

4. **DECLARATION FORM**

Date

To
The Chief Officer
Department of Housing & Urban Development,
County Government of Kisumu,
P.O. Box 2738-40100
Kisumu

The tenderer i.e. (name and address) _____

declare the following: _____

- a) Has not been debarred from participating in public procurement.
- b) Has not been involved in and will not be involved in corrupt and fraudulent practices regarding public procurement.

Name/Title Signature Date

(To be signed by authorized representative and officially stamped)

5. DETAILS OF CONTRACTOR'S EXPERIENCE

In the table below, give a brief summary of the Company's major Road Works carried out and **completed** in the **last FIVE years**. The works listed should be similar to the Works described in this tender.

DESCRIPTION OF WORKS, CLIENT AND CONTACT PERSON	TOTAL VALUE OF WORKS (KSH.)	CONTRACT PERIOD (YEARS)	YEAR COMPLETED

Note: Attach relevant documentary evidence.

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

.....
(Title)

.....
(Signature)

.....
(Date)

4. DETAILS OF ONGOING PROJECTS

In the table below, give a brief summary of the Company's major Road Works that are currently ongoing. The works listed should be similar to the Works described in this tender.

DESCRIPTION OF WORKS, CLIENT AND CONTACT PERSON	CONTRACT PERIOD	DATE OF COMMENT	INTENDED DATE OF COMPLETION	TOTAL VALUE OF WORKS	% COMPLETED TO DATE

Note: *Attach relevant documentary evidence.*

I certify that the above Road Works are being carried out by ourselves and that the above information concerning them is correct.

.....
(Title)

.....
(Signature)

.....
(Date)

5. SCHEDULE OF KEY PERSONNEL

*In the table below, give the details of the Tenderer's Key **Technical Personnel** who will be responsible for the major activities of the works described in this tender, both at the Headquarters and at the Site.*

DESIGNATION	NAME	NATIONALITY	SUMMARY OF QUALIFICATIONS AND EXPERIENCE

Note: *Attach the CVs of the Key Personnel.*

I certify that the above information is correct.

.....
(Title)

.....
(Signature)

.....
(Date)

6. DETAILS OF SUB-CONTRACTORS

If the Tenderer wishes to sublet any portions of the works under any heading, he must give below the details of the sub-contractors he intends to employ for each portion.

Failure to comply with this requirement may invalidate the tender.

FULL NAME AND ADDRESS OF THE SUB-CONTRACTOR	PORTION OF WORKS TO BE SUB-CONTRACTED AND CONTRACT VALUE	SUB-CONTRACTOR'S EXPERIENCE IN SIMILAR WORKS

Note: *Attach relevant evidence.*

I certify that the above information is correct.

.....
(Title)

.....
(Signature)

.....
(Date)

8 7. SCHEDULE OF PLANT AND EQUIPMENT

PARTICULARS OF EACH UNIT	TYPE/ RATING	SERIAL NO. & REG. NO.	YEAR OF MANUFA -CTURE	WHERE MADE	VALUE	OWNERSHIP				PRESENT LOCATION	WEEK WHEN AVAILAB LE ON SITE
						OWNED <i>(Give SR. No. and Reg. No)</i>	TO HIRE <i>(Give name and address of Owner)</i>	HIRE PURCHASE <i>(Give details as stated in the Footnote)</i>	PURCHASE <i>(Give details as stated in the Footnote)</i>		

Note *Details of each machine/equipment in more than one of the same make or type must be given separately. Items to be imported pursuant to the conditions of contract to be indicated together with 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 Project Manager may carry out physical verification of the availability of the plant and equipment listed on the schedule

9 (IV) TENDER QUESTIONNAIRE

Please fill in **BLOCK LETTERS**.

1. Full names of Tenderer [Name of the Firm]
.....
.....
2. Full address of Tenderer to which tender correspondence is to be sent
(unless an agent has been appointed below)
.....
.....
.....
3. Telephone/Cellphone 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: _____
(Name of Employer)

(V) 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 2(d) 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: K. pound.....

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:

<i>Name in full</i>	<i>Nationality</i>	<i>Citizenship Details</i>	<i>Shares</i>
1.....			
2.....			
3.....			

Part 2(c) – Registered Company:

Private or public.....

State the nominal and issued capital 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(Name of Employer) who has interest in this firm? Yes/No.....(Delete as necessary)

I certify that the information given above is correct.

