

NAIROBI CITY COUNTY



ROADS, PUBLIC WORKS & TRANSPORT SECTOR

**BID DOCUMENT FOR COMPLETION OF ACCESS ROAD TO
TASSIA ESTATE**

TENDER No. NCC/RPW&T/T/566/2016-2017

**Chief Officer-Roads, Public Works
&TransportSector
Nairobi City County
P.O. Box 30075 - 00100
NAIROBI**

**County Secretary
Nairobi City County
P.O. Box 30075 - 00100
NAIROBI**

TABLE OF CONTENTS

SECTION 1: INVITATION TO TENDER.....3
SECTION 2: INSTRUCTIONS TO TENDERERS AND CONDITIONS OF TENDER.....5
SECTION 2: INSTRUCTIONS TO BIDDERS5
SECTION 3: APPENDIX TO INSTRUCTION TO TENDERERS20
SECTION 4: FORM OF BID24
SECTION 5: APPENDIX TO FORM OF BID.....27
SECTION 6: FORM OF BID SECURITY29
SECTION 8: SCHEDULES OF SUPPLEMENTARY INFORMATION.....40
SECTION 9: CONDITIONS OF CONTRACT57
SECTION 9A CONDITIONS OF CONTRACT PART I: GENERAL CONDITIONS OF CONTRACT 58
SECTION 10: FORM OF AGREEMENT.....82
SECTION 11: FORM OF PERFORMANCE BANK GUARANTEE (UNCONDITIONAL)85
SECTION 12: ROAD MAINTENANCE MANUAL.....88
SECTION 13: STANDARD SPECIFICATIONS.....90
SECTION 14: SPECIAL SPECIFICATIONS.....92
SECTION 15: SUPERVISION AND CONTRACT EVALUATION MANUAL 2012.....148
SECTION 16: BILLS OF QUANTITIES149
SECTION 17: DRAWINGS151

SECTION 1: INVITATION TO TENDER

SECTION I: INVITATION FOR TENDERS

- 1.1 The Nairobi City County invites sealed tenders for the Tender No. **NCC/RPW&T/T/566/2016-2017 COMPLETION OF ACCESS ROAD TO TASSIA ESTATE** Eligible contractors are those registered in Category NCA 7 and above by the National Construction Authority.
- 1.2 Interested eligible candidates may obtain further information and inspect tender documents (and additional copies) at Director of Procurement's Office, P.O. Box30075 - 00100, NAIROBI located at City Hall Annexe 2nd Floor Room 105 during normal working hours.
- 1.3 A complete set of tender documents may be obtained by interested candidates from www.nairobi.go.ke or supplier.treasury.go.ke
- 1.4 Bidders **must attend a mandatory pre-tender site visit** organized and guided by the Employer's representative and must attach the duly signed Certificate of Tenderer's Site Visit in the completed tender document.
- 1.5 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.
- 1.6 Completed tender documents are to be enclosed in plain sealed envelopes marked with Tender name and reference number and deposited in the Tender Box at City Hall Annexe 2nd Floor or to be addressed to:

County Secretary,
Nairobi City County,
P.O. Box 30075 - 00100
NAIROBI

So as to be received **on or before 10:00 am on thursday, 25th May, 2017**

- 1.7 Tenders will be opened immediately thereafter in the presence of the candidates or their representatives who choose to attend at City Hall Annexe 2nd Floor Procurement Department Boardroom

Dr. Robert Ayisi
AG. COUNTY SECRETARY

SECTION 2: INSTRUCTIONS TO TENDERERS AND CONDITIONS OF TENDER

TABLE OF CONTENTS

A.	GENERAL	7
	SCOPE OF BID	7
	ELIGIBLE BIDDERS	8
	QUALIFICATION OF THE BIDDER.....	8
	One bid per bidder.....	8
	Cost of Bidding.....	9
	Site Visit.....	9
B.	BIDDING DOCUMENTS.....	9
	Contents of Bidding Documents	9
	Clarification of Bidding Documents.....	10
	Amendment of Bidding Documents	10
C.	PREPARATION OF BIDS.....	10
	Language of Bid	10
	Documents Comprising the Bid.....	10
	Bid Prices.....	11
	CURRENCIES OF BID AND PAYMENT.....	11
	Bid Validity.....	11
	Bid Security	12
	No Alternative Offers	12
	PRE-BID MEETING.....	12
	Format and Signing of Bids.....	13
D.	SUBMISSION OF BIDS.....	13
	Sealing and Marking of Bids.....	13
	Deadline for Submission of Bids.....	14
	LATE BIDS	14
	Modification, SUBSTITUTION and Withdrawal of Bids	14
E.	BID OPENING AND EVALUATION.....	14
	Bid Opening	14
	Process to be confidential	15
	clarification of bids and contacting of the employer	15
	Examination of bids and determination of responsiveness.....	15
	correction of errors.....	Error! Bookmark not defined.
	EVALUATION AND COMPARISON OF BIDS.....	16
	PREFERENCE FOR DOMESTIC BIDDERS.....	18
	This will not be applicable for this bid.....	18
	AWARD OF CONTRACT	18
	Award.....	18
	employer's right to accept any bid and to reject any or all bids	19
	notification of award	19
	Signing of agreement.....	19
	PERFORMANCE SECURITY	19
	contract effectiveness.....	19

CONDITIONS OF TENDERERS AND INSTRUCTIONS TO BIDDERS

A. GENERAL

SCOPE OF BID

- 1.1 The Employer, as defined in the Conditions of Contract Part II hereinafter “the Employer” wishes to receive bids for the construction of works as described in Section 1, clause 102 of the Special Specifications –“Location and extent of the Works”)
- 1.2 The successful bidder will be expected to complete the Works within the period stated in the Appendix to Bid from the date of commencement of the Works.
- 1.3 Throughout these bidding documents, the terms bid and tender and their derivatives (bidder/tenderer, bid/tendered, bidding/tendering etc) are synonymous, and day means calendar day. Singular also means plural.

1.4 SOURCE OF FUNDS

- 1.5 The works shall be carried out using Departmental Vote Funds allocation by Nairobi City County in the FY 2016- 17 Budget Estimate.

1.6 CORRUPT PRACTICES

- 1.7 The government requires that the bidders, suppliers, sub contractors and supervisors observe the highest standards of ethics during the execution of such contracts. In this pursuit of this policy, the government;

Defines for the purpose of this provision, the terms set forth below as follows:

- i) “corrupt practice” means the offering, giving ,receiving, or soliciting of anything of value to influence the action of the public official in the procurement process or in the execution, and
- ii) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the employer, and includes collusive practices among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the employer the benefits of free and open competition

The Employer Shall reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract, and

The Employer Shall declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a government contract if it at any time it is determined that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a government financed contract

ELIGIBLE BIDDERS

- 1.8 This invitation to bid is open to all bidders who are legally registered or incorporated in the Republic of Kenya as of the time of bid submission. Registration with the National Construction Authority (NCA) as a contractor is mandatory.
- 1.9 Bidders shall not have a conflict of interest. Bidders shall be considered to have conflict of interest, if they participated as a consultant in the preparation of the design, documentation or technical specifications of the works that are the subject of this bidding other than as far as required by the Employer.
- 1.10 A firm that is under a declaration of eligibility by the Employer in accordance with clause 3, at the date of submission of the Bid or thereafter, shall be disqualified.
- 1.11 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer as the Employer shall reasonably request.

QUALIFICATION OF THE BIDDER

1.12 Bidders shall as part of their bid:

- (a) Submit a written power of attorney authorizing the signatory of the bid to commit the bidder; and
- (b) Update any information submitted with their bids and update in any case the information indicated in the schedules and continue to meet the minimum threshold criteria set out in the bid documents.

1.13 As a minimum, bidders shall update the following information:

- (a) evidence of access to lines of credit and availability of other financial resources
- (b) financial predictions for the current year and the two subsequent years, including the effect of known commitments
- (c) work commitments
- (d) current litigation information; and
- (e) availability of critical equipment

1.14 Bidders shall also submit proposals of work methods and schedule in sufficient detail to demonstrate the adequacy of the bidders' proposals to meet the technical specifications and the completion time referred to in Clause 1.2 above.

ONE BID PER BIDDER

1.15 Each bidder shall submit only one bid. A bidder who submits or participates in more than one bid will be disqualified.

COST OF BIDDING

1.16 The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

SITE VISIT

1.17 The bidder is informed that pre-tender site visit is mandatory and he/she shall examine the Site of Works and its surroundings and obtain for himself all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the site shall be at the bidder's own expense.

1.18 The bidder and any of his personnel or agents will be granted permission by the Employer to enter its premises and lands for the purpose of such inspection, but only on the express condition that the bidder, its personnel and agents, will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for 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.

1.19 The Employer will conduct a Site Visit concurrently with the pre-bid meeting referred to in Clause 0, attendance for which is mandatory for all bidders. Failure to attend the site visit by any bidder will lead to disqualification of his /her bid.

B. BIDDING DOCUMENTS

CONTENTS OF BIDDING DOCUMENTS

1.20 The set of documents comprising the tender includes the following together with any addenda issued in accordance with Clause 0:

- (a) Invitation to Bid
- (b) Instructions to bidders
- (c) Conditions of Contract - Part I
- (d) Conditions of Contract - Part II
- (e) Standard Specifications
- (f) Special Specifications
- (g) Form of Bid, Appendix to Form of Bid and Bid Security
- (h) Bills of Quantities
- (i) Schedules of Supplementary information
- (j) Form of Contract Agreement
- (k) Form of Performance Security
- (l) Drawings
- (m) BID addenda (BID notices)

- 1.21 The bidder is expected to examine carefully all instructions, conditions, forms, terms, specifications and drawings in the bidding documents. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Bids that are not substantially responsive to the requirements of the bidding documents will be rejected.

CLARIFICATION OF BIDDING DOCUMENTS

- 1.22 The prospective bidder requiring any clarification of the bidding documents may notify the Employer in writing or by cable (hereinafter the term cable is deemed to include telex and facsimile) at the Employer's mailing address indicated in the Bidding Data.
- 1.23 The Employer will respond in writing to any request for clarification that he receives earlier than 7 days prior to the deadline for the submission of bids. Copies of the Employer's response to queries raised by bidders (including an explanation of the query but without identifying the sources of the inquiry) will be sent to all prospective bidders who will have purchased the bidding documents.

AMENDMENT OF BIDDING DOCUMENTS

- 1.24 At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing subsequent Addenda.
- 1.25 The Addendum thus issued shall be part of the bidding documents pursuant to Sub-Clause 1.22 and shall be communicated in writing or cable to all purchasers of the bidding documents. Prospective bidders shall promptly acknowledge receipt of each Addendum in writing or by cable to the Employer.
- 1.26 In order to afford prospective bidders reasonable time in which to take an Addendum into account in preparing their bids, the Employer may, at his discretion, extend the deadline for the submission of bids in accordance with Clause 16.2.

C. PREPARATION OF BIDS

LANGUAGE OF BID

- 1.27 The bid prepared by the bidder and all correspondences and documents relating to the bid exchanged by the bidder and the Employer shall be written in the English Language. Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an appropriate translation of pertinent passages in the above stated language. For the purpose of interpretation of the bid, the English language shall prevail.

DOCUMENTS COMPRISING THE BID

1.28 The bid to be prepared by the bidder shall comprise:

- (a) Duly filled-in the Form of Bid and Appendix to form of bid;
- (b) Bid security;
- (c) Priced Bills of Quantities;
- (d) Schedules of information
- (e) Qualification criteria
- (f) Any other materials required to be completed and submitted in accordance with the Instructions to Bidders embodied in these bidding documents.

1.29 These Forms, Bills of Quantities and Schedules provided in these bidding documents shall be used without exception (subject to extensions of the Schedules in the same format).

BID PRICES

1.30 Unless explicitly stated otherwise in the bidding documents, the contract shall be for the whole works as described in Sub-Clause 1.1, based on the basic unit rates and prices in the Bill of Quantities submitted by the bidder.

1.31 The bidder shall fill in rates and prices for all items of Works described in the Bills of Quantities, whether quantities are stated or not.

1.32 All duties, taxes (including VAT) and other levies payable by the Contractor under the Contract, or for any other cause as of the date 7 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the bidder.

1.33 Unless otherwise provided in the Bidding Data and Conditions of Particular Application the rates and prices quoted by the bidder are subject to adjustment during the performance of the contract in accordance with the provisions of Clause 70 of the Conditions of Contract.

CURRENCIES OF BID AND PAYMENT

1.34 Bids shall be priced in Kenya Shillings.

BID VALIDITY

1.35 The bid shall remain valid and open for acceptance for a period of 90 days from the specified date of bid opening specified in Clause 22.

1.36 In exceptional circumstances prior to expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing or by cable. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required nor permitted to modify his bid, but will be required to extend the validity of his bid security for the period of the extension, and in compliance with Clause 0 in all respects.

BIDSECURITY

- 1.37 The bidder shall furnish, as part of his bid, a bid security in the amount shown in the Appendix to form of Bid.
- 1.38 The bid security shall be in the form of unconditional bank guarantee from a reputable bank selected by the bidder and located in Kenya. The format of the bank guarantee shall be in accordance with bid security included in Section 3. The bid security 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 1.36.
- 1.39 Any bid not accompanied by an acceptable bid security will be rejected by the Employer as non-responsive.
- 1.40 The bid securities of unsuccessful bidders will be discharged/ returned as promptly as possible as but not later than 30 days after the expiration of the period of bid security validity.
- 1.41 The bid security of the successful bidder will be discharged upon the bidder signing the Contract Agreement and furnishing the required performance security.
- 1.42 The bid security may be forfeited:
- (a) if a bidder withdraws his bid, except as provided in Sub-Clause 1.58.
 - (b) if the bidder does not accept the correction of any errors, pursuant to Sub-Clause 28.2 or
 - (c) 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

NO ALTERNATIVE OFFERS

- 1.43 The bidder shall submit one offer, which complies fully with the requirements of the bidding documents.
- 1.44 The bid submitted shall be solely on behalf of the bidder. A bidder who submits or participates in more than one bid will be disqualified.
- 1.45 A price or rate shall be entered in indelible ink against every item in the Bills of Quantities with the exception of items which already have Prime Cost or 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.

PRE-BID MEETING

- 1.46 The bidders designated representative is invited to attend a mandatory pre-bid meeting, which will take place as indicated in the tender notice. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 1.47 The bidder is requested as far as possible to submit any questions in writing or by cable, to reach the Employer not later than one week before the meeting. It may not be practicable at the meeting to answer questions received late, but questions and responses will be transmitted

in accordance with the Minutes of the meeting, including the text of the questions raised and the responses given together with any responses prepared after the meeting, will be transmitted without delay to all purchasers of the bidding documents. Any modification of the bidding documents listed in Sub-Clause 9.1, which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause 10 or through the minutes of the pre-bid meeting.

FORMAT AND SIGNING OF BIDS

- 1.48 The bidder shall prepare one original of the documents comprising the bid as described in Clause 0 of these Instructions to Bidders, bound with the section containing the Form of Bid and Appendix to Bid, and clearly marked “ORIGINAL”. In addition, the bidder shall submit another copy of the bid clearly marked “COPY OF ORIGINAL”. The copy MUST be a replica of the original document. However, in the event of discrepancy between them, the original shall prevail.
- 1.49 The original and copies of the bid shall be typed or written in indelible ink (in the case of copies, photocopies are also acceptable) and shall be signed by a person or persons duly authorized to sign on behalf of the bidder pursuant to Sub-Clause 1.12(a) OR 4.3 (c) as the case may be. The person or persons signing the bid shall initial all pages of the bid where entries or amendments have been made.
- 1.50 The bid shall be without alterations, omissions or conditions except as necessary to correct errors made by the bidder, in which case such corrections shall be initialled by the person or persons signing the bid.

D. SUBMISSION OF BIDS

SEALING AND MARKING OF BIDS

- 1.51 The bidder shall seal the original and each copy of the bid in separate envelopes duly marking the envelopes “ORIGINAL” and “COPY”. The envelopes shall then be sealed in an outer separate envelope.
- 1.52 The inner and outer envelopes shall be:
 - (a) Addressed to the Employer at the address provided in the Appendix to Form of Bid.
 - (b) Bear the name and identification number of the contract. In addition to the identification required in sub-Clause 1.52, the inner envelopes shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared “late” pursuant to Clause 1.56, and for matching purposes under Clause 0.
- 1.53 If the outer envelope is not sealed and marked as instructed above, the Employer will assume no responsibility for the misplacement or premature opening of the bid. If the outer envelope discloses the bidder's identity the Employer will not guarantee the anonymity of the bid submission, but this shall not constitute grounds for rejection of the bid.

Deadline for Submission of Bids

- 1.54 Bids must be received by the Employer at the address specified in Sub Clause 1.52 not later than the date indicated in the tender notice.
- 1.55 The Employer may, at his discretion, extend the deadline for the submission of bids through the issue of an Addendum in accordance with Clause 0 in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline shall thereafter be subject to the new deadline as extended.

LATE BIDS

- 1.56 Any bid received by the Employer after the deadline for submission of bids prescribed in Clause 0 will be returned unopened to the bidder.

MODIFICATION, SUBSTITUTION AND WITHDRAWAL OF BIDS

- 1.57 The bidder may modify, substitute or withdraw his bid after bid submission, provided that written notice of modification or withdrawal is received by the Employer prior to the prescribed deadline for submission of bids.
- 1.58 The bidder's modification, substitution or withdrawal notice shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause 0, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL" as appropriate.
- 1.59 No bid may be modified subsequent to the deadline for submission of bids, except in accordance with Sub-Clause 29.2.
- 1.60 Any withdrawal of a bid during the interval between the deadline for submission of bids and expiration of the period of bid validity specified in Clause 0 may result in the forfeiture of the bid security pursuant to Sub-Clause 1.42.

E. BID OPENING AND EVALUATION

BID OPENING

- 1.61 The Employer will open the bids, including withdrawals and modifications made pursuant to Clause 24, in the presence of bidders' designated representatives who choose to attend, at the time, date, and location stipulated in the the tender notice. The bidders' representatives who are present shall sign a register evidencing their attendance.
- 1.62 Envelopes marked "WITHDRAWAL" and "SUBSTITUTION" shall be opened first and the name of the bidder shall be read out. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 0 shall not be opened.
- 1.63 The bidder's name, the Bid Prices, including any bid modifications and withdrawals, the presence (or absence) of bid security, and any such details as the Employer may consider

appropriate, will be announced by the Employer at the opening. Subsequently, all envelopes marked "MODIFICATION" shall be opened and the submissions therein read out in appropriate detail. No bid shall be rejected at bid opening except for late bids pursuant to Clause 22.

- 1.64 The Employer shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with Sub-Clause 25.3.
- 1.65 Bids not opened and read out at bid opening shall not be considered further for evaluation, irrespective of the circumstances.

PROCESS TO BE CONFIDENTIAL

- 1.66 Information relating to the examination, evaluation and comparison of bids, and recommendations for the award of contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful bidder has been announced. Any effort by a bidder to influence the Employer's processing of bids or award decisions may result in the rejection of the bidder's bid.

CLARIFICATION OF BIDS AND CONTACTING OF THE EMPLOYER

- 1.67 To assist in the examination, evaluation, and comparison of bids, the Employer may, at its discretion, ask any bidder for clarification of its bid, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, but no change in the price or substance of the bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with Clause 29.
- 1.68 Subject to Sub-Clause 26.1, no bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. If the bidder wishes to bring additional information to the notice of the Employer, should do so in writing.
- 1.69 Any effort by the bidder to influence the Employer in the Employer's bid evaluation, bid comparison or contract award decisions may result in the rejection of the bidder's bid.

EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

- 1.70 Prior to the detailed evaluation of bids, the Employer will determine whether each bid (a) has been properly signed; (b) is accompanied by the required securities; (c) is substantially responsive to the requirements of the bidding documents; and (d) provides any clarification and/or substantiation that the Employer may require to determine responsiveness pursuant to Sub-Clause 28.2.
- 1.71 A substantially responsive bid is one that conforms to all the terms, conditions, and specifications of the bidding documents without material deviation or reservation and has a valid tender bank guarantee. A material deviation or reservation is one (a) which affects in

any substantial way the scope, quality, or performance of the works; (b) which limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the bidder's obligations under the contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

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

CORRECTION OF ERRORS

Tenders determined to be substantially responsive shall be checked by the Employer for any arithmetic errors in the computations and summations. Errors will be corrected by the Employer as follows:

- (a) Where there is a discrepancy between the amount in figures and the amount in words, the amount in words will govern.
- (b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will prevail, unless in the opinion of the Employer, there is an obvious typographical error, in which case adjustment will be made to the entry containing that error.
- (c) In the event of a discrepancy between the tender amount as stated in the Form of Tender and the corrected tender figure in the main summary of the Bills of Quantities, the amount as stated in the Form of Tender shall prevail.
- (d) The Error Correction Factor shall be computed by expressing the difference between the tender amount and the corrected tender sum as a percentage of the corrected work items (i.e. corrected tender sum less Prime Cost and Provisional Sums).
- (e) The Error Correction Factor shall be applied to all work items (as a rebate or addition as the case may be) for the purposes of valuations for Interim Certificates and valuations of variations.
- (f) The bidder shall within three (3) days after issuance of the written notice by the employer, or such further time as the employer may allow, accept correction of errors in the tender in such a manner as may be agreed or directed by the employer failing which the tender may be absolutely rejected and the bidder be suspended in accordance with sub-clause 17.5

EVALUATION AND COMPARISON OF BIDS

1.73 The Employer will carry out evaluation of details and information provided in post-Qualification Questionnaire and any bidder who does not qualify shall not have his/her bid evaluated further.

- 1.74 The Employer will then evaluate and compare only the bids determined to be substantially responsive in accordance with Clauses 27 and 28.
- 1.75 If the bid, which results in the lowest Evaluated Bid Price is seriously unbalanced or front loaded in relation to the Engineer's estimate of the items of work to be performed under the contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Bills of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated contract payments, the Employer may require that the amount of the Performance Security set forth in Clause 35 be increased at the expense of the bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the contract.
- 1.76 **QUALIFICATION AND EVALUATION CRITERIA**
- 1.77 Post-qualification will be based on meeting all of the following minimum point scale criteria regarding the Applicant's general and particular experience, personnel and equipment capabilities as well as financial position. The Employer reserves the right to waive minor deviations, if they do not materially affect the capacity of an applicant to perform the contract. Subcontractor's experience and resources shall not be taken into account in determining the Applicant's compliance with qualifying criteria.
- 1.78 ***General Experience.***
- The Applicant shall meet the following minimum criteria: -
- (a) Average annual turnover for the last 2 years – KShs.30, 000,000/-.
 - (b) Successful completion as a prime contractor or sub-contractor in the execution of at least three roads rehabilitation/new construction projects of a similar nature and comparable in complexity to the proposed contract within the last three years, for which at least one was located in an urban environment in Kenya.
- 1.79 ***Personnel Capabilities.*** The Applicant should list down personnel of minimum qualification of HND in Civil Engineering for Site Agent, Ordinary Diploma for the surveyor and other supervisory staff.
- 1.80 ***Equipment Capabilities.*** The Applicant should list down, the plants and equipments that are in his ownership and the ones proposed for hire which should be suitable for executing contract works. – Applicants must attaché evidence of ownership or hiring arrangements.
- 1.81 ***Cash flow statement.*** The Applicant should demonstrate that the firm has access to or has available, liquid assets, unencumbered real assets, lines or credit, and other financial means sufficient to meet the construction cash flow for a period of 2 months, estimated at 30% of the estimated tender sum.
- 1.82 ***Balance Sheets.*** Signed and stamped Audited balance sheets for the last two years should be submitted and must demonstrate the soundness of the Applicant's financial position, availability of working capital and net worth

1.83

1.84 **Financial position/Ratios.** The applicant's financial information will be assessed in terms of ROCE, current ratio and return on equity, and the point scale criteria on their financial position given on this basis. Where necessary, the Employer may make inquiries with the Applicant's bankers.

1.85 **Litigation History.** The Applicant should provide accurate information on any litigation or arbitration resulting from contracts complete or under execution by him over the last five years. A consistent history of litigation against the Applicant may result in failure of the application.

1.86 Post-qualification criteria are as provided in the Appendix to instruction to tenderers.

The pass mark shall be **75%**.

The bidders who pass the technical criteria will be subjected to financial evaluation.

FINANCIAL EVALUATION

1.87 Comparison of major rates of items of construction & credibility of tenderers rates

The Employer will compare the tenderers' rates with the Engineer's estimates for major items of construction. If some bids are seriously unbalanced or front loaded in relation to the Engineer's estimates for the major items of work to be performed under the contract, the Employer may require the bidder to produce detailed price analyses for any or all items of the Bills of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated contract payments, the Employer may require that the amount of the Performance Security set forth in Clause 35 be increased at the expense of the bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful bidder under the contract.

PREFERENCE FOR DOMESTIC BIDDERS

This will not be applicable for this bid.

F. AWARD OF CONTRACT

AWARD

1.88 Subject to Clause 32, the Employer will award the contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest Evaluated Bid Price pursuant to Clause 29, provided that such bidder has been determined to be (a) eligible in accordance with the provisions of Sub-Clause 3.1, and (b) qualified in accordance with the provisions of Clause 4.

EMPLOYER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

- 1.89 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer's action.

NOTIFICATION OF AWARD

- 1.90 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing or by cable confirmed by registered letter that its bid has been accepted. This letter (hereinafter and in the Conditions of Contract called "Letter of Acceptance") shall specify the sum, which the Employer will pay the Contractor in consideration of the execution and completion of the works and the remedying of any defects therein by the Contractor as prescribed by the contract (hereinafter and in the Conditions of Contract called "the Contract Price").
- 1.91 At the same time that the Employer notifies the successful bidder that his bid has been accepted, the Employer shall notify the other bidders that their bids have been unsuccessful and that their bid security will be returned as promptly as possible, in accordance with sub clause 17.4.

SIGNING OF AGREEMENT

- 1.92 Within 28 days of receipt of the Agreement, the successful bidder shall sign the Form of Agreement and return it to the Employer, together with the required performance security.

PERFORMANCE SECURITY

- 1.93 Within 28 days of receipt of the Letter of Acceptance from the Employer, the successful bidder shall furnish to the Employer a performance security in the form stipulated in the Conditions of contract. The form of performance security provided in Section 9 of the bidding documents shall be used.
- 1.94 The successful bidder shall provide a performance security in the form of an Unconditional Bank Guarantee from a reputable bank located in Kenya.
- 1.95 Failure by successful bidder to lodge the required performance Guarantee within 28 days of the receipt of the letter of Acceptance shall constitute sufficient grounds for annulment of the award and forfeiture of the bid surety; in which event the Employer may make the award to another bidder or call for new bids.

CONTRACT EFFECTIVENESS

- 1.96 The Contract will be effective only upon signature of the Agreement between the Contractor and the Employer.

EXECUTION OF WORKS

1.97 The work execution will be carried out based on the documents as listed below.

- a. Conditions of Contract Part I: General Conditions of Contract
- B. Conditions of Contract Part II (Conditions of Particular Application)
- c. Road Maintenance Manual
- d. Standard Specifications
- e. Special Specifications
- f. Supervision and Contract Evaluation Manual
- g. Bills of Quantities

SECTION 3: APPENDIX TO INSTRUCTION TO TENDERERS

Correction of errors.

Contrary to the clause with respect to correction of errors, tenders determined to be substantially responsive shall be checked by the Employer for any arithmetic errors in the computations and summations. Any arithmetic errors in the computations and summations detected will be deemed unresponsive and will be disqualified in compliance with Clause 82 of Public Procurement and Asset Disposal Act 2015.

Table 1: Pre- qualification checklist for Completeness and responsiveness

S/No.	Completeness and Responsiveness Criteria	References	Requirement
1.	Form of Bid	Section 4 Clause 20.2	- Amount must be indicated - Properly fill and sign
2.	Appendix to Form of Bid	Clause 20.2 Section 5	- Form properly sign
3.	Bid Security	Section 6 Clause 16/17	- Unconditional bank guarantee - In the format provided with all conditions - must be valid for 120 days
4.	Confidential Business Questionnaire	Section 8; Schedule 1	- Properly fill and sign - Provide all required information
5.	Form of Power of Attorney	Section 8; Schedule 2 Clause 5.1(a)	- Properly fill and sign
6.	Tax Compliance Certificate	Employer's notice	- Copy of certificate Certified by Commissioner for Oaths - Valid
7.	Registration with National Construction Authority (NCA)	Employer's notice Item 1.4 of QC	- Copy of certificate Certified by Commissioner for Oaths
8.	Certificate of Incorporation	Employer's notice Item 1.4 of QC	- Copy of certificate Certified by Commissioner for Oaths
9.	Priced Bill of Quantities	Clause 14.1 Section 15	- Fill all rates, prices and amounts and counter sign any alteration(s)
10.	Eligibility	Section 8; Schedule 1 Clause 4.1/4.2	- Copies of National ID or passport for all directors - Certified copy of Form CR12
11.	Conflict of interest	Section 8; Schedule 1 Clause 4.2	- to state explicitly
12.	Debarment	Section 8; Schedule 11 Item 1.3 of QC	- Properly fill and sign
13.	Pending Litigation	Item 2.2 of QC	- Provide Sworn affidavit
14.	Litigation History	Section 8; Schedule 9	- Fill in information and sign

15.	History of Non performance	Section 8; Schedule 6 Item 2.1 of QC	- Fill information on non-completed works
16.	Certificate of Tenderers Visit to Site	Clause 8.1/8.3 Section 8; Schedule 3	- Attend pre-bid meeting/visit - Certificate must be signed by the Employer's representative
17.	Schedule of Major Items of Plant	Item 9 of QC Section 8; Schedule 4	- Properly fill and sign
18.	Schedule of Key Personnel	Item 6 of QC Section 8; Schedule 5	- Properly fill and sign
19.	Roadwork Completed Satisfactorily	Item 4 of QC Section 8; Schedule 6	- Properly fill and sign
20.	Schedule of Ongoing Projects	Item 5.1 of QC Section 8; Schedule 7	- Properly fill and sign
21.	Schedule of other Supplementary Information / Financial Standings	Item 5.1 of QC Section 8; Schedule 9	- Properly fill and sign
22.	Preparation of Bid Document	Section 2 Clauses 1.19 to 1.28	- All the documents, forms, BoQs, Schedules and addendas in the bid documents to be properly filled and attached without exception
23.	Copy of Bid Document	Clause 20.1	- Replica of the original
24.	Correction of errors	Clause 29	- Any arithmetic errors in the computations and summations detected will lead to disqualification in compliance with Clause 82 of Public Procurement and Asset Disposal Act 2015.
REMARKS		Clause 13.1/20.2	- Bid document to be complete, properly filled and signed.

Key: QC – Qualification Criteria

Table 2: Post- qualification Score

ITEM		DESCRIPTION	POINT SCORE SCALE
1		FINANCIAL CAPACITY	Max 20
	a	Audited Statements	0-4
	b	Cash flow statement (forecasts)	0-4
	c	Financial position/Ratios	0-5
	d	Turnover	0-7
2		EXPERIENCE	Max 25
		General Experience	0-10
		Specific experience in related works	0-15
3		CURRENT COMMITMENTS	Max 10
		On-going works	0 or 10
4		KEY PERSONNEL	Max 18
		HQ Staff	0-4
		Site Agent	0-6
		Surveyor	0-4
		Foreman	0-4
5		PLANT AND EQUIPMENT	Max 15
		Equipment capabilities	0-15
6		WORK METHODOLOGY	0 or 5; Max 5
7		LITIGATION HISTORY	0 or 2; Max 2
8		County based	0 or 5; Max 5
		TOTAL	MAX 100

SECTION 4: FORM OF BID

FORM OF BID

(NOTE: The Appendix forms part of the Bid. Bidders are required to fill all the blank spaces in this form of Bid and Appendix)

NAME OF CONTRACT:

NCC/RPW&T/T/566/2016-2017 COMPLETION OF ACCESS ROAD TO TASSIA ESTATE

TO: County Secretary,
Nairobi City County,
P.O. Box 30075 – 00100,
NAIROBI, KENYA.

Sir,

1. Having examined the Conditions of Contract, Specifications, Bill of Quantities, and Drawings for the execution of the above-named works we, the undersigned, offer to construct and install such works and remedy any defects therein in conformity with the said Bill of Quantities, Conditions of Contract, Specifications and Drawings for the sum of

(Insert amount in words)

.....
.....

(Insert amount in figures).....

as specified in the Appendix to Bid or such other sums as may be ascertained in accordance with the said Conditions.

2. We undertake, if our bid is accepted, to commence the works within twenty-eight (28) days of receipt of the Engineer’s order to commence, and to complete and deliver the whole of the works comprised in the contract within the time stated in the Appendix to Bid.
3. If our bid is accepted we will, when required, obtain the guarantee of a Bank or other sureties (to be approved by you) to be jointly and severally bound with us in a sum not exceeding 5% of the above named sum for the due performance of the contract under the terms of a Bond to be approved by you.
4. We agree to abide by this bid for the period of 90 days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. We understand that you are not bound to accept the lowest or any bid you may receive.

6. On the basis of our previous experience we are fully experienced and competent in the type of work included in this tender and we have adequate financial resources to carry out the works described within the period for completion. We are in a position to fulfil the contract for which we have tendered.

Dated this Day of 20

Signature.....in the capacity of

Duly authorized to sign bids on behalf of (Name of Tenderer)

.....

(Address of Tenderer).....

(Name of Witness).....

(Signature of Witness).....

(Address of Witness).....

(Occupation of Witness).....

SECTION 5: APPENDIX TO FORM OF BID

**APPENDIX TO FORM OF BID
(This appendix forms part of the bid)**

CONDITIONS OF CONTRACT	CLAUSE	AMOUNT
Bid Security (Bank Guarantee Only)		1 per cent of Tender Sum in the form of Unconditional Bank Guarantee
Amount of Performance Security (Unconditional Bank Guarantee or Insurance)	10.1	5% of the Tender Sum
Duration within which programme of works to be submitted	14.1	14 days
Duration within which cash flow estimate to be submitted	14.3	28 days
Minimum amount of Contractors all risks third party insurance	23.2	1% of the Contract Price
Period for commencement, from Engineer's order to commence	41.1	28 days
Time for completion	43.1	8 (Eight) months
Amount of liquidated damages	47.1	0.05% of Contract Sum per day
Limit of liquidated damages	47.1	5% of Contract Value
Defects Liability period	49.1	12 (Twelve) month
Percentage of Retention	60.3	10% of Interim Payment Certificate
Limit of Retention Money	60.3	5% of Contract Price
Minimum amount of interim certificates	60.2	Kshs 5,000,000.00
Time within which payment to be made after Interim Payment Certificate signed by Engineer	60.10	30 days
Rate of interest	60.10	Central Bank Rate +2%
Amount of advance payment	60.12	Nil
Appointer of Arbitrator	67.3	The Chartered Institute of Arbitrators (Kenya)
Notice to Employer and Engineer	68.2	The Employers address is: County Secretary Nairobi City County P.O Box 30075-00100 <u>NAIROBI</u> The Engineer's address is: Director of Roads, Nairobi City County P.O Box 30075-00100 <u>NAIROBI</u>

Date this.....Day of20.....