.....
(Title)

.....
(Signature)

.....
(Date)

- Attach proof of citizenship

(VI) SCHEDULE OF PARTICULARS

1. PARTICULARS OF FIRM

<i>Name of Company:</i>	
<i>Postal Address:</i>	
<i>Physical Address:</i>	
<i>Tel. Nos.</i> <i>Fax No.</i> <i>E-mail:</i>
<i>Full names of Directors and their citizenship:</i>	
<i>Registered Office, address and Telephone/Cellphone No.</i>	
<i>Workshop, Yard, Stores address:</i>	
<i>Type of services the Company provides:</i>	
<i>Registration with Government Departments:</i>	
<i>Name and address of Company's bankers:</i>	
<i>Statements by Company's bankers on financial status (attach copy):</i>	

Date:

.....

Signed:

2. PARTICULARS OF INSURANCE

Sn	Type of Insurance	Name of Company	Registered Address
1	<i>Insurance of Works</i>		
2	<i>Plant and Machinery</i>		
3	<i>Public Liability</i>		
4	<i>Workmen's Compensation</i>		
5	<i>Employer's Liability</i>		
6	<i>Personal Accident</i>		

NOTE: *Certified photocopies of the relevant insurance policies should accompany these particulars.*

Date:

Signed:

CERTIFICATE OF BIDDER’S VISIT TO SITE

This is to certify that

[Name/s].....
.....

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

.....
.....

participated in the organised inspection visit of the site of the works for the

CONSTRUCTION OF RIAT-PARADISE ROAD

held on.....day of.....20.....

Signed.....
(Employer’s Representative)

.....
(Name of Employer’s Representative)

.....
(Designation)

NOTE: This part is to be completed at the time of the organized site visit.

Project Name: _____

	Date	Signatures
The Engineer's Representative (Project Engineer)		
Resident Engineer		

1. This check list is for Sub-County Engineer Engineer to check contractor's work execution process.
2. Fill in date of checking as (day/month), mark as indicated in Filling Example, and state remarks.
3. Put this check list in the Monthly Progress Report.

Item	Check Point	before	During execution										after	Remarks	
		Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date	Date		
		/	/	/	/	/	/	/	/	/	/	/	/	Reason for unsatisfactory performance (Site diary No.) Corrective order by authority (Date) Excellent point to be specified	
1	Execution system in general	1-1	Works Execution Programme (including its revised version if any) is submitted before the date specified in contract document	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		1-2	Works Execution Programme properly reflects the given specifications and site conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
		1-3	Execution procedures are in accordance with Works Execution Programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	Equipment holding	2-1	All equipment used are properly mobilized in accordance with Works Execution Programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		2-2	All equipment used is well maintained during the execution of works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	Contractor's in-house staff	3-1	Qualified technical staff of contractor are properly assigned as specified in Works Execution Programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		3-2	Contractor's in-house key staff understand work process and schedule properly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
		3-3	Contractor's in-house staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

BILL NO.	DESCRIPTION	AMOUNT
1	PRELIMINARY AND GENERAL	
4	SITE CLEARANCE AND TOP SOIL STRIPPING	
5	EARTHWORKS	
8	CULVERTS AND DRAINAGE WORKS	
9	PASSAGE OF TRAFFIC	
12	NATURAL MATERIAL BASE AND SUBBASE	
14	CEMENT AND LIME TREATED BASE AND SUB BASE	
16	BITUMINOUS WEARING COURSES	
20	ROAD FURNITURE	
22	DAY WORKS	
A	SUB TOTAL (1)	
B	Add 2.5% of (1) for contingencies to be Expended in part or deleted entirely by the Engineer in accordance with clause 58 of the Conditions of Contract (2)	
C	SUB TOTAL	
E	ADD 14% OF "C" FOR VALUE ADDED TAX (VAT)	
F	Grand Total Carried Forward to Form of Bid	

ITEM	DESCRIPTION	UNIT	QUANTIT Y	RATE (KSHS.)	AMOUNT (SHS)
BILL NO. 1: PRELIMINARY AND GENERAL					
1.01	Allow Provisional sum of KES 150,000 for hire of 2No. for Engineer's staff for 3 months	Prov. Sum	6	25,000	150,000
1.02	Include a percentage of item 1.01 for contractor's overheads and profit	%		15	
1.04	Allow Provisional sum of Ksh 100,000 for testing of pavement materials	Prov. Sum		100,000	100,000
1.06	Allow provisional Sum of Ksh 100,000 for hire of survey equipment.	Prov. Sum		100,000	100,000
1.07	Include a percentage of item 1.06 for contractor's overheads and profit	%		10	
1.12	Provide, erect and maintain publicity signboards as directed by the Engineer.	No .	2		
Total of Bill No. 1 Carried Forward to Summary Page					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO.4: SITE CLEARANCE AND TOP SOIL STRIPPING					
4.01	Clear site on road reserve including of removal encroaching structures, trees, hedges, bushes and other vegetation and other deleterious materials, grub up roots and backfilling of holes left by removal of stumps and roots in accordance with the Specifications, as shown in drawings and as directed by Engineer.	m ²	3,600		
4.02	Removal of unsuitable material top soil to a maximum depth of 100 mm including excavation, loading and disposal to all leads and lifts but excluding replacement by suitable soil which shall be paid separately.	m ³	400		
4.03	Allow Ksh 100,000 for removal of any structure including services and obstructions as directed by the Engineer. Payment to be on dayworks basis.	Prov. Sum			
Total of Bill No. 4 Carried Forward to Summary Page					

ITEM		DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO.5: EARTHWORKS						
5.01	5.01	NOTE: No overhaul will be paid for these items as they shall be deemed to have been included in the Tenderer's rates. Provide, lay and compact improved subgrade material of top 150 mm in fills of 2 layers of 75 mm compacted to 100% MDD (AASHTO T99) as Subgrade as per specifications	m ³	540		
	5.02	Grade existing carriage way to camber including slopes and ditches of road length from chainage 0+400 to 1+800 as per the designs and approved by the Engineer.	m ²	11,200		
Total of Bill No.5 carried forward to summary page						

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 8: CULVERTS AND DRAINAGE WORKS					
	No separate payment shall be made for the haulage of surplus or unsuitable excavated material and the cost of such haulage shall be included in the rates and/or prices				
8.01	Excavate in Soft material for outfall, mitre drains, cut-off drains, catch water drains, outfall channels etc including carting of excavated material to spoil, all as directed by the Engineer	m ³	7.20		
8.02	Excavate in Soft material for pipe culverts, wingwalls, aprons, toe walls and drop inlets and compact as specified or as directed by the Engineer	m ³	48.41		
8.04	Provide, lay and joint 600mm 1.0. Reinforced Concrete pipes	m	21		
8.05	Provide, lay and joint 900mm 1.0. Reinforced Cement Concrete pipes	m	7		
8.07	Provide, place and compact class 25/20 concrete to bed, surround, headwalls, wingwalls, aprons and toewalls to pipe culverts including all formwork	m ³	29.90		
8.09	Excavate, provide all materials and construct 200mm thick mortar grouted stone pitching to bed and side slopes of channels, natural ground faces, inlets etc as directed by the Engineer	m ²	800		
Total of Bill No.8 carried forward to summary					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BIL NO. 9: PASSAGE OF TRAFFIC					
9.01	Improve existing road by regrading to Engineer's satisfaction to allow passage of traffic including provision and maintenance of signs, barriers etc during works	Km	0.40		
9.02	Construct and maintain deviations where directed by the Engineer in accordance with Clause 904 of the Standard Specifications	Km	0.40		
Total Carried Forward to Summary					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 12: NATURAL MATERIAL BASE AND SUBBASE					
12.01	<p>Measurements and payment by method 'A' as defined in the standard specifications, No separate payments shall be made for the overhaul of material and the cost of such haulage shall be included in the rates and or prices</p> <p>Provide, place and compact 150mm to 95% MDD (AASHTO T180), natural material for subbase in layers as per the standard and special specifications</p>	m ³	540		
12.02	<p>Provide, lay and compact 150mm to 95% AASHTO T180, natural material for base in layers as per the standard and special specifications</p>	m ³	480		
Total of Bill No. 12 carried forward to summary					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 14: CEMENT AND LIME TREATED BASE AND SUB BASE					
14.01	<p>Measurements and payment by method 'A' as defined in the standard specifications, No separate payments shall be made for the overhaul of material and the cost of such haulage shall be included in the rates and or prices</p> <p>Provide, transport, spread cement stabilizer (mix -in- place method) for base at the specified rate of 2.5% for base</p>	m ³	12		
14.02	Protection and curing of cement treated material for base	m ²	3,200		
Total of Bill No. 14 carried forward to summary					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 16: BITUMINOUS WEARING COURSES					
	Note: No haulage will be paid for bitumen or chippings and this should be included in the rates tendered.				
16.01	Prepare surface of road base, provide, heat and spray MC. 30 cut back bitumen prime coat at the instructed application rate (0.8-1.2l/m ²)	lt	19,008		
16.02	Provide, haul and spray K1-60 tack coat at the instructed application rate (range 0.5-0.8L/m2)	Lt	3,520		
16.03	Provide, lay and compact 40mm Type II Asphalt Concrete 0/10 on the carriageway	m3	96		
16.04	Provide, lay and compact 25mm Type II Asphalt on shoulders	m3	12		
Total of Bill No. 15 carried forward to summary					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO 20: ROAD FURNITURE					
Road Markings					
20.01	Prepare road surface and paint yellow road marking lines 100mm wide according to specifications	m	500		
20.02	As for Item 20.01 but white lines	m	1,000		
20.03	Prepare road surface and paint yellow road markings "Give way"at junctions as per specification.	m	7		
20.04	As for Item 20.03 above but Pedestrian Crossing	m	14		
Permanent Road Signs					
20.04	Supplying and fixing cautionary/warning road sign boards 750mm size.	No.	2		
20.05	Supplying and fixing Priority road sign boards 1000mm size.	No.	1		
20.07	Supplying and fixing regulatory/mandatory road signs in accordance with specifications	No.	2		
20.15	Provide materials and construct speed bumps	m	14.00		
Total of Bill No. 20 carried forward to summary					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 22: DAY WORKS					
A. PLANT					
The rates inserted herein are to include all operational and maintenance costs, fuel, oil, grease, drivers, and turn boy's wages supervision, overheads and profit. Only time actually employed upon the work will be measured and the rates shall include for idle time, travelling time and overtime. Note: All items of plant must be priced.					
22.01	Crawler Dozer and Hydraulic Ripper a) 100-135 Kw rated flywheel power	Hr	1		
22.03	Motor Graders b) 80 - 160 Kw rated flywheel power	Hr	1		
22.04	Road Roller dead weight (Steel Three Wheel) a) 6.5 - 11t unballasted wt	Hr	1		
22.05	Roller rubber tyred self propelled a) up to 2ton per wheel	Hr	1		
22.07	Roller Vibrators single roll Rubber tyred 8.3-10.5 t unballasted weight	Hr	1		
22.09	Compressor rated by normal delivery of free air per minute at about 7 kg/cm ² , capable of 70m ³ of air per min. complete with all tools	Hr	1		
22.10	Tracked Excavator Cranes (20-28t max working load)	Hr	1.00		
22.12	Excavators hydraulic wheeled dual purpose a) 6 - 0.8m ³ rated bucket capacity	Hr	1		
Total Carried Forward to page 2 of 3					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 22: DAY WORKS					
Brought Forward from previous page					
22.17	Concrete mixers (wet capacity) a) up to 100 litres	Hr	1		
22.18	Concrete poker vibrator	Hr	1		
22.20	Lorries Tippers a) up to - 25 ton gross vehicle weight	Hr	1		
22.22	Self propelled water or fuel tanker a) up to 12000 litre capacity	Hr	1		
22.23	Pressure Bitumen distributor a) 3500 - 9000 litre capacity	Hr	1		
22.25	Asphalt paver, maximum cavino width 3.6 m	Hr	1		
22.27	Bitumen handspray (a) Mechanical bitumen handspray unit	Hr	1		
B. Labour					
The rate inserted herein is to include all costs of labour such as insurance. accommodation. travelling time. overtime, use and maintenance of small tools of the trade, and supervision. Only the actual time engaged upon the work will be paid for, all in accordance with the Specifications.					
22.28	Unskilled labour	hr	1		
22.29	Working ganger	hr	1		
22.30	Timberman	hr	1		
22.32	Concretor	hr	1		
Total Carried Forward to page 3 of 3					