Signaturein the capacity of

Duly authorized to sign tenders for and on behalf of

.....

(In Block Capitals)

Witness.....Address.....

Witness.....Address.....

SECTION 6: FORM OF BID SECURITY

TENDER BANK GUARANTEE

Note: The bidder shall complete only this form of Bank guarantee. No other Form of Bid Bond or any other forms of security will be accepted. Bidders who fail to comply with this requirement will be disqualified.

WHEREAS [*Name of bidder*].
.....

.....

(herein after called “the Bidder”) has submitted his bid dated

.....for the

NCC/RPW&T/T/566/2016-2017 COMPLETION OF ACCESS ROAD TO TASSIA ESTATE

hereinafter called “the bid”

KNOW ALL MEN by these presents that we [*Name of Bank*]

.....

.....

of [*Name of Country*]

.....

having our registered offices at

.....

(hereinafter called the Bank) are bound unto the County Secretary, (hereinafter called “the Employer”) in the sum of

(in words Kshs).....

.....

(In figures Kshs).....

for which payment will be well and truly made to the said Employer the Bank binds itself, its successors and assigns by these presents.

SEALED with the common Seal of the said Bank this day of

20.....

THE CONDITIONS of this obligation are:

If the bidder withdraws his Bid during the period of bid validity specified by the Bidder on the Bid Form; or

If the Bidder refuses to accept the correction of errors in his bid; or

If the Bidder having been notified of the acceptance of his bid by the Employer during the period of Bid Validity

- (i) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Tenderers when required or
- (ii) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Bidders.

We undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of any of the above conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including thirty days after the date of expiration of the bid validity, as stated in the Instructions to Bidders.

At the request of the Employer the Bid validity period may be extended by mutual agreement between the Employer and the Bidder and we undertake to extend the validity of this surety accordingly without you having to inform us of such an extension of the Bid validity period if within this period the Bidder has been notified of the acceptance of his Bid. This Surety shall remain valid up to the time the Contract Agreement has been executed.

SIGNATURE AND SEAL OF THE BANK

.....

NAME OF SIGNATORYDATE.....

NAME OF THE WITNESS

SIGNATURE OF THE WITNESS DATE

ADDRESS OF THE WITNESS

SECTION 7: QUALIFICATION CRITERIA

This Section contains all the factors, methods and criteria that the Employer shall use to evaluate applications. The information to be provided in relation to each factor and the definitions of the corresponding terms are included in the respective Application Forms.

Qualification Criteria		Compliance Requirement	Documentation	
No.	Subject	Requirement	Bidder	Submission Requirements
1. Eligibility				
1.1	Eligibility	Nationality in accordance with Sub-Clause 4.1.	Must meet requirement	Section 7, Schedule 1
1.2	Conflict of Interest	No conflicts of interest in Sub-Clause 4.2.	Must meet requirement	Section 7, Schedule 1
1.3	Debarment	Not having been declared ineligible by the Employer, as described in Sub-Clause 4.3. Must fill the Declaration form	Must meet requirement	Section 7, Schedule 11
1.4	Incorporation & Registration	Pursuant to sub-clause 4.1 the following shall be provided; - Copy of Certificate of incorporation certified by a Commissioner of Oaths or issuing authority to show that the applicant is a registered company and legally authorised to do business in Kenya	Must meet requirement	Section 7, Schedule 1

Qualification Criteria		Compliance Requirement	Documentation
No.	Subject	Requirement	Bidder
		- Proof of registration with the NCA for classes 6 and above	
2. Historical Contract Non-Performance			
2.1	History of Non-Performing Contracts	Non performance of a contract did not occur within the last Three (3) years prior to the deadline for application submission based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the applicant have been exhausted.	Must meet requirement
2.2	Pending Litigation	All pending litigation shall in total not represent more than fifty percent (50%) of the Applicant's net worth and shall be treated as resolved against the Applicant. The applicant to provide Sworn affidavit.	Must meet requirement (a) Score • 0 or 2 Marks
3. Financial Situation			
3.1	Financial Performance	(a) Submission of audited balance sheets and other financial statements acceptable to the Employer, for the last two [2] years to demonstrate: (b) the current soundness of the applicants financial position and its prospective long term profitability, and (c) capacity to have a cash flow equivalent to 30% of the tender sum	(a) Score • 0 – 4 Marks (b) Score • 0 – 4 Marks (c) Score • 0 – 5 Marks

Qualification Criteria		Compliance Requirement	Documentation	
No.	Subject	Requirement	Bidder	
3.2	Average Annual Construction Turnover	(d) Average annual construction turnover of KShs. 120 Million [Twenty Million], calculated as total certified payments received for contracts in progress or completed, within the last two [(2)] years	(d) Score <ul style="list-style-type: none"> • 0 – 7 Marks 	Section 7, Schedule 8
4. Experience				
4.1(a)	General Construction Experience	Experience under construction contracts in the role as a main contractor or subcontractor for at least the last Three [3] years prior to the applications submission deadline	Score <ul style="list-style-type: none"> • 0 – 10 Marks 	Section 7, Schedule 6
4.1(b)	Specific Construction Experience	Participation as a roads contractor, management contractor or subcontractor, in at least three (3) each with a value of at least KShs. 48 Million (Five million), successfully and substantially completed. One (1) of the contracts should be in a City or Municipality and is similar to the proposed works. The similarity shall be based on the physical size, complexity, methods/technology or other characteristics as described in Section 12.	Score <ul style="list-style-type: none"> • 0-15 Marks 	Section 7, Schedule 6
4.2	Work Methodology	Submission of a brief work methodology in accordance with sub-clause 5.3	Score <ul style="list-style-type: none"> • 0 - 5 Marks 	Section 7, Schedule 10

Qualification Criteria		Compliance Requirement	Documentation	
No.	Subject	Requirement	Bidder	Submission Requirements
5. Current Commitments				
5.1	On-going contracts	The total value of outstanding works on the on-going contracts should not exceed the average annual turnover for the last two years.	Score <ul style="list-style-type: none"> 0 -10 Marks 	Section 7, Schedule 7
6. Site Staff				
	HQ Staff	The site staff shall possess minimum levels of qualifications set below; Atleast 2No. Personnel be based at HQ	Score <ul style="list-style-type: none"> 0-4 marks 	Section 7, Schedule 5
	Site Agent	Qualification = Bsc. In Civil Engineering or Equivalent General Experience= 5 Yrs Specific Experience = 3Yrs	<ul style="list-style-type: none"> 3 marks 3 marks 	
	Foreman	Qualification = Dip. Civil Engineering or Equivalent General Experience = 5 yrs Specific Experience = 3 Yrs	<ul style="list-style-type: none"> 2 marks 2 marks 	
	Site Surveyor	Qualification = Diploma in Survey General Experience = 3 yrs Specific Experience = 2 Yrs	<ul style="list-style-type: none"> 2 marks 2 marks 	
7. County Based				
	Nairobi City	Should have the physical address within Nairobi city and Current Work Permit	Score <ul style="list-style-type: none"> 0 or 5 marks 	Section 7, Schedule 4

9 Schedule Of The Major Items Of Plant To Be Used On The Proposed Contract.

The Bidder must indicate the core plant and equipment considered by the company to be necessary for undertaking the project together with proof ownership. (* Mandatory minimum number of equipment required by the Employer for the execution of the project that the bidder must make available for the Contract).

Item No.	Equipment Details	*Minimum Number Required for the Contract	Maximum Score	No of Equipment Owned by the Bidder	No. of equipment to be hired/	No. of equipment to be made available for
A	Bituminous Plants					
	Asphalt concrete paver	1	1.5			
	Pot hole repair machines					
B	Colas Sprayer	1	1			
	Paver Braker Machine	1	1.5			
	Pedestrian Roller	1	1			
	Subtotal for	<u>4</u>	<u>3.5</u>			
	Compactors					
	Vibrating compaction plate 300 mm wide	1	1			
		1	1			
C	Vibrating compaction plate 600 mm wide	<u>2</u>	<u>2</u>			
	Subtotal for C					
	Concrete Equipment					
	Mobile concrete mixers	1	1			
D	Concrete vibrators	<u>2</u>	<u>2</u>			
	Subtotal for D					

Item No.	Equipment Details	*Minimum Number Required for the Contract	Maximum Score	No of Equipment Owned by the Bidder	No. of equipment to be hired/	No. of equipment to be made available for
E	<p>Transport (Tippers, dumpers, water tankers)</p> <p>4X2 tippers payload 7 – 12 tonnes</p> <p>6X4 tippers payload 16 – 20 tonnes</p> <p>8X4 tippers payload 16 – 20 tonnes</p> <p>Flat bed lorries</p> <p>Subtotal for E – tippers & dumpers</p> <p>Water tankers (18,000 – 20,000 litres capacity)</p> <p>Subtotal for E</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p><u>4</u></p> <p>1</p> <p><u>1</u></p>	<p>(Each 1 mark to a max. of 2marks)</p> <p><u>2</u></p> <p>1</p> <p><u>1</u></p>			
F	<p>Earth – Moving Equipment</p> <p>Wheeled loaders</p> <p>Motor graders (93 - 205kW)</p> <p>Trench excavator</p> <p>Subtotal for F</p>	<p>1</p> <p>1</p> <p>1</p> <p><u>3</u></p>	<p>0.5</p> <p>0.5</p> <p>1</p> <p><u>2</u></p>			
G	<p>Excavators</p> <p>Hydraulic crawler mounted (7 – 10 tonnes) – 0.25 – 0.4 m3 SAE bucket.</p> <p>Hydraulic crawler mounted (10 – 16 tonnes) – 0.40 – 0.60 m3 SAE bucket.</p>		<p>(Any gets 1mark)</p>			

Item No.	Equipment Details	*Minimum Number Required for the Contract	Maximum Score	No of Equipment Owned by the Bidder	No. of equipment to be hired/	No. of equipment to be made available for
H	Hydraulic wheel mounted (7 – 10 tonnes) – 0.25 – 0.4 m3 SAE bucket.					
	Hydraulic wheel mounted (10 – 16 tonnes) – 0.40 – 0.6 m3 SAE bucket.	<u>2</u>	<u>1</u>			
	Hydraulic wheel mounted backloader (7 – 10 tonnes) – 0.25 – 0.4 m3 SAE bucket.	1	1			
	Subtotal for G	1	1			
	Rollers					
	Self propelled single drum vibrating (various types)	Optional <u>2</u>	<u>2</u>			
	Pneumatic rubber tyre (1-2 tonnes/wheel)					
	Sheep's foot roller					
Subtotal for H						

(Bidders must provide proof of ownership or lease arrangements for all plants and equipments)

We hereby certify that notwithstanding the list of plant and equipment detailed above, we will provide sufficient, suitable and adequate plant in good working order for the successful completion of works

.....
(Signature of Contractor)

.....
(Date)

SECTION 8: SCHEDULES OF SUPPLEMENTARY INFORMATION

SECTION 8: SCHEDULES OF SUPPLEMENTARY INFORMATION

SCHEDULE 1: CONFIDENTIAL BUSINESS QUESTIONNAIRE.....42

SCHEDULE 2: FORM OF WRITTEN POWER OF ATTORNEY.....46

SCHEDULE 3: CERTIFICATE OF BIDDER’S VISIT TO SITE.....47

SCHEDULE 4: MAJOR ITEMS OF CONSTRUCTION PLANT AND EQUIPMENT.....63

SCHEDULE 5: KEY PERSONNEL.....64

SCHEDULE 6: SCHEDULE OF ROADWORKS CARRIED OUT BY THE BIDDER IN THE LAST 3 YEARS.....50

SCHEDULE 7: SCHEDULE OF ONGOING PROJECTS.....66

SCHEDULE 8: FINANCIAL STANDING.....67

SCHEDULE 9: OTHER SUPPLEMENTARY INFORMATION.....68

SCHEDULE 10: WORK METHODOLOGY.....69

SCHEDULE 1: CONFIDENTIAL BUSINESS QUESTIONNAIRE

This Confidential Business Questionnaire of the Government of Kenya shall be completed by the Bidder.

REPUBLIC OF KENYA

CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2(b) or 2(c) 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

.....

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 one time:

Kshs.....

Name of your bankers

Branch.....

Are you an agent of the Kenya National Trading Corporation? YES/NO

Part 2(a) - Sole Proprietor:

Your name in full

.....

Age.....

NationalityCountry of origin

*Citizenship details

Part 2(b) - Partnership:

Give details of partners as follows:

Name	Nationality	Citizenship Details*	Shares
1.....			
2.....			
3.....			
4.....			
5.....			

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	Nationality	Citizenship Details*	Shares
1.....			
2.....			
3.....			
4.....			
5.....			

Part 2(d)- Interest in the Firm:

Yes**	
-------	--

No**	
------	--

Is there any person / persons in the Nairobi City County who has interest in this firm?

.....

.....

.Date

Signature of Bidder

- Attach proof of citizenship and Form CR12 (Compulsory)

** Tick (√) to agree as necessary

SCHEDULE 2: FORM OF WRITTEN POWER OF ATTORNEY

The Bidder shall state here below the name(s) and address of his representative(s) who is/are authorized to sign the document and receive on his behalf correspondence in connection with the Bid.

.....
(Name of Bidder's Representative in block letters)

.....
(Address of Bidder's Representative)

.....
(Signature of Bidder's Representative)

Alternate:

.....
(Name of Bidder's Representative in block letters)

.....
(Address of Bidder's Representative)

.....
(Signature of Bidder's Representative)

*To be filled by all Bidders.

SCHEDULE 3: 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

NCC/RPW&T/T/566/2016-2017 COMPLETION OF ACCESS ROAD TO TASSIA ESTATE

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

Signed.....

(Employer's Representative)

.....

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

.....
(Designation)

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

SCHEDULE 4: MAJOR ITEMS OF CONSTRUCTION PLANT AND EQUIPMENT

Date of Arrival on Project (Days after commencement)	
Power Rating	
Owned/Leased/Imported	
Source	
Estimated CIF Mombasa Value (If to be Imported)	
Capacity t or m ³	
New or Used	
Year of Manufacture	
No. of each	
Description Type, Model, Make	

The Bidder shall enter in this schedule all major items of plant and equipment which he proposes to bring to site. Only reliable plant in good working order and suitable for the work required of it shall be shown on this Schedule. Summary of the same shall be entered in Section 5: Qualification Criteria, Part 7.

I certify that the above information is correct.

.....
(Signature of Bidder)

.....
(Date)

SCHEDULE 5: KEY PERSONNEL

DESIGNATION	NAME	NATIONALITY	SUMMARY OF QUALIFICATIONS AND EXPERIENCE		
			Qualifications	General Experience (Yrs)	Specific Experience (Yrs)
Headquarters Partner/Director or other key staff (give designation)					
Site Office Site Agent Site Surveyor Foreman					

Note: The Bidder shall list in this schedule the key personnel he will employ from the Contractor’s headquarters and from the Contractor’s site office to direct and execute the work together with their qualifications, experience, position held and nationality in accordance with Clause 15.2 and 16.3 of the Conditions of Contract Part II (where required, use separate sheets to add extra data for column 4). Bidders shall attach certified copies of academic certificates, evidence of current employment (employment letter), signed and certified CVs of all key staff and certified copies of academic certificates.

I certify that the above information is correct.

.....
(Signature of Bidder)

.....
(Date)

SCHEDULE 6: SCHEDULE OF ROADWORKS CARRIED OUT BY THE BIDDER IN THE LAST THREE YEARS

DESCRIPTION OF WORKS	NAME OF CLIENT	VALUE OF WORKS (KSHS) *	YEAR COMPLETED/ REMARKS
<u>A) Non-completed Works (beyond completion date)</u>			
<u>B) Completed Works</u>			
<u>C) Specific Construction Experience</u>			

Note: Bidders shall attach certified copies of letters of award (for each listed project), certified copies of completion certificates (for completed projects) and any certified evidence for executed works for non-completed projects e.g copy of recent payment certificate.

I certify that the above works were successfully carried out by this Bidder.

.....
(Signature of Bidder)

.....
(Date)

* Value in KShs using Central Bank of Kenya mean exchange rate at a reference date 7 days before date of BID opening

SCHEDULE 7: SCHEDULE OF ONGOING PROJECTS

DESCRIPTION OF WORKS	NAME OF CLIENT	DATE OF COMMENCEMENT	DATE OF COMPLETION	VALUE OF WORKS (KSHS)	VALUE COMPLETED UP TO DATE %	PHYSICALLY COMPLETED UP TO DATE %

Note: 1. Bidders shall attach certified copies of letters of award (for each listed project) and any certified evidence for executed works e.g copy of recent payment certificate.

2. Bidders must indicate all their on-going works as at the time of bidding. Any non-disclosure shall constitute non-responsiveness)

I certify that the above works are being carried out by me and that the above information is correct.

.....
(Signature of Bidder)

.....
(Date)

SCHEDULE 8: SCHEDULE OF BASIC PRICES FOR SELECTED ITEMS

Bidders are to attach evidence of prices for material sourced in the form of price schedules of invoices to justify the same.

S/No.	Material	Unit	Unit Price KShs	Source
1	Cement	Kg		
2	Aggregates 0/6 mm	Kg		
3	Aggregates 0/14 mm	Kg		
4	Aggregates 0/20 mm	Kg		
5	Aggregates 0/3 mm	Kg		
6	Diesel	Litre		
7	Petrol – Premium Grade	Litre		
8	Industrial Diesel Oil	Litre		
9	Grease	Kg		
10	Oils as Lubricants - Premium Grade	Litre		
11	Bitumen 80/100	Kg		
12	K1-60 Bitumen Emulsion	Litre		
13	MC- 30 Cutback	Litre		

S/No.	Labour/Trade	Unit	Unit Price KShs	Source
1	Labourer	Hr.		
2	Ungraded Tradesman	Hr.		
3	Light Plant Operators, Class 1	Hr.		
4	Heavy Plant Operators	Hr.		
5	Mason	Hr.		
6	Miscellaneous	Hr.		

SCHEDULE 9: FINANCIAL STANDING

- 1 Submit copies of audited profit and loss statements, balance sheet and Cash flow statements for the last two calendar years and estimated projection for the next two years with certified English translation where appropriate. These must be signed by Certified Public Accountant recognised by ICPAK and atleast one Director.
- 2 Give turnover figures for each of the last two (2) financial years. Quote in millions and decimal thereof.

	Year 2013	Year 2014
	Ksh.	Ksh.
Roadworks		
Other civil Engineering works		
Other (specify)		
Total		

SUMMARY OF ASSETS AND LIABILITIES OF THE AUDITED FINANCIAL STATEMENTS OF THE LAST TWO (2) FINANCIAL YEARS.

	Year 2013	Year 2014
	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+3-5)		

- (a) Name/ Address of Commercial Bank providing credit line

.....

- (b) Total amount of credit line KShs.....

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

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

SCHEDULE 10: OTHER SUPPLEMENTARY INFORMATION

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

.....

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

.....

Name, address, telephone, telex, fax numbers of the Bidders Bankers who may provide reference if contacted by the Contracting Authority.

.....

Information on current litigation in which the Bidder is involved.

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

I certify that the above information is correct.

.....
 Date

.....
 Signature Of Bidder

SCHEDULE 11: WORK METHODOLOGY

Give a brief description of how you intend to carry out the work including traffic management, quality assurance of works and any designs to be carried out by the Bidder, in not less than three (3) pages and not more than five (5) pages (typed, font 12 and single spaced).

SCHEDULE 12: DECLARATION FORM

DECLARATION FORM

Date _____

To
County Secretary,
Nairobi City County,
P.O. Box 30075 - 00100
NAIROBI, KENYA

We (name and address) _____

_____ declare the following:

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

Name of Bidder

Signature

Date

(To be signed by authorized representative and officially stamped)

SECTION 9: CONDITIONS OF CONTRACT

SECTION 9A CONDITIONS OF CONTRACT PART I: GENERAL CONDITIONS OF CONTRACT

The Conditions Of Contract Part 1 – General Conditions shall be those forming Part 1 of the Conditions Of Contract for works of Civil engineering construction Fourth Edition 1987, reprinted in 1992 with further amendments, prepared by the Federation Internationale des IngenieursConseils (FIDIC)

Copies of the FIDIC Conditions of Contract can be obtained from:

FIDIC Secretariat

P.O.Box 86

1000 Lausanne 12

Switzerland

Fax: 41 21 653 5432

Telephone: 41 21 653 5003

SECTION 9B: CONDITIONS OF CONTRACT PART II: (CONDITIONS OF PARTICULAR APPLICATION)

The following Conditions of Particular Application shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. The Particular Condition is preceded by the corresponding clause number of the General Conditions to which it relates.

CONTENTS

CONDITIONS OF CONTRACT PART II (CONDITIONS OF PARTICULAR APPLICATION)	61
SUBCLAUSE 1.1 – DEFINITIONS	61
SUBCLAUSE 2.1 - ENGINEER’S DUTIES AND AUTHORITY	61
SUBCLAUSE 5.1 - LANGUAGE AND LAW	61
SUBCLAUSE 5.2 – PRIORITY OF CONTRACT DOCUMENTS	61
SUBCLAUSE 10.1 - PERFORMANCE SECURITY	62
SUBCLAUSE 10.2 - VALIDITY OF PERFORMANCE SECURITY	62
SUBCLAUSE 10.3 - CLAIMS UNDER PERFORMANCE SECURITY	62
SUBCLAUSE 10.4 - COST OF PERFORMANCE SECURITY	62
SUBCLAUSE 11.1 - INSPECTION OF SITE	62
SUBCLAUSE 11.2 - ACCESS TO DATA	62
SUBCLAUSE 14.3- CASHFLOW ESTIMATE	64
SUBCLAUSE 15.1- CONTRACTOR’S SUPERINTENDENCE	64
SUBCLAUSE 15.2- LANGUAGE ABILITY AND QUALIFICATIONS OF CONTRACTOR’S AUTHORISED AGENT	64
SUBCLAUSE 16.2- ENGINEER AT LIBERTY TO OBJECT	64
SUBCLAUSE 16.3- QUALIFICATION AND LANGUAGE ABILITY OF SUPERINTENDING STAFF	64
SUBCLAUSE 16.4 – EMPLOYMENT OF LOCAL PERSONNEL& THE MARGINALIZED GROUP	65
SUBCLAUSE 19.1- SAFETY, SECURITY AND PROTECTION OF THE ENVIRONMENT	65
SUBCLAUSE 20.4 - EMPLOYERS RISKS	65
SUBCLAUSE 21.1 - INSURANCE OF WORKS AND CONTRACTOR ‘S EQUIPMENT	66
SUBCLAUSE 21.2 – SCOPE OF COVER	66
SUBCLAUSE 21.4 - EXCLUSIONS	66
SUBCLAUSE 23.2 – MINIMUM AMOUNT OF INSURANCE	66
SUBCLAUSE 25.1 – EVIDENCE AND TERMS	66
SUBCLAUSE 25.6 – INSURANCE NOTICES	67
SUBCLAUSE 25.7 – NOTIFICATION TO INSURERS	67
SUBCLAUSE 28.2 – ROYALTIES	67
SUBCLAUSE 29.1 – INTERFERENCE WITH TRAFFIC	67
SUBCLAUSE 29.2 – REINSTATEMENT AND COMPENSATION FOR DAMAGES TO PERSONS AND PROPERTY	68
SUBCLAUSE 34.2 – CONDITIONS OF EMPLOYMENT OF LABOUR	68
SUBCLAUSE 34.3 – FAIR WAGES	68
SUBCLAUSE 34.4 – BREACH OF FAIR WAGES CLAUSE	69
SUBCLAUSE 34.5 – RECRUITMENT OF UNSKILLED LABOUR	69
SUBCLAUSE 34.6 – COMPENSATION FOR INJURY	69
SUBCLAUSE 34.7 – LABOUR STANDARDS	69
SUBCLAUSE 35.2 – RECORDS OF SAFETY AND HEALTH	69
SUBCLAUSE 35.3 – REPORTING OF ACCIDENTS	70
SUBCLAUSE 41.1 – COMMENCEMENT OF WORKS	70
SUBCLAUSE 44.1 – EXTENSION OF TIME FOR COMPLETION	70

SUBCLAUSE 45.1 – RESTRICTION ON WORKING HOURS	70
SUBCLAUSE 47.2 – REDUCTION OF LIQUIDATED DAMAGES	70
SUBCLAUSE 52.1 – VALUATION AND VARIATIONS	71
SUBCLAUSE 52.4 – DAYWORKS.....	71
SUBCLAUSE 54.1 – CONTRACTOR’S EQUIPMENT, TEMPORARY WORKS AND MATERIALS	71
SUBCLAUSE 55.2 – OMMISIONS OF QUANTITIES	72
SUBCLAUSE 58.4 – PROVISIONAL ITEMS	72
SUBCLAUSE 60.1 – MONTHLY STATEMENT.....	72
SUBCLAUSE 60.2 INTERIM PAYMENT CERTIFICATE.....	72
SUBCLAUSE 60.3 – PAYMENT OF RETENTION MONEY	73
SUBCLAUSE 60.4– CORRECTION OF CERTIFICATES	73
SUBCLAUSE 60.5– STATEMENT AT COMPLETION.....	73
SUBCLAUSE 60.6 – FINAL STATEMENT.....	74
SUBCLAUSE 60.7– DISCHARGE.....	74
SUBCLAUSE 60.8 – FINAL PAYMENT CERTIFICATE.....	74
SUBCLAUSE 60.9– CESSATION OF EMPLOYERS LIABILITY	74
SUBCLAUSE 60.10 – TIME FOR PAYMENT.....	75
SUBCLAUSE 60.11 – CURRENCY OF PAYMENT.....	75
SUBCLAUSE 60.12 – ADVANCE PAYMENT	75
SUBCLAUSE 60.13 MATERIALS FOR PERMANENT WORKS.....	75
SUBCLAUSE 67.1 – ENGINEER’S DECISION	76
SUBCLAUSE 67.2 – AMICABLE SETTLEMENT	77
SUBCLAUSE 67.3 – ADJUDICATION	77
SUBCLAUSE 67.3 – ARBITRATION.....	77
SUBCLAUSE 68.2 – NOTICES TO EMPLOYER AND ENGINEER.....	77
CLAUSE 69 – DEFAULT OF EMPLOYER	78
CLAUSE 70 – CHANGES IN COSTAND LEGISLATION.....	78
CLAUSE 72 – RATES OF EXCHANGE COST.....	80
CLAUSE 73 – BRIBERY AND COLLUSION.....	80
CLAUSE 74 – CONTRACT CONFIDENTIAL.....	81

CONDITIONS OF CONTRACT PART II (CONDITIONS OF PARTICULAR APPLICATION)

SUBCLAUSE 1.1 – DEFINITIONS

Amend this sub-clause as follows:

- (a) (i) The “Employer” is the Nairobi City County, represented by the County Secretary – Nairobi City County.
- (ii) The “Engineer” is the Director of Roads–Roads, Public Works and Transport
- (b) (i) Insert in line 2 after the Bills Of Quantities”, the following, “the rates entered by the Contractor (whether or not such rate be employed in computation of the Contract Price),”

Amend subparagraph (b) (v) of Sub-Clause 1.1 by adding the following words at the end: The word “BID” is synonymous with “bid” and the word “Appendix to BID” with “Appendix to Bid” and the word “BID documents” with “bidding documents”.

Add the following at the end of this sub-clause:

- (h) (i) “Materials” means materials and other things intended to form or forming part of the Permanent Works.

SUBCLAUSE 2.1 - ENGINEER’S DUTIES AND AUTHORITY.

With reference to Sub-Clause 2.1 (b), the following shall also apply: The Engineer shall obtain the specific approval of the Employer before taking any of the following actions specified in Part 1:

- (a) Consenting to the subletting of any part of the works under Clause 4;
- (b) Certifying additional cost determined under Clause 12;
- (c) Determining an extension of time under Clause 44;
- (d) Issuing a variation under Clause 51;
- (e) Fixing rates or prices under Clause 52
- (f) The works specified under this Contract shall be executed, supervised and evaluated in accordance to the Contract Supervision and Evaluation Manual developed by the Ministry of Roads - Version 2012.

SUBCLAUSE 5.1 - LANGUAGE AND LAW

The Contract document shall be drawn up in the ENGLISH LANGUAGE. Communication between the Contractor and the Engineer’s Representative shall be in this given language.

The Laws applicable to this Contract shall be the Laws of the Republic of Kenya.

SUBCLAUSE 5.2 – PRIORITY OF CONTRACT DOCUMENTS

Delete the documents listed 1-6 and substitute:

- (1) The Contract Agreement (if completed)
- (2) The Letter Of Acceptance;
- (3) The Bid and Appendix to Bid;
- (4) The Conditions of Contract Part II;
- (5) The Conditions of Contract Part I;

- (6) The Special Specifications;
- (7) The Standard Specification for Road and Bridge Construction, 1986;
- (8) The Drawings;
- (9) The priced Bills of Quantities
- (10) Other documents as listed in the Appendix to form of Bid

SUBCLAUSE 10.1 - PERFORMANCE SECURITY

Replace the text of Sub-clause 10.1 with the following:

“The Contractor shall provide security for his proper performance of the Contract within 21 days after receipt of the Letter of Acceptance. The Performance Security shall be in the form of a bank guarantee as stipulated by the Employer in the Appendix to Bid. The Performance Security shall be issued by a bank incorporated in Kenya. The Contractor shall notify the Engineer when providing the Performance Security to the Employer.

“Without limitation to the provisions of the preceding paragraph, whenever the Engineer determines an addition to the Contract Price as a result of a change in cost, the Contractor, at the Engineers written request, shall promptly increase the value of the Performance Security by an equal percentage.

SUBCLAUSE 10.2 - VALIDITY OF PERFORMANCE SECURITY

The Performance Security shall be valid until a date 28 days after the date of issue of the Defects Liability Certificate. The security shall be returned to the Contractor within 14 days of expiration.

SUBCLAUSE 10. 3 - CLAIMS UNDER PERFORMANCE SECURITY

Delete the entire sub-clause 10.3.

SUBCLAUSE 10. 4 - COST OF PERFORMANCE SECURITY

The cost of complying with the requirements of this clause shall be borne by the Contractor.

SUBCLAUSE 11. 1 - INSPECTION OF SITE

In line 17 after “affect his BID” add

“and the Contractor shall be deemed to have based his BID on all the aforementioned”

Delete the last paragraph completely and replace with the following:

“The Employer in no way guarantees completeness nor accuracy of the soil, materials, subsurface and hydrological information made available to the Contractor at the time of BIDDing or at any other time during the period of the Contract, and the Contractor shall be responsible for ascertaining for himself all information as aforesaid for the execution of works and his BID shall be deemed to have been priced accordingly.

SUBCLAUSE 11.2 - ACCESS TO DATA

Data made available by the Employer in accordance with Clause 11.1 shall be deemed to include data listed elsewhere in the Contract as open for inspection at the address stipulated in the Appendix to Bid.

SUBCLAUSE 14.1 PROGRAM TO BE SUBMITTED

The time within which the program shall be submitted shall be as specified in the Appendix to the Form of Bid.

This detailed program shall be based upon the program submitted by the Contractor as part of his BID, where this was required, and shall in no material manner deviate from the said program.

The program shall be in the form of a Critical Path Method Network (CPM Network) showing the order of procedure and a description of the construction methods and arrangements by which the Contractor proposes to carry out the works. It should also be supplemented by a time –bar chart of the same program. The program shall be coordinated with climatic, groundwater and other conditions to provide for completion of the works in the order and by the time specified. The program shall be revised at three-month intervals and should include a chart of the principle quantities of work forecast for execution monthly.

The Contractor shall submit to the Engineer not later than the day or date mentioned in the Appendix to the Form of Bid, a general description of his proposed arrangements and methods for the execution of the Works, including temporary offices, buildings, access roads, construction plant and its intended production output, working shift arrangements, labour strength, skilled and unskilled, supervision arrangements, power supply arrangements, supply of materials including a materials utilization program, stone crushing, aggregate production and storage, cement handling, concrete mixing and handling, methods of excavation, dealing with water, testing methods and facilities.

During the execution of the works, the Contractor shall submit to the Engineer full and detailed particulars of any proposed amendments to the arrangements and methods submitted in accordance with the foregoing.

If details of the Contractors proposals for Temporary Works are required by the Engineer for his own information the Contractor shall submit such details within fourteen days of being requested to do so.

The various operations pertaining to the works shall be carried out in such a progressive sequence as will achieve a continuous and consecutive output of fully completed roadworks inclusive of all bridge works and culverts within the time limits specified in the Contract. Generally the Contractor shall start at one end of the road and progress continuously towards the other without leaving any isolated section or sections of uncompleted road provided always that the site of the works has been acquired in its entirety and the encumbrances and services thereon removed.

The Contractor shall allow in his programme for the following public holidays per calendar year during which the Contractor shall not be permitted to work.

- New Years Day (1st January)
- Good Friday
- Easter Monday
- Labour day (1st May)
- Madaraka Day (1st June)
- IddUIFitr
- Mashujaa Day (20th October)
- Jamhuri day (12th December)
- Christmas Day (25th December)

- Boxing day (26th December)

The Contractor shall also allow per calendar year for a further 2 unspecified public holidays which may be announced by the Government of Kenya with no prior notification upon which he shall not be permitted to work.

SUBCLAUSE 14.3- CASHFLOW ESTIMATE

The time within which the detailed cash flow estimate shall be submitted shall be as specified in the Appendix to the Form of Bid.

SUBCLAUSE 15.1- CONTRACTOR'S SUPERINTENDENCE

Add the following at the end of the first paragraph of sub-clause 15.1:

“The Contractor shall, within seven (7) days of receipt of the Engineer's order to commence the works inform the Engineer in writing the name of the Contractor's Representative and the anticipated date of his arrival on site.”

Add the following Sub-clause 15.2

SUBCLAUSE 15.2- LANGUAGE ABILITY AND QUALIFICATIONS OF CONTRACTOR'S AUTHORISED AGENT

The Contractor's Agent or Representative on the site shall be a Registered Engineer as registered by the Engineer's Board of Kenya in accordance with the Laws Of Kenya Cap 530 or have equivalent status approved by the Engineer and shall be able to read and write English fluently.

The Contractor's Agent or Representative shall have at least 10 years experience as an Engineer.

SUBCLAUSE 16.2- ENGINEER AT LIBERTY TO OBJECT

At the end of this Clause add

“by a competent substitute approved by the Engineer and at the Contractors own expense.”

Add the following Sub-Clauses 16.3 and 16.4:

SUBCLAUSE 16.3- QUALIFICATION AND LANGUAGE ABILITY OF SUPERINTENDING STAFF

The Contractor's superintending staff shall meet the following minimum qualifications:

Should have a working knowledge of English or Kiswahili. Should any of the superintending staff not be able to meet this condition, the Contractor shall propose to the Engineer arrangements for provision of a sufficient number of interpreters of approved qualifications. The Engineer, at his discretion, may amend, approve or reject such arrangements or reject deployment of superintending staff not meeting the language requirements. The Engineer may at any time during the duration of the Contract amend any approved arrangements made for interpreters, which shall be implemented at the Contractors expense.