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (Kshs)	AMOUNT (Kshs)
BILL NO. 22: DAY WORKS					
Brought Forward from previous page					
22.37	Light plant operator	hr	1		
22.38	Heavy plant operator	hr	1		
C. MATERIALS					
All materials are to comply-with the requirements of the specifications, The.rates inserted are to include for delivery to the site, storage and handling, e.t.c.D144					
Note: All items of materials must be priced					
22.39	Ordinary Portland cement	Tonne	1		
22.40	Hydrated Lime	Tonne	1		
22.41	Aggregate for Concrete				
	(a) Fine (sand)	m ³	1		
	(b) Coarse (nominal size 10 - 40mm)	m ³	1		
22.42	Shuttering Timber				
	(a) Class of finish F1	m ²	1		
	(b) Class of finish F2	m ²	1		
22.45	Chippings				
	(a) Class 4, nominal size 10/40mm	ton	1		
	(b) Class 4, nominal size 3/6 mm	ton	1		
22.46	Bitumen and Emulsion				
	(a) Bitumen Penetration grade 80/100	Litre	1		
	(b) Bitumen cut - back MC-30	Litre	1		
	(c) Bitumen cut - back MC-3000	Litre	1		
	(b) Bitumen - Emulsion - K160	Litre	1		
22.47	Gabion Mesh, size 1.0m x 1.0m x 1.0m	m ²	1		
22.48	Stone Gabions	m ³	1		
Total of Bill No. 22 carried forward to summary					