The key staff listed below must have academic qualifications from government-recognised institutions or equivalent institutions of the levels set out in Section 5, Part 6.

- Site Agent
- Site Surveyor
- Foremen

Qualifications as above shall be subject to verification and approval on site by the Engineer or his representative on site before commencement of the said works.

SUBCLAUSE 16.4 – EMPLOYMENT OF LOCAL PERSONNEL& THE MARGINALIZED GROUP

The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience who are Kenya citizens. The contractor shall ensure that not more than two thirds of the personnel are from the same gender. Also the contractor shall ensure that 30% of the vacancies are reserved for youth, women and persons living with disabilities. The contractor shall be filing monthly labour returns with the Engineer indicating the name of the employee, their designation, age, gender and whether they are living with disability or not. The labour returns should reach the office of the Engineer not later than the 7th day of every month.

SUBCLAUSE 19.1- SAFETY, SECURITY AND PROTECTION OF THE ENVIRONMENT

Add Sub-Clause-paragraph (d) of Sub-Clause 19 as follows:

Notwithstanding the Contractor’s obligation under Sub-Clause-paragraph (a), (b) and 9(c) of Sub-Clause 19.1 of the Conditions Of Contract, the Contractor shall observe the following measures with a view to reducing or elimination adverse environmental effects by the site works:

- (i) All quarries and borrow pits shall be filled and landscaped to their original state after extraction of construction material
- (ii) Soil erosion due to surface runoff or water from culverts or other drainage structures should be avoided by putting in place proper erosion control measures that shall include, but are not limited to grassing and planting if trees
- (iii) Long traffic diversion roads shall be avoided so as to minimize the effect of dust on the surrounding environment. In any case all diversions shall be kept damp and dust free
- (iv) Spillage of oils, fuels and lubricants shall be avoided and if spilt, shall be collected and disposed off in such a way as not to adversely affect the environment
- (v) Rock blasting near settlement areas shall be properly coordinated with the relevant officers of the Government so as to minimize noise pollution and community interference.

SUBCLAUSE 20.4 - EMPLOYERS RISKS

Delete Sub-Clause (h) and substitute with;

- (h) any operation of the forces of nature (insofar as it occurs on site) which an experienced contractor:
 - (i) could not have reasonably foreseen, or
 - (ii) could reasonably have foreseen, but against which he could not reasonably have taken at least one of the following measures:
 - (A) prevent loss or damage to physical property from occurring by taking appropriate measures or
 - (B) insure against such loss or damage

SUBCLAUSE 21.1 - INSURANCE OF WORKS AND CONTRACTOR 'S EQUIPMENT

Add the following words at the end of Sub-paragraph (a) and immediately before the last word of Sub-paragraph (b) of Sub-Clause 21.1:

“It being understood that such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred”

Delete the first sentence of this Clause and replace with the following:

“prior to commencement of the Works the Contractor shall, without limiting his or the Employer’s obligations and responsibilities under Clause 20, insure to the satisfaction of the Employer.”

SUBCLAUSE 21.2 – SCOPE OF COVER

Amend sub-paragraph (a) of Sub-Clause 21.2 as follows:

Delete words “from the start of work at the site” and substitute the words “from the first working day after the Commencement Date”

Add the following as Sub-Clause (c) under Sub-Clause-21.2

(c) It shall be the responsibility of the Contractor to notify the insurance company of any change in the nature and extent of the Works and to ensure the adequacy of the insurance coverage at all times during the period of the Contract.

SUBCLAUSE 21.4 - EXCLUSIONS

Amend Sub-Clause 21.4 to read as follows:

“There shall be no obligation for the insurances in Sub-Clause 21.1 to include loss or damage caused by the risks listed under Sub-Clause 20.4 sub-paragraph (a) (i) to(iv) of the Conditions of Particular Application.”

SUBCLAUSE 23.2 – MINIMUM AMOUNT OF INSURANCE

Add the following at the end of this Clause:

“.. with no limits to the number of occurrences”.

SUBCLAUSE 25.1 – EVIDENCE AND TERMS

Amend Sub-Claus OF INSURANCE 25.1 as follows:

Insert the words “as soon as practicable after the respective insurances have been taken out but in any case” before the words “prior to the start of work at the site”
Add the following Sub-Clauses 25.6, 25.7

SUBCLAUSE 25.6 – INSURANCE NOTICES

Each policy of insurance effected by the Contractor for purposes of the Contract shall include a provision to the effect that the Insurer shall have a duty to give notice in writing to the Contractor and Employer of the date when a premium becomes payable. This shall not be more than thirty (30) days before that date and the policy shall remain in force until thirty (30) days after the giving of such notice.

SUBCLAUSE 25.7 – NOTIFICATION TO INSURERS

It shall be the responsibility of the Contractor to notify insurers under any of the insurance referred to in the preceding clauses 21, 23 and 24 on any matter or event, which by the terms of such insurance are required to be so notified. The Contractor shall indemnify and keep indemnified the Employer against all losses, claims, demands, proceedings, costs, charges and expenses whatsoever arising out of or in consequence of any default by the Contractor in complying with the requirements of this Sub-Clause whether as a result of avoidance of such insurance or otherwise.

SUBCLAUSE 28.2 – ROYALTIES

Add at the end of this Sub-Clause the following sentence:

“The Contractor shall also be liable for all payments or compensation if any that are levied in connection with the dumping of part or all of any such material.”

SUBCLAUSE 29.1 – INTERFERENCE WITH TRAFFIC

Supplement Sub-Clause 29.1 by adding the following sentence at the end:

“The Contractor will be permitted to use existing public roads for access to the site. The Contractor shall pay vehicle license tax and road maintenance duty in accordance with relevant regulations and shall obtain any necessary permits or licenses from relevant authorities for transporting his equipment.”

Add the following subclause 29.2:

SUBCLAUSE 29.2 – REINSTATEMENT AND COMPENSATION FOR DAMAGES TO PERSONS AND PROPERTY

The Contractor shall reinstate all properties whether public or private which are damaged in consequence of the construction and, maintenance of the works to a condition as specified and at least equal to that prevailing before his first entry on them.

If in the opinion of the Engineer the Contractor shall have failed to take reasonable and prompt action to discharge his obligations in the matter of reinstatement, the Engineer will inform the Contractor in writing of his opinion, in which circumstances the Employer reserves the right to employ others to do the necessary work of reinstatement and to deduct the cost thereof from any money due or which shall become due to the Contractor.

The Contractor shall refer to the Employer without delay all claims which may be considered to fall within the provisions of Clause 22.1.

Add the following Sub-Clause 34.2 to 34.8

SUBCLAUSE 34.2 – CONDITIONS OF EMPLOYMENT OF LABOUR

The Contractor shall be responsible for making all arrangements for and shall bear all costs relating to recruitment, obtaining of all necessary visas, permits or other official permission for movements of staff and labour.

SUBCLAUSE 34.3 – FAIR WAGES

The Contractor shall, in respect of all persons employed anywhere by him in the execution of the Contract, and further in respect of all persons employed by him otherwise than in the execution of the Contract in every factory, Workshop or place occupied or used by him for the execution of the Contract, observe and fulfil the following conditions:

(a) The Contractor shall pay rates of wages, observe hours of labour and provide conditions of labour, housing, amenities and facilities not less favourable than those required by the latest Regulation of Wages (Building and Construction Industry) Order as of the time of bid submission, and subsequent amendments thereto, or in any wage scales, hours of work or conditions agreed by the Ministry of Labour or other Government Department in consultation with the appropriate wage fixing authority and generally recognized by other employees in the district whose general circumstances in the trade or industry in which the Contractor is engaged are similar.

(b) In the absence of any rates of wages, hours or conditions of labour so established the Contractor shall pay rates of wages and observe hours and conditions of labour which are not less favourable than the general level of wages, hours and conditions observed by other Employers whose general circumstances in the trade or industry in which the Contractor is engaged are similar.

(c) Where the absence of established rates of wages, hours and conditions of labour or the dissimilarity of the general circumstances in the trade of industry in which the Contractor is engaged prevent the Contractor from observing rates of wages, hours and conditions of labour ascertained under sub-paragraph (a) and (b) above the Contractor in fixing the rates of wages, hours and conditions of labour of his employees shall be guided by the advice of the Labour Department.

(d) The Contractor shall recognize the freedom of his employees to be members of trade unions.

(e) The Contractor shall maintain records in English of the time worked by, and the wages paid to, his employees. The Contractor shall furnish to the Engineer or Employer, if called upon to do so, such particulars of the rates, wages and conditions of labour as the Employer or Engineer may direct.

(f) The Contractor shall at all times during the continuance of the contract display, for the information of his employees in every factory, workshop or place occupied or used by him for the execution of the Contract, a copy of this clause together with a notice setting out the general rates of wages, hours and conditions of labour of his employees.

(g) The Contractor shall be responsible for the observance of this clause by sub-Contractors employed in the execution of the works.

SUBCLAUSE 34.4 – BREACH OF FAIR WAGES CLAUSE

Any Contractor or Sub-Contractor who is found to be in breach of Fair Wages Clause shall cease to be approved as a Contractor or Sub-Contractor for such period as the Permanent Secretary for the Ministry of Transport and Infrastructure and Public Works may determine.

Should a claim be made to the Employer alleging the Contractor's default in payment of Fair Wages of any workman employed on the Contract and if proof thereof satisfactory to the Employer is furnished by the Labour Authority, the Employer may, failing payment by the Contractor, pay the claims out of any monies due or which may become due to the Contractor under the Contract.

SUBCLAUSE 34.5 – RECRUITMENT OF UNSKILLED LABOUR

Any additional unskilled labour which is required by the Contractor for the works and which is not in his employ at the time of the acceptance of the BID shall be recruited by the Contractor from the Labour Exchange or Exchange or Exchanges nearest to the site or sites of the work.

SUBCLAUSE 34.6 – COMPENSATION FOR INJURY

The Contractor shall in accordance with the Workmen's Compensation Act of the Laws of Kenya and any other regulations in force from time to time pay compensation for loss or damage suffered in consequence of any accident or injury or disease resulting from his work to any workman or other person in the employment of the Contractor or any Subcontractor.

SUBCLAUSE 34.7 – LABOUR STANDARDS

(a) the Contractor shall comply with the existing local labour laws, regulations and labour standards
(b) the Contractor shall formulate and enforce an adequate safety program with respect to all work under his contract, whether performed by the Contractor or subcontractor. The Contractor has assurance from the Employer of cooperation where the implementation of these safety measures requires joint cooperation.

(c) Upon written request of the Employer the Contractor shall remove or replace any of his employees employed under this Contract.

Add the following Sub-Clause 35.2 and 35.3.

SUBCLAUSE 35.2 – RECORDS OF SAFETY AND HEALTH

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

SUBCLAUSE 35.3 – REPORTING OF ACCIDENTS

The Contractor shall report to the Engineer details of any accident as soon as possible after its occurrence. In the case of any fatality or serious accident, the Contractor shall, in addition, notify the Engineer immediately by the quickest available means. The Contractor shall also notify the relevant authority whenever the Laws of Kenya require such a report.

SUBCLAUSE 41.1 – COMMENCEMENT OF WORKS

Amend Sub-Clause 41.1 as follows:

Delete the words “as soon as is reasonably possible” in the first sentence and replace with “within the period stated in the Appendix to Bid”.

SUBCLAUSE 43.1 – TIME FOR COMPLETION

Amend Sub-Clause 43.1 as follows:

Delete the words “within the time” to “such extended time” and substitute “by the date or dates stated or implied in Clause 14 of these Conditions of Particular Application.

SUBCLAUSE 44.1 – EXTENSION OF TIME FOR COMPLETION

Add at the end of Sub-Clause 44.1 the following:

“Neither rains falling within the rainy seasons as occurs in Kenya nor floods caused by such rains shall be deemed exceptional weather conditions such as may fairly entitle the Contractor to an extension of time for the completion of the work.”

SUBCLAUSE 45.1 – RESTRICTION ON WORKING HOURS

Add at the end of Sub-Clause 45.1 the following:

“If the Contractor requests permission to work by night as well as by day, then if the Engineer shall grant such permission the Contractor shall not be entitled to any additional payments for so doing. All such work at night shall be carried out without unreasonable noise or other disturbance and the Contractor shall indemnify the Employer from and against any liability for damages on account of noise or other disturbance created while or in carrying out night work and from and against all claims, demands, proceedings, costs, charges and expenses whatsoever in regard or in relation to such liability.

“In addition the Contractor will be required to provide, for any work carried out at night or recognized days of rest, adequate lighting and other facilities so that the work is carried out safely and properly.

“In the event of the Engineer granting permission to the Contractor to work double or rotary shifts or on Sundays, the Contractor shall be required to meet any additional costs to the Employer in the administration and supervision of the Contract arising from the granting of this permission.”

SUBCLAUSE 47.2 – REDUCTION OF LIQUIDATED DAMAGES

Add the following paragraphs at the end of this Sub-Clause:

“There shall be no reduction in the amount of liquidated damages in the event that a part or a section of the Works within the Contract is certified as completed before the whole of the Works comprising that Contract.

The Employer shall pay no bonus for early completion of the Works to the Contractor.

The sum stated in the Appendix to Bid as liquidated damages shall be increased by a sum equivalent to any additional amount payable by the Employer to the Contractor under clause 70.1 in respect of an increase in costs in such a period that would not have been incurred by the Contractor if the works had been completed by the due date for completion prescribed by Clause 43.”

SUBCLAUSE 52.1 – VALUATION AND VARIATIONS

Add new Clause 52.2(c)

No change in the unit rates or prices quoted shall be considered for items included in the schedule of Dayworks rates, or Provisional Sums and items, or for any item in the BOQ.

Modification to Clause 52(3)

SUBCLAUSE 52.4 – DAYWORKS

Add the following at the end of Sub-Clause 52.4:

The work so ordered shall immediately become part of the works under the contract. The Contractor shall, as soon as practicable after receiving the Dayworks order from the Engineer undertake the necessary steps for due execution such work. Prior to commencement of any work to be done on a Dayworks basis, the Contractor shall give an advance notice to the Engineer stating the exact time of such commencement.

SUBCLAUSE 54.1 – CONTRACTOR’S EQUIPMENT, TEMPORARY WORKS AND MATERIALS

: Exclusive use for the works

Amend Sub-Clause 54.1 as follows:

Line 5:add “written” between “the” and “consent”.

Delete Sub-Clauses 54.2 and 54.5.

SUBCLAUSE 55.2 – OMMISIONS OF QUANTITIES

Items of Works described in the Bills of Quantities for which no rate or price has been entered in the Contract shall be considered as included in other rates and prices in the Contract and will not be paid for separately by the Employer.

Add the following Sub-Clause 58.4:

SUBCLAUSE 58.4 – PROVISIONAL ITEMS

Provisional items shall be read as Provisional Sums and shall be operated as such in accordance with Sub-Clauses 58.1 to 58.3.

Clause 60 of the General Conditions is deleted and substituted with the following:-

SUBCLAUSE 60.1 – MONTHLY STATEMENT

The Contractor shall submit a statement to the Engineer at the end of each month, in a tabulated form approved by the Engineer, showing the amounts to which the Contractor considers himself to be entitled. The statement shall include the following items, as applicable;

- the value of the Permanent Work executed up to the end of previous month
- such an amount (not exceeding 75 percent of the value) as the Engineer may consider proper on account of materials for permanent work delivered by the Contractor in the site
- such amount as the Engineer may consider fair and reasonable for any Temporary Works for which separate amounts are provided in the Bill of Quantities
- adjustments under Clause 70
- any amount to be withheld under retention provisions of Sub-clause 60.3
- any other sum to which the Contractor may be entitled under the Contract

If the Engineer disagrees with or cannot verify any part of the statement, the Contractor shall submit such further information as the Engineer may reasonably require and shall make such changes and corrections in the statement as may be directed by the Engineer. In cases where there is difference in opinion as to the value of any item, the Engineer's view shall prevail.

SUBCLAUSE 60.2 INTERIM PAYMENT CERTIFICATE

The Contractor shall forward to the Engineer an Interim Payment Certificate based on the statement as corrected above and, should it be necessary in the Engineers opinion, shall promptly make any further amendments and corrections to the Interim Payment Certificate.

The Engineer shall not unreasonably withhold certifying an Interim Payment Certificate and in case of likely delay in establishing the value of an item, such item may be set aside and the remainder certified for payment.

Within 28 days after receipt of the Interim Payment Certificate and subject to the Contractor having made such further amendments and corrections as the Engineer may require, the Engineer will forward to the Employer the certified Interim Payment Certificate.

Provided that the Engineer shall not be bound to certify any payment under this Clause if the net amount thereof, after all retentions and deductions, would be less than the minimum amount of Interim Payment Certificate's stated in the Appendix to Form of Bid. However in such a case, the

uncertified amount will be added to the next interim payment, and the cumulative unpaid certified amount will be compared to the minimum amount of interim payment.

SUBCLAUSE 60.3 – PAYMENT OF RETENTION MONEY

A retention amounting to the percentage stipulated in the Appendix to Bid shall be made by the Engineer in the first and following Interim Payment Certificates until the amount retained shall reach the "Limit of Retention Money" named in the Appendix to Form of BID.

Upon the issue of the Taking-Over Certificate, with respect to the whole of the works one half of the retention money shall become due and shall be paid to the Contractor when the Engineer shall certify in writing that the last section of the whole works has been substantially completed.

Upon expiration of the Defects Liability Period for the works, the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor.

Provided that in the event of different Defects Liability Periods being applicable to different Sections of the Permanent Works pursuant to Clause 48, the expression “expiration of the Defects Liability Period “ shall, for the purpose of this sub-clause, be deemed to mean the expiration of the latest of such periods.

Provided also that if at such time, there remain to be executed by the Contractor any work instructed, pursuant to Clause 49 and 50, in respect of the works, the Engineer shall be entitled to withhold certification until completion of any such work or so much of the balance of the Retention money as shall in the opinion of the Engineer, represents the cost of the remaining work to be executed.

SUBCLAUSE 60.4– CORRECTION OF CERTIFICATES

The Engineer may in any Interim Payment Certificate make any correction or modification to any previous Interim Payment Certificate signed by him and shall have authority, if any work is not being carried out to his satisfaction to omit or reduce the value of such work in any Interim Payment Certificate.

SUBCLAUSE 60.5– STATEMENT AT COMPLETION

Not later than 84 days after the issue of the Taking-Over Certificate in respect of the whole of the works, the Contractor shall submit to the Engineer a statement at completion showing in detail, in a form approved by the Engineer;

The final value of all work done in accordance with the Contract up to the date stated in such Taking-Over Certificate.

Any further sums which the Contractor considers to be due; and

An estimate of amounts that the Contractor considers will become due to him under the Contract.

Estimate amounts shall be shown separately in the Statement at Completion. The Contractor shall amend and correct the Statement as directed by the Engineer and submit a Certificate at Completion to be processed as in Sub-Clause 60.2.

SUBCLAUSE 60.6 – FINAL STATEMENT

Not later than 56 days after the issue of the Defects Liability Certificate pursuant to Sub-Clause 62.1, the Contractor shall submit to the Engineer for consideration a draft final statement with supporting documents showing in detail, in the form approved by the Engineer;
The final value of all work done in accordance with the Contract;
Any further sums which the Contractor considers to be due to him.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonable require and shall make such changes in the draft as may be required.

SUBCLAUSE 60.7– DISCHARGE

Upon submission of the Final Statement, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract. Provided that such discharge shall become effective only after payment under the Final Payment Certificate issued pursuant to Sub-Clause 60.8 has been made and the Performance Security referred to in Sub-Clause 10.1 has been returned to the Contractor.

SUBCLAUSE 60.8 – FINAL PAYMENT CERTIFICATE

Upon acceptance of the Final Statement as given in Sub-Clause 60.6, the Engineer shall prepare a Final Payment Certificate which shall be delivered to the Contractor's authorized agent or representative for his signature. The Final Payment Certificate shall state:

The final value of all work done in accordance with the Contract;
After giving credit to the Employer for all amounts previously paid by the Employer, the balance, if any, due from the Employer to the Contractor or the Contractor to the Employer.

Final Certificate shall be issued for any sum due to the Contractor even if such is less than the sum named in the Appendix to the Form of BID.

SUBCLAUSE 60.9– CESSATION OF EMPLOYERS LIABILITY

unless the Contractor notifies the Engineer of his objection to the Final Certificate within fourteen days of delivery thereof he shall be deemed to have agreed that he accepts the total Contract Price as set out in the Final Certificate as full settlement for all Work Done under the Contract including any variations and omissions thereof but excluding any variations and claims previously made in writing.

SUBCLAUSE 60.10 – TIME FOR PAYMENT

The amount due to the Contractor under any Interim Payment Certificate or Final Payment Certificate issued pursuant to this Clause or to any other term of the Contract, shall, subject to Clause 47, be paid by the Employer to the Contractor as follows:

- (i) In the case of Interim Payment Certificate, within the time stated in the Appendix to Form Of Bid, after the Engineer has signed the Interim Payment Certificate.
- (i) In the case of the Final Payment Certificate pursuant to Subclause 60.8, within the time stated in the Appendix to Form Of Bid, after the Engineer has signed the Final Payment Certificate.
- (ii) In the event of the failure of the Employer to make payment within the times stated, the Employer shall make payment to the Contractor of simple interest at a rate equal to two percentage points above the averaged Base Lending Rate of three leading banks namely Kenya Commercial Bank, Standard Chartered Bank and Barclays Bank for the time being or as shall be the case from the time to time obtained from the Central Bank of Kenya. The provisions of this subclause are without prejudice to the Contractor's entitlements under Clause 69 or otherwise.

SUBCLAUSE 60.11 – CURRENCY OF PAYMENT

The Contract Price shall be designated in Kenyan Currency.

All work performed by the Contractor under the Contract shall be valued in Kenya Shillings using the rates and prices entered in the Bills of Quantities together with such other increases to the Contract Price, except for variation of price payments in accordance with Clause 70.1.

SUBCLAUSE 60.12 – ADVANCE PAYMENT

Advance payment shall not be offered in this Contract.

SUBCLAUSE 60.13 MATERIALS FOR PERMANENT WORKS

With respect to materials brought by the Contractor to the site for incorporation into the permanent works, the Contractor shall,

-Receive a credit in the month in which these materials are brought to site,

-Be charged a debit in the month in which these materials are incorporated in the permanent works.

Both such credit and debit to be determined by the Engineer in accordance with the following provisions.

No credit shall be given unless the following conditions shall have been met to the Engineers satisfaction

The materials are in accordance with the specifications for the works;

The materials have been delivered to site and are properly stored and protected against loss, damage or deterioration;

The Contractors record of the requirements, orders receipts and use of materials are kept in a form approved by the Engineer, and such records are available for inspection by the Engineer;

The Contractor has submitted a statement of his cost of acquiring and delivering the materials and plant to the Site, together with such documents as may be required for the purpose of evidencing such cost;

The materials are to be used within a reasonable time.

The amount to be credited to the Contractor shall not be more than 75% of the Contractor's reasonable cost of the materials delivered to site, as determined by the Engineer after review of the documents listed in subparagraphs (a) (iv) above;

The amount to be debited to the Contractor for any materials incorporated into the works shall be equivalent to the credit previously granted to the Contractor for such materials pursuant to Clause (b) above as determined by the Engineer.

SUBCLAUSE 67.1 – ENGINEER'S DECISION

Delete the entire subclause 67.1 and add the following;

“If a dispute of any kind whatsoever arises between the Employer and the Contractor in any connection with, or arising out of, the Contract or the execution of the works, whether during the execution of the works or after their completion and whether before or after repudiation or other termination of the Contract including any dispute as to any opinion, instruction, determination, certificate or valuation of the Engineer, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state it is made pursuant to this clause. No later than 28 (twenty eight) day after the day on which he received such reference the Engineer shall give notice of his decision to the Employer and the Contractor. Such decision shall state it is made pursuant to this clause.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the works with all due diligence and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided, in an Amicable Settlement, Adjudicator's or Arbitrator's award.

If either the Employer or the Contractor be dissatisfied with the any decision of the Engineer, or if the Engineer fails to give notice of his decision on or before the 28th (twenty eighth) after the day on which he received the reference, then either the Employer or the Contractor may, on or before the 28th (twenty eighth) day after the day the day on which he received notice of such decision, or on or before the 28th (twenty eighth) day after the day the day on which the said period of 28 days expired, as the case may be, give notice to the other party, with a copy for information to the Engineer, of his intention to commence Adjudication, as hereinafter provided, as to the matter in dispute. Such notice shall establish the entitlement of the party giving the same to commence Adjudication, as hereinafter provided, as to such dispute; no adjudication in respect thereof may be commenced unless such notice is given.

If the Engineer has given notice of his decision as to a matter in dispute to the Employer and the Contractor and no notice of intention to commence adjudication as to such dispute has been given by either the Employer or the Contractor on or before the twenty eighth day after the day on which the parties received notice as to such decision from the Engineer, the said decision shall become final and binding upon the Employer and the Contractor. “

SUBCLAUSE 67.2 – AMICABLE SETTLEMENT

Delete the entire subclause 67.2 and add the following;

“Where notice to of intention to commence adjudication as to a dispute has been in accordance with subclause 67.1, the parties shall attempt to settle such dispute in amicably before the commencement of Adjudication; provided that, unless the parties otherwise agree, Adjudication may be commenced on or after the 14th (fourteenth) day after the day on which notice of intention to commence adjudication of such dispute was given, even if an attempt at amicable settlement thereto has been made.”

SUBCLAUSE 67.3 – ADJUDICATION

Delete the entire subclause 67.3 and add the following;

“The Adjudicator shall be appointed by the Chartered Institute of Arbitrators (Kenya) unless the appointment is agreed by the parties within 7 (seven) days of the notice to adjudication.

The adjudication process shall be conducted according to the Laws of Kenya and the Rules of the Chartered Institute of Arbitrators (Kenya).”

SUBCLAUSE 67.3 – ARBITRATION

Delete the entire subclause 67.3 and add the following;

“Any dispute in respect of which:

The decision, if any, of the Adjudicator has not become final and binding pursuant to subclause 67.1, and
Amicable settlement has not been reached within the period stated in subclause 67.2,

shall be finally settled, under the Laws of Kenya and the Arbitration Rules of the Chartered Institute of Arbitrators (Kenya Branch) by one or more arbitrators appointed by the Chartered Institute of Arbitrators (Kenya Branch).

Neither party shall be limited in the in the proceedings before such arbitrator/s to the evidence or arguments put before the Adjudicator for the purpose of obtaining his said decision pursuant to subclause 67.1.

Arbitration may be commenced prior to or after completion of the works, provided that the obligations of the Employer, the Engineer and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the works.

SUBCLAUSE 68.2 – NOTICES TO EMPLOYER AND ENGINEER

Delete in Sub-Clause 68.2 the words "nominated for that purpose in Part II of these conditions".

- a. The Employer's address is:
County Secretary,
Nairobi City County,
P.O. Box 30075 - 00100
NAIROBI
- b. The Engineer's address is:
Director of Roads,
Roads, Public Works & Transport Sector,
Nairobi City County,
P.O. Box 30075 - 00100
NAIROBI

SUBCLAUSE 68.4 – All letters and notices from the Contractor to the Employer and/Engineer must be signed by the Managing Director or the person given written power of Attorney.

CLAUSE 69 – DEFAULT OF EMPLOYER

Delete Sub-Clause 69.1 (c)

In Sub-Clause 69.4 add at the end of first paragraph the following “the period of such suspension shall be as agreed upon by both parties and in any case not more than six (6) months”.

In Subclause 69.4 of General Conditions of Contract Part I, insert at the end ~~~~“The amounts of such costs which shall be added to the Contract Price shall exclude any cost due to idle time for equipment, plant and labour.”

CLAUSE 70 – CHANGES IN COST AND LEGISLATION

Delete clause 70 in its entirety, and substitute: -

70.01 Increase or Decrease of Cost

This sub clause is only applicable to the following items :

- a) Labour
- b) Cement
- c) Aggregates
- d) Fuels ,Lubricants, bitumen and bitumen products

Bidders shall benefit from these items if they shall have filled all the information required in **schedule 8** of the basic prices for selected items as provided in this contract.

The Contract Price shall be adjusted for the increase or decrease in the price of labour and certain specified materials. The amount to be added to or deducted from the Contract price will be determined by the application of an index-linked formula provided in sub clause .

70.02 Other Changes in Cost

- a. Variation in the price of all personnel shall be deemed to be covered by the **Labour Index (L)** which is defined as the average of the minimum hourly rates for “Nairobi Area” for the following grades of workers:-

- i) Labourer
- ii) Un-graded Tradesman
- iii) Light Plant Operators, class 1
- iv) Heavy Plant Operators
- v) Miscellaneous

As agreed between the Kenya Association of Building and Civil Engineering Contractor and the Kenya Federation of Building and Construction Workers Union.

- b. Variations in the price of cement shall be deemed to be covered by the **Cement Index (C)**, which is defined as the Price ex-manufacturers to Main Agents per single Tonne in the Nairobi Area.
- c. Variation of price of all aggregate for concrete shall be deemed to be covered by the **Aggregate Index (A)** which is defined as the average of the cost of sand and aggregate per cubic metre delivered in the City area as specified in the joint Building Council Fluctuations Clause Price List as published from time to time.
- d. Variations in the price of fuels and lubricants, bitumen and bitumen products will be deemed to be covered by the **Fuel Index (FB)**, which is defined as the ex-Nairobi depot price of light fuel oil (DERV) as, published by Oil Companies or ERC
- e. Variations in price of materials not included in this list shall be deemed to be covered by the above indices or shall otherwise be to the contractor's accounts.

70.03 Adjustment Formulae

The variation shall be applicable if the contract period is over 12 months from the date of award of the contract.

The base rate of each of the above items on which variation in prices that will be permitted will be the rate ruling on the twenty eight (28) days before the date stipulated for return of Tenders. The Contractor will include such base rates in the submission of his contract, where base rates are not provided, the Engineer will determine such base rates.

- (a) The amount to be added to or deducted shall be calculated by multiplying the final value prior to certification (after adjustment in respect of the balancing item but before deduction of Retention) by a variation factor V_t

$$V_t = \frac{0.85 (L_t)}{(L_o)} + \frac{0.37 FB_t}{(FB_o)} + \frac{0.12 C_t}{(C_o)} + \frac{0.17 A_t}{(A_o)} - 1$$

Where:

- V_t is the index for the period required
- L_t is the index for labour for the period of application
- FB_t is the index for Fuel and associated items for the period of application
- C_t is the index for Cement for the period of application
- A_t is the index for Aggregates for the period of application
- L_o is the index for labour for the contract base period

- FB₀ is the index for Fuel and associated items for the contract base period
C₀ is the index for Cement for the contract base period
A₀ is the index for Aggregates for the contract base period

Where time value “t” is the value of the relevant index on the last day of the month up to the end of which the works are valued and “0” is the base rate.

The value of V_t shall be recalculated each month

- (b) The variation factor V as calculated on the last day of the twelfth (12) month of the contract or any such extended time as may be allowed under Clause 44 shall be held as that ruling for the remainder of the duration of the works included in the maintenance period.

- (c) Amount of Variation of Price

Amount of Variation of Price (V.o.P) shall be calculated as :

V.o.P = Variation factor (V_t) x Total Value of Works inclusive of V.A.T and before deduction of retention money.

CLAUSE 72 – RATES OF EXCHANGE COST

Delete clause 72 in its entirety and substitute the following:

The currency of BID and payment is Kenya Shillings and rates of exchange requirements are not applicable.

CLAUSE 73 – BRIBERY AND COLLUSION

Add new Clause 73.1:

“The Contractor shall not:

(a) Offer or give or agree to give to any person in the service of the Government of Kenya any gift or consideration or any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other contract to which the Government of Kenya is a party or for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract for the Government of Kenya.

(b) Enter into this or any other contract with the Government of Kenya in connection with which commission has been paid or agreed to be paid by or on his behalf or to his knowledge, unless before the contract is made particulars of any such commission and of the terms and conditions of any agreement for the payment thereof have been disclosed in writing to the Employer.

Any breach of this condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) or the commission of any offence

by the Contractor or by anyone employed by him or acting on his behalf in relation to this or any other contract to which the Government of Kenya is a party shall entitle the Employer to determine the Contract (See Condition 63 hereof) and/ or to recover from the Contractor the amount or value of any such gift, consideration or commission.

Any dispute or difference of opinion arising in respect of either the interpretation, effect or application of this condition or of the amount recoverable hereunder by the Employer from the Contractor shall be decided by the Employer, whose decision shall be final and conclusive.

CLAUSE 74 – CONTRACT CONFIDENTIAL

Add new Clause 74.1:

The Contractor shall treat the details of this Contract as Private and Confidential and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere (save in so far as may be necessary for the purpose thereof) without the previous consent in writing of the Government. If any dispute arises as to the necessity of any publication or disclosures for the purposes of this Contract the same shall be referred to the decision of the Engineer mentioned in the said Conditions of Contract whose award shall be final.

SECTION 10: FORM OF AGREEMENT

SECTION 10: FORM OF AGREEMENT

THIS AGREEMENT is made on the day of 20
between the Nairobi City County of P. O. Box 30075 - 00100, Nairobi, Kenya hereinafter called
"the Employer" of the one part and
hereinafter called "the Contractor" of the other part.

WHEREAS the Employer is desirous that certain works should be executed, viz.

NCC/RPW&T/T/566/2016-2017 COMPLETION OF ACCESS ROAD TO TASSIA ESTATE

and has accepted a Bid by the Contractor for the execution completion and maintenance of such works NOW THIS AGREEMENT WITNESSETH as follows:

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

The following document shall be deemed to form and be read and construed as part of this Agreement, viz.:

- The said BID dated
- The Conditions of Contract
- The Standard and Special Specification
- The Priced Bill of Quantities
- The Letter of Acceptance
- Schedules of Supplementary Information
- The Drawings
- Other documents as may be agreed and listed

All aforesaid documents are hereinafter referred to as "The Contract".

In consideration of the payment to be made by the Employer to the Contractor, the Contractor hereby covenants with the Employer to execute, complete and maintain the works in conformity in all respects with the provisions of the Contract.

The Employer hereby covenants to pay the Contractor in consideration of the execution, completion and maintenance of the works the Contract Price at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused their respective common seals to be hereto affixed (or have hereunto set their respective hands and seals) on the day and year first above written.

SIGNED/SEALED/STAMPED AND DELIVERED

By the said Employer:
(County Secretary, Nairobi City County)
For and on behalf of the said Employer

In the presence of:
(Name and Designation of Witness)

.....
(Signature of Witness)

.....
(Address of witness)

By the said Contractor:

In the presence of:
(Name and Designation of Witness)

.....
(Signature of Witness)

.....
(Address of witness)

SECTION 11: FORM OF PERFORMANCE BANK GUARANTEE (UNCONDITIONAL)

SECTION 11: FORM OF PERFORMANCE BANK GUARANTEE (UNCONDITIONAL)

To

The County Secretary,
Nairobi City County,
P.O. Box 30075 - 00100
NAIROBI

WHEREAS (hereinafter called “the Contractor”)
has undertaken in pursuance of Contract No.Datedto execute the

NCC/RPW&T/T/566/2016-2017 COMPLETION OF ACCESS ROAD TO TASSIA ESTATE

(hereinafter called the “Contract”)

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified in the Appendix to Form of Bid as security for compliance with his obligations in accordance with the Contract;

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

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you on behalf of the Contractor, up to a total of

Kshs.....(amount in figures)

Kshs.
.....
.....
... (amount in words)

and we undertake to payment to you, upon your first written demand and without cavil or argument, any sum or sums within and up to the limits as aforesaid without your needing to prove or show grounds or reasons for the sum specified therein.

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

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the Contract Documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee and we hereby waive notice of any such change, addition or modification
This Guarantee shall be valid until 28 days after issuing of the Defects Liability Certificate.

AUTHORIZED SIGNATURE OF THE BANK

.....

Name of Signatory.....

Name of bank.....

Address..... Date

SECTION 12: ROAD MAINTENANCE MANUAL

SECTION 12: ROAD MAINTENANCE MANUAL

The Manual refers to the Ministry of Roads 'Road Maintenance Manual, May 2010 Edition'.

SECTION 13: STANDARD SPECIFICATIONS

SECTION 13: STANDARD SPECIFICATIONS

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

SECTION 14: SPECIAL SPECIFICATIONS

SECTION 14: SPECIAL SPECIFICATIONS

TABLE OF CONTENTS

SECTION 1 – GENERAL

101 SPECIAL SPECIFICATIONS

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

102 LOCATION OF CONTRACT

The works are located in Embakasi ward within the jurisdiction of the Nairobi City County. The Roads will serve the heavily developed residential area in the vicinity in addition to provision of drainage facilities to discharge storm water from the area. The proposed works are approximately 1.2 km.

Prior to commencement of this contract the Engineer and the Contractor will undertake a detailed inspection of the outfall location in order for the latter to familiarize himself with the extent of the works. During the construction period the Engineer will provide the contractor with a detailed and quantified instruction which will comprise a written schedule of the works required. The contractor will provide marks for the works identified to be carried out and may where necessary substitute some of the works with others within the project area without substantially altering the overall scope of the works. The contract price shall be deemed to include for such changes and payment for measured works carried out on such alternative areas shall be made using the relevant rates and shall be made using the relevant rates and prices entered in the Bills of Quantities.

103 EXTENT OF CONTRACT

The works provided for under this contract consist of the execution of pavement rehabilitation and reconstruction, walkways rehabilitation and reconstruction, drainage rehabilitation and construction, reinstatement of carriageway, walkway or existing surface drains affected by the drainage construction within the area of the jurisdiction of the Nairobi City County. The works shall include but not limited to:-

- Site clearance and earthworks as necessary
- Excavation to remove unsuitable materials
- Filling with approved materials as specified and directed.
- Hand packing with approved stone as specified and directed
- Base repairs as specified and directed
- Repairs to existing drainage structures as specified and directed
- Improvement/construction to the drainage facilities as directed

- Sectional improvement/construction of sections of roads as directed
- Repairs and/or improvement/construction to footpaths and shoulders as directed
- Laying of Asphaltic concrete layer(s) to a consolidated thickness as directed
- Laying and vibrating of concrete pavement to a consolidated thickness as directed
- Laying and/or replacement of kerbs and channel as specified and directed
- Construction of road junctions abutting to these roads
- Operations ancillary to the main works
- Maintenance of the works during the construction and maintenance
- Maintenance of the works during the construction and maintenance periods specified
- Traffic Management through the works and from the works
- Relocation and/or protection of other services including but not limited to water pipes, sewer pipes, streetlighting, KPLC mains electricity and telephone lines.
- Any other works as instructed by the Engineer and/or as specified in this document

Any other activity not listed above in either category but deemed to be necessary by the Engineer, shall be subject to the Engineer's formal instructions within the mode of payment stipulated either by day works or on a measured basis.

104 PROGRAMME OF EXECUTION OF THE WORKS

The contractor shall provide the works programme, required under clause 14 of the Conditions of Contract, within 21 days of receipt of the Engineer's Order to commence work.

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

The Contractor shall carry out the contract in accordance with the programme agreed with the Engineer, but he shall in no manner be relieved by the Engineer's approval of the programme, of his obligation to complete the works in the prescribed order and by the prescribed completion date and he shall from time to time review his progress and make such amendments to his rate of execution of the works as may be necessary to fulfil his obligations.

105 ORDER OF EXECUTION OF WORKS

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

107

TAKING OVER CERTIFICATE

The minimum length of the road for which a certificate will be issued under clause 48 of the conditions of Contract shall be a whole length of the road substantially completed.

109

NOTICE OF OPERATIONS

Add the following sub- Clause.

Notification Terms

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

Explosive and Blasting

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

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

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

117

HEALTH, SAFETY AND ACCIDENTS

Add the following:

In addition to providing, equipping and maintaining adequate first aid stations throughout the works in accordance with the laws of Kenya, the contractor shall provide and maintain on site during the duration of the Contract, a fully equipped dispensary. This shall be with a qualified Clinical Officer / Nurse who shall offer the necessary medical advice on HIV and related diseases to the Engineer's and Contractor's Site staff. The Contractor shall allow for this in the rates and be responsible for all site welfare arrangements at his own cost.

120

PROTECTION OF EXISTING WORKS AND SERVICES

The Contractor shall acquaint himself with the position of all existing services such as sewers, water drains, cables for electricity and telephone, lighting and telephone poles, water mains, etc., before commencing any excavation or other work likely to affect the existing services.

The cost of all plant, equipment and materials, labour, technical and professional staff, transport and the like necessary for determining the locations of existing services, including the making good of any damage caused to such services all to the satisfaction of the Engineer, shall be deemed to be included in the tender rates. No other payment shall be made for the costs of such operations, nor for the making good of damage caused thereby to the existing services.

The Contractor shall be held responsible for injury to existing structures, works or services and shall indemnify and keep indemnified the Employer against any claims in this respect (including consequential damages).

121 DIVERSION OF SERVICES

- (a) The Contractor shall acquaint himself with the location of all existing services such as telephone lines, electricity cables, water pipes, sewers etc., before execution of any works that may affect the services. The cost of determining the location of the existing services together with making good or repairing of any damage caused all to the satisfaction of the Engineer shall be included in the BID rates.
- (b) Subject to the agreement with the Engineer, the Contractor shall be responsible for removal of alteration and relocation of existing services.
- (c) The Contractor shall indemnify the Employer against claims originating from damage to existing services or works.

123 LIAISON WITH GOVERNMENT AND POLICE OFFICIALS

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

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

Notwithstanding Clause 124 of the Standard Specification all requirements of land for temporary works and construction purposes shall be to the approval of the Engineer but the Contractor will make all necessary arrangements with the property owners concerned and pay all charges arising therefrom. On or before completion of the Contract, the Contractor shall remove all temporary works and shall restore all such land to the condition in which it was immediately prior to the occupation thereof as far as is reasonable and practicable. No separate payment will be made to the Contractor on account of these items and the Contractor must make due allowance for them in his rates.

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

128 STORAGE OF MATERIALS

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

129 TEST CERTIFICATES

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

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

131 SIGNBOARDS

The Contractor shall provide and erect two (2) publicity signs on the site as directed. The Engineer shall, as shown in the Drawings, direct the minimum dimensions and thickness of the steel framework and sheet. The framework and sheet shall be prepared and painted black, while the ring at the top of the supporting frames shall be painted white. The wordings and NCC's logo shall be printed on backlit sticker paper resistant to the effects of weather using reflectorised paint or material approved by the Engineer. The colours, fonts and heights of the letters shall be as indicated on the attached drawings and as directed by the Engineer.

142 ENVIRONMENTAL PROTECTION

The Contractor shall comply with the Statutory Regulations in force in Kenya regarding environmental protection and waste disposal, and shall liaise with the National Environmental Management Agency (NEMA).

Within four (4) weeks of the order to commence work, the Contractor shall prepare and submit a specific Environmental Management Plan for the project and his operations, relating to the approved Environmental Impact Assessment. The Environmental Management Plan shall outline potential environmental hazards and risks, and provide an action plan to deal with the hazards, minimise the risks, and mitigate adverse environmental impacts, and include a general decommissioning plan covering all relevant aspects of the project. The Environmental Management Plan shall identify monitoring indicators and reporting requirements.

The Contractor shall be required to submit environmental progress reports to the Engineer every three (3) months.

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

- (a) The Contractor shall exercise care to preserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work. Except where clearing is required for permanent works, all trees, native shrubbery, and vegetation shall be preserved and shall be protected from damage by the Contractor's construction operations and equipment. All unnecessary destruction, scarring, damage or defacing resulting from the Contractor's

operations shall be repaired, replanted, reseeded or otherwise corrected as directed by the Engineer, and at the Contractor's expense.

- (b) The Contractor shall ensure that measures are in place to control soil erosion and water pollution, by use of berms, dykes, silt fences, brush barriers, dams, sediment basins, filter mats, netting, gravel, mulches, grasses, slope drains, contour banks, and other erosion control devices and methods. Temporary erosion control provisions shall be coordinated with permanent erosion control features to assure economical, effective and continuous measures throughout the period of the works. The Contractor's attention is drawn to the requirements of Clause 502, in that works need to be progressively finished so that permanent vegetation can establish quickly to mitigate soil erosion and erosion of drains.
- (c) The Contractor shall provide all the labour, equipment, materials, and means required and shall carry out proper and efficient measures wherever and as often as necessary to minimise the dust nuisance.
- (d) The Contractor shall comply with all applicable Kenyan laws, orders and regulations concerning the prevention, control and abatement of excessive noise. Blasting, use of jackhammers, pile driving, rock crushing, or any other activities producing high-intensity impact noise may be performed at night only upon approval of the Engineer.
- (e) Immediately after extraction of materials, all borrows pits shall be backfilled to the satisfaction of the Engineer. In particular borrow pits near the project road shall be backfilled in such a way that no water collects in them.
- (f) Spilling of bitumen fuels Oils and other pollutants shall be cleared up.
- (g) The Contractor's attention is drawn to the requirements of the Standard Specification in regard to the environment and in particular to the following clauses:
 - Clause 115: Construction Generally
 - Clause 116: Protection from Water
 - Clause 136: Removal of Camps
 - Clause 605: Safety and Public Health Requirements Clause
 - Clause 607: Site Clearance and Removal of Topsoil and Overburden
- (h) Payment in respect of this Clause 142 is included as a Lump Sum in the Bill of Quantities. Payment of the Lump Sum will be by equal monthly instalments over the period of the Contract excluding the Period of Maintenance. The total sum of the instalments shall not exceed the Lump Sum, and payment of the monthly instalment will only be made for that month if the Engineer is satisfied that the Contractor has fully complied with the requirements of Clause 142, otherwise the Contractor shall forfeit such instalment.

STAFF TRAINING

The Contractor shall allow for training of engineers, technicians and other support staff as may be instructed by the Engineer.

The payment of the allowances of such staff shall be made as instructed by the Engineer under the relevant provisions in the Bills of Quantities.

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.

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 - EARTHWORKS

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 EARTHWORKS

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

At locations adjacent to structures, all fill above ground level 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.

517 MEASUREMENT AND PAYMENT

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

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.

602 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 EXCAVATION 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 D.W.O'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: -

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

- (b) Removal of Existing Pipe Culverts

Where instructed by the 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.

- (c) 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.

- (d) Excavation for Culverts and Drainage Works

The Contractor shall carry out all excavations for new culverts and drainage works to the lines, levels, inclinations, and dimensions shown on the drawings or as instructed by the 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 maintain the existing project road a head 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

(a) General

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

Subject to the approval by the Nairobi City Council authorities, 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/day 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 11 – SHOULDERS TO PAVEMENT

1101 GENERAL

Shoulders shall be constructed in accordance with guidelines given in 1102 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.

1102 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.

a) Areas to be scarified and reprocessed

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

b) 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.

c) 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

Grading

Sieve Size	% 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

(b) 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.

- (c) 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.
- (d) 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.
- (e) 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.
- (f) 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.
- (g) 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

(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

(b) 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.

(c) 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.

(d) 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 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

1502B 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

(a) Seal coat

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

1602A 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 5°C and a fixed thermometer easily read from outside the tank. Any bitumen that has been heated above 180°C 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: -

- a) Test materials, designed in the laboratory, so that a workable mix that satisfies the specification requirements can be selected.
- b) To enable the Contractor to demonstrate the suitability of his mixing and compaction equipment to provide and compact the material to the specified density and to confirm that the other specified requirements of the completed asphalt pavement layer can be achieved.

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: -

- i. The composition and grading of the material including the bitumen content and type and grade of bitumen used.
- ii. The moisture content of aggregate in the asphalt plant hot bins.
- iii. 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.
- iv. 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.
- v. The target voids and other target properties of the mix together with the results of the laboratory tests on the mix.
- vi. The density and voids achieved.
- vii. The compacted thickness of the layer.
- viii. 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.

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	2% (by total weight of dry aggregate including mineral filler)

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.

1602B 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.

b) **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.

1.98 (c) **Measurement and payment**

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

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

Pay item No. 17/02 Levelling Concrete Works (Class 15/20) for Box Culvert and 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:

(i) Grading of Fine Aggregates

Sieve Size	Percentage by Weight Passing
10 mm	100
5 mm	89-100
2.5 mm	60-100
1.2 mm	30-100
0.6 mm	15- 54
0.3 mm	5- 40
0.15 mm	0 - 15

(ii) Grading of Coarse Aggregates

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

Other requirements for aggregates are as follows:

(iii) Fine Aggregates

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

(iv) Coarse Aggregate

- Abrasion, AASGTO T96 : Max. 405 loss
- Soft Fragment and shale, AASHTO M80 : Max. 5% by weight

Thin and elongated Pieces, AASHTO M80 : Max. 15%

(v) Water

All sources of water to be used with cement shall be approved by the 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

(i) Batching

Batching shall be done by weight with accuracy of:

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

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

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

(ii) Mixing and delivery

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

(iii) Concrete in hot weather

No concrete shall be placed when the ambient air temperature is expected to exceed thirty three degrees celsius (33⁰c) 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.

(iv) 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.

1703(E) CONCRETE WORKS (CLASS 30/20) CONCRETE PAVEMENT SLABS

The slab consists of Portland cement concrete, reinforcing steel (optionally), load transfer devices (dowels) and joint sealants.

Portland Cement Concrete

The main influences on the structural performance of concrete in roads are the strength of the concrete and its coefficient of thermal expansion. For concrete to harden satisfactorily the cement must be sound, the mixture of cement and aggregate properly designed, the water: cement ratio carefully controlled, and the concrete well compacted and kept moist during the curing period. The initial setting of the concrete is accelerated at high temperatures and this requires that particular care is necessary in tropical climates to compact the concrete before initial setting has occurred. In drier climates special measures are required to protect the concrete for at least 7 days after placing.

Cement

The cement should conform to KS 1725-1 2001. In addition, unless cement is properly stored and used in a fresh condition, the concrete quality will be substantially reduced. Even if properly stored the cement will suffer a progressive loss in strength with time: after 3 months, 20%; after 6 months, 30%; after 1 year, 40%.

Water

The water used for concrete preparation should contain no more than 1000ppm of Cl and 2000ppm of SO₄ ion.

Aggregate

KS 95 2003 specifies the quality and grading requirements for aggregates suitable for concrete production. It is clearly an advantage to use aggregates with low coefficient of thermal expansion and in Table 3.1 the effect of aggregate on this parameter is given.

Table 0.1: Coefficient of Expansion of various aggregates

Aggregate used	Coefficient of Expansion of Concrete, per °C *10 ⁻⁶	
	Range	Average
Quartzite	11.7 to 14.6	13.2
Granite/gneiss	8.1 to 10.3	11.4
Basalt	7.9 to 10.4	9.2
Limestone/marble	4.3 to 10.3	7.3

From Table 3.1 it is clear that limestone would be the most suitable aggregate but it is not common in Kenya and has a low Polished Stone Value and would not be suitable for the surface of concrete roads.

Obviously it is important to use tough and durable aggregate and especially important to limit the proportion of flaky and elongate particles, an excessive amount of which can prejudice concrete compaction and strength. Additionally, it is common practice to restrict the maximum aggregate size to 20mm to minimise the risk of segregation. Table 3.2 presents general limits for aggregate sizes and gradings.

Table 0.2: Aggregate Sizes and Gradings for OPC Concrete

Sieve size (mm)	Percentage by Mass of Total Aggregate Passing Sieve				
	Coarse Aggregate		Fine Aggregate	All-in Aggregate	
	40mm down	20mm down		40mm down	20mm down
50	100			100	
37.5	90-100	100		95-100	100
20	35-70	90-100		45-80	95-100
14		40-80			
10	10-40	30-60	100		
5	0-5	0-10	30-100	25-50	35-75
2.36			60-100		
1.18			30-100		
0.6			15-100	5-35	10-35
0.3			5-7		
0.15			0-10	0-8	0-8

CONCRETE ITSELF

Stresses from traffic loads require consideration of the modulus of rupture (or flexural strength) but this parameter is difficult to measure and concrete strength is universally expressed in terms of compressive strength at ages of 7 and 28 days. Typical compressive strengths are 30 MPa (N/mm²) at 7 days and 40 MPa at 28 days, with the tests performed on 150mm cubes under standard conditions (test KS 02-595-1986). The correlation between modulus of rupture and compressive strength depends on the aggregate shape; the amount of elongate or flaky aggregate particles adversely affects the modulus of rupture. Normally, concrete made with natural aggregate is inferior in strength to that made with crushed rock. The mechanical strength required for aggregate for pavement concrete is similar to that required for bituminous road bases. Regarding the fine aggregate, it is better if possible to use material with gradings towards the coarse end of the envelope, in order to improve workability. All-in aggregate, i.e crusher-run stone is also commonly used.¹

The (compacted) concrete will normally consist of between 250 to 350 kg/m³ of Ordinary Portland Cement, coarse and fine aggregate, the precise proportions of which are determined during design by compressive strength tests.

To control workability the tendency is always to increase the added water but it is crucial to keep the water: cement ratio below 0.5, otherwise the concrete will have insufficient strength and durability. The workability is measured using the slump cone test (KS 02-595-1986), where a standard cone is filled with wet concrete, the cone lifted and the concrete allowed to subside. The slump is then the difference between the cone height and the highest point of the slumped concrete. It should be limited to 75mm. However, with the lean and dry mixtures used in roads, the test is not very discerning in identifying variations, and the compacting factor test is better. For small contracts the slump test is simpler: for large

¹ The following approximate correlation is useful:

Flexural Strength (MPa) = $c\sqrt{\text{Compressive Strength}}$, where $c \approx 0.75$. Values of Flexural Strength ranging from 3.8 to 4.5 after 28 days are usually acceptable for concrete in roads.

contracts the more precise compacting factor test is preferred. In this test, there are two cones one above the other. The uppermost cone is filled with concrete and then allowed to fall into and overflow the lower, smaller cone. Its surface is then levelled and the concrete then allowed to fall into a basal cylinder. The bulk density of the contents of this cylinder is then measured to measure the compaction produced by the energy of the falling concrete.

The principles of concrete compaction are similar to that of soils. A mix too dry is difficult to compact. A mix too wet renders the maximum density impossible to achieve. Once the mix proportions have been specified and the method of compaction selected there is normally no need to determine the densities achieved in the compacted concrete. However, in particular with the thicker slabs, there is a tendency for segregation with the larger particles falling to the bottom of the slab. This risk is greatest when the concrete is too wet. This is the reason for limiting the maximum aggregate size to 20mm.

Reinforcing Steel

Cracks in concrete develop by:

Temperature and/or moisture-related contractions and expansions, and frictional resistance between the slab base and underlying layer

Tensile stresses result, maximising at mid-slab, and if they exceed the tensile strength of the concrete, it cracks transversally and the stress is transferred to the reinforcing steel. Thus, the purpose of the (longitudinal) reinforcing steel is to control concrete cracking and hold the cracks tightly closed, maintaining the pavement as an integral unit. Transverse reinforcing steel is used to ensure that the longitudinal reinforcing steel remains in the correct position during slab construction and also mitigates any longitudinal cracking that could eventually occur.

For joint spacing less than 6 meters, transverse cracking is not expected and reinforcement normally not required.

For joint spacing between 6 and 30 meters, reinforcement is required.

In CRCP the percentage of steel reinforcing is much higher than JRCF.

The characteristic yield strength of concrete bars is 430MPa.

Dowell Bars

The most common failures of concrete roads occur at the transverse joints and it is imperative that adequate load transfer support is provided to minimise cracking, spalling and corner breaks. Load transfer support across the slabs is enhanced by:

stiff subbases

large sized coarse aggregate (>25mm)

small joint openings, and dowels

Dowels are normally 20mm diameter, 400mm long and fitted at about 300mm spacing. Since they are load transfer devices they must be strong and robust and closely spaced to resist bending and shear of the concrete. To allow slabs to move horizontally relative to one another, at least 65% of the dowel must be coated with a bond-breaking compound, e.g. bitumen. Dowels must not 'lock' the joint where they are placed, otherwise an uncontrolled crack may occur close to the joint.

End dowels should be at least 200mm distant from the slab edge. All dowels must be aligned parallel with the pavement direction to close tolerances.

Where joint openings are less than 1mm, dowels need not be utilised. For dowelled joints the joint opening should be 6mm or less. Short-slabbled pavements thus do not need dowels but it is common practice to use dowels regardless of joint opening.

Tie Bars

Tie bars are fixing devices whose function is to tie two slabs together. In contrast to dowells they are deformed or hooked and are firmly anchored in the slab. Typically they are used to prevent separation at longitudinal joints but at the same time allowing some warping to occur. They hold the joints together so that load transfer is achieved by aggregate interlock in the concrete.

Tie bars are generally 12mm diameter, 750mm long and spaced at intervals of 600mm.

When the width of the pavement in construction is greater than 4.5m, hinge joints are made. The concrete is sawed to a third of its thickness; the joint is sealed and then tied by inserting tie bars at two thirds slab thickness into the slab.

Construction break joints are made by using long (at least 750mm) tie bars to join the old and new concrete.

Measurement and Payment

Measurements for the Concrete Works Class 30/20 of pavement slabs shall be made in cubic metres for the pavement slabs actually constructed, measured from their dimensions shown on the Drawings. Payment shall be the full compensation for furnishing all materials of the concrete mixing, delivering, placing and curing the concrete, dowel bars, 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 menthlymethacrylic.

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).

REQUIREMENTS

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 °F 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/l 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.

2007 KERBS

a) Vertical Joints

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

b) Transition between flush and raised kerbs

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

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.

Guardrail

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

Kerbs

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

SECTION 22-DAYWORKS

2202 MEASUREMENTS AND PAYMENT

(a) Plant

Where items of major plant listed in the schedule of Dayworks are specified by type (e.g. Concrete mixer etc.) the power rating if such items of plant are provided by the Contractor shall not be lower than the power ratings of such plant manufactured within the last two years prior to the date of 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.

a. 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.

b. 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 KS02 – 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.

c. 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

SECTION 15: SUPERVISION AND CONTRACT EVALUATION MANUAL 2012

The Manual refers to the Ministry of Roads ‘Supervision and Contract evaluation Manual for road Maintenance Works 2012

SECTION 16: 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 fulfilment 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.

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. Errors in the pricing of the Bills of Quantities will be corrected in accordance with Clause (28) of instructions to bidder

COMPLETION OF ACCESS ROAD TO TASSIA ESTATE

Length=580m width=7m

Item	Description	Unit	Qty	Rate	Amount
<u>BILL NO. 1 - GENERAL</u>					
1.01	Provide for Third party Insurance to cover both the contract and maintenance periods.		Item		
1.02	Allow a provisional sum of Kenya Shillings Three Hundred Thousand (KShs. 300,000/=) for testing of materials to be expended as directed by the Engineer.	item	1	300,000	300,000
1.03	Attendance to the Item 1.02 above	%			
1.04	Allow a provisional sum of Kenya Shillings Two Hundred Thousand (KShs. 200,000/-) for relocation and maintenance of Utility Services.	PC Sum	1	200,000	200,000
1.05	Attendance to the Item 1.04 above	%			
1.06	Provide and erect publicity sign boards as directed by the Engineer in accordance with drawings	No.	2		
1.07	Allow for provisional sum of Kenya Shillings Fifty Thousand (KShs. 50,000/-) for Resident Engineers receipted accounts for purchase of stationery.	PC Sum	1	50000	50,000
1.08	Attendance to the Item 1.07 above	%			
1.09	Provide and maintain 1 No supervision vehicle for exclusive use by Resident Engineer and his staff	Veh.Mnths	8		

	Total Carried Forward to Summary Sheet.				
	<u>BILL NO. 4 - SITE CLEARANCE</u>				
4.01	Removal of topsoil on the walkways and road shoulders to an approved depth and cart away to spoil	m ³	700		
4.02	Excavate, remove and cart to spoil all broken and damaged OG pipes.	m	50		
4.03	Excavate, remove and cart away to spoil all existing broken and damaged kerbs and channels as directed by the Engineer	m	200		
4.04	Ditto item 4.03 but for displaced quadrants	No	100		
4.05	Excavate, remove and cart to spoil all broken and damaged invert block drains(IBD) as directed by the Engineer	m	100		
4.06	Excavate, remove and cart to spoil all broken and damaged side slabs as directed by the Engineer	m	200		
	Total Carried Forward to Summary Sheet.				
	<u>BILL NO. 5 - EARTH WORKS</u>				
5.01	Excavate in any material to a depth not exceeding 1.2m. Rate to include shaping and carting away of surplus material to spoil.	m ³	200		
5.02	Trim, level and compact the road base to formation level to 95% MDD(AASHTO T.180) and cart away to spoil.	m ²	2,100		

	Total Carried Forward to Summary Sheet				
	<u>BILL NO. 8 - CULVERTS AND DRAINAGE WORKS</u>				
8.01	Excavate in any material in trench to a depth not exceeding 1.5m. Rate to include				
	shaping and carting away of surplus material to spoil.	m ³	500		
8.02	Clean/desilt inlets, outfalls, side and mitre drains to free flowing condition				
	including cart to spoil any excess grass, debris and soil	m ³	80		
8.03	Ditto item 8.02 above but for gully pots of any depth	No	20		
8.04	Ditto item 8.02 above but for manhole of any depth	No	20		
8.05	Clean blocked closed drains to free flow conditions and to the satisfaction of				
	the Engineer.	m	200		
8.06	Excavate into any material for 900mmx600mm p.c.c gully pot as directed by Engineer	m ³	20		
8.07	Provide all materials, prepare and construct standard untrapped gulley pots				
	with polyserin gully frame and covers conforming CCN specifications	No	10		
8.08	Provide all materials, and erect polyserin frame and cover on the gulley				
	pots as directed by the Engineer.	No	10		
8.09	Ditto item 8.08 above but for manholes.	No	5		

8.10	Provide, lay and joint joint 300mm dia. Pipes as Engineer directs. The rates to include backfilling and compaction to drain formation level.	m	240		
8.11	Ditto item 8.10 above but 450mm diameter pipes.	m	520		
8.12	Ditto item 8.10 above but 600mm diameter pipes.	m	50		
8.13	Provide, place and compact 150mm class D (1:3:6) type C concrete bed and surround to 300mm diameter pipes (0.2966m ³ /m).	m ³	71		
8.14	Ditto item 8.09 above but 450mm diameter pipes (0.4059m ³ /m).	m ³	211		
8.15	Ditto item 8.09 above but 600mm diameter pipes (0.5259m ³ /m).	m ³	26		
8.16	Excavate into any material for headwalls, wing walls and manholes cart away to tips excess material.	m ³	30		
8.17	Provide all materials and construct standard headwalls conforming to City Council of Nairobi standards as directed by the Engineer. Use natural blue stone with 1:3 cement mortar and plaster finish	No	80		
8.18	Provide, lay and joint 450mm x 225mm PCC invert block drains laid on a 100mm thick murrum well compacted bed and jointed by 1:3 cement mortar. With single side precast side slabs of 600x225x75mm as lining for a stormwater drain including bedding and	m	600		

	backfilling with selected material as directed by the Engineer.				
8.19	Excavate in any material, provide, lay and joint shallow IBD as directed by the Engineer to form mitre drains. Rate to include provision of 100mm well compacted murrum bed				
	and jointing with 1:3 cement mortar.	m	100		
8.20	Provide ,lay and joint 600x360mm PCC rectangular invert block drains with two courses laid on 100mm well compacted murrum bed jointed by 1:3 cement mortar .to inlets, Rate include				
	backfilling with selected material as directed by the Engineer.	m	100		
Total Carried Forward to Summary Sheet.					
<u>BILL NO. 9 - PASSAGE OF TRAFFIC</u>					
9.01	Allow a sum of passage for traffic through the works including				
	provision of signs, barriers etc. in accordance with section 907 of the standard				
	specifications.	month	8		
Total Carried Forward to Summary Sheet.					
<u>BILL NO. 11 - WALKWAYS</u>					
11.01	Grade shape and compact surface of existing shoulders as directed by				
	Engineer	m ²	480		
11.02	Provide natural gravel material to base quality and thickness of 100mm				
	compact to 95% MDD (AASHTO T.180) in accordance with section 12 of the				
	Standard Specifications (Allow for identification of Quarry site, excavation				

	and haulage)	m ³	210		
	Total Carried Forward to Summary Sheet.				
	<u>BILL NO. 12 - QUARRY FILL STONE FOR SUB-BASE</u>				
	<u>AND QUARRY CHIPS FOR BASE</u>				
12.01	Provide, deliver, place and compact approved quarry fill (hard core) to refusal densities to excavated area to a consolidated thickness of not more than				
	300mm as directed by the Engineer	m ³	600		
12.02	Prepare surface provide place, hand pack and compact quarry chips (natural blue stone) to refusal densities as directed by the Engineer. Rate to include				
	provision of quarry dust to be swept into the voids and watering the same to				
	the satisfaction of the Engineer.	m ³	400		
	Total Carried Forward to Summary Sheet.				
	<u>BILL NO. 16 - BITUMINEOUS MIX BASES, BINDER COURSES AND WEARING COURSES</u>				
16.01	Provide and apply to base MC30 or MC70 as prime coat at a rate of 0.8 - 1.2 litres per square metre to area of carriageway and walkway as directed by the Engineer.				
	The rate to include preparation of surface to get rid of the foreign material by				
	way of sweeping or blowing off or any method and carting way to spoil waste				
	materials.	litres	6,700		
16.02	Provide place and compact hot asphaltic concrete type I as directed by the				
	Engineer for repairs to carriageway in form of patchwork and regulation. Rate				

	to include preparation of surface to rid of all foreign and deliterious material as				
	spray of KI-60 bitumen emulsion as tack coat at a rate of 0.5 - 0.8 l/m2.	m3	150		
16.03	Provide, transport, lay and compact Asphaltic Concrete Wearing course				
	type II to a consolidated thickness of 35mm as directed by the Engineer				
	Rate to include cleaning of the carriageway to get rid of the foreign				
	material by way of sweeping or blowing off or any method and carting				
	away to spoil waste materials. Also included is the provision and spraying of KI-60 bitumen	m ³	170		
	emulsion as tack coat at a rate of 0.5 - 0.8 l/m2.				
16.04	Provide, transport, lay and compact Asphaltic Concrete Wearing course				
	type 1 to a consolidated thickness of 25mm as directed by the Engineer				
	Rate to include cleaning of the carriageway to get rid of the foreign				
	material by way of sweeping or blowing off or any method and carting				
	away to spoil waste materials. Also included is the provision and spraying of KI-60 bitumen	m ³	60		
	emulsion as tack coat at a rate of 0.5 - 0.8 l/m2.				
	Total Carried Forward to Summary Sheet.				
	<u>BILL NO. 20 - ROAD FURNITURE</u>				
20.01	Excavate in any material for 125mm x 250mm half-battered kerbs to straight and				
	radius. Rate to include excavation for 100mmx225mm concrete bed and haunch.	m	1,160		
20.02	Ditto item 20.01 but for 100mm x 125mm concrete chanel straight and radius. Rate to include				

	excavation for 100mmx550mm concrete bed and 100mm x 225mm haunch.	m	1,160		
20.03	Ditto item 20.01 but for 450mm x 250mm quadrants. Rate to include excavation for 100mmx550mm concrete bed and 100mm x 225mm haunch.	No.	20		
20.04	Provide, lay and joint 125mm x 250mm half-battered kerbs to straight and radius greater than 12m laid on a 100mmx225mm concrete class 15 bed and haunch.	m	30		
20.05	E.O. item 20.04 but to radii less than 12m	m	30		
20.06	Provide, lay and joint 100mm x 125mm concrete channels straight and radius greater than 12m laid on a 100mm x 125mm concrete class 15 bed and haunch.	m	30		
20.07	E.O. Item 20.06 above but to radii less than 12m	m	30		
20.08	Provide, lay and joint 450mm x 250mm p.c.c. quadrants bedded and jointed in a 1:3 cement mortar laid on a 100mm x 550mm bed and 100mm x 225mm haunch concrete class 15 .	No.	10		
20.09	Provide and deliver in air tight corrosion 20 litres containers approved white paint (reflectorized) for road marking from an approved supplier, paint and mark the road with 2 coats as directed by the Engineer.	m ²	200		
20.10	As item 20.09 but for approved yellow paint.	m ²	100		

20.11	Provide and erect permanent road signs where instructed by the resident Engineer and in accordance with the special specification Clause 2004 as follows:-				
	(a) Warning signs	No.	5		
	(c) Standard informatory signs	No.	5		
Total Carried Forward to Summary Sheet.					
BILL NO. 22 DAYWORKS					
	Rates included herein for labour are to include insurance cover accomodation, travelling time, overtime, use and maintainance of small tools and profit. Only the time engaged in actual works will be paid for				
22.01	Unskilled labour	Hrs	500		
22.02	Working ganger	Hrs	50		
22.03	Artisan	Hrs	50		
	Rates inserted herein for plant shall include for all operational and maintenance costs, fuels, oils, water, grease, drivers, operators and turn boys, supervision overheads and profits. Only time actually employed upon the works will be paid for and the rates should include for idle time unless such idle time is authorised by the Engineer, travelling time and overtime. All items of plant must be priced.				

22.04	Motor grader Cat 14 equivalent with scarifier	Hrs.	10		
22.05	Shovel Komatsu W90 or equivalent	Hrs.	10		
22.06	15 tonne pneumatic self propelled roller	Hrs.	10		
22.07	Compressor (70M3 Min) complete with all tools	Hrs.	10		
22.08	Vibrating hand compactor whacker plate or equivalent	Hrs.	10		
22.09	Concrete mixer of capacity 0.1,0.2m3	Hrs.	10		
22.1	Concrete vibrator (poker type)	Hrs.	10		
	MATERIALS				
	All materials to be provided are to comply with the Specifications and rates inserted				
	are to include for delivery to site, storage, handling and related overheads and profit.				
22.11	Ordinary Portland Cement	Tonne	4		
22.12	Coarse aggregates (chippings)	Tonne	10		
22.13	Fine aggregates	Tonne	5		
22.14	Mild steel (any diameter)	Tonne	1		
	Total Carried Forward to Summary Sheet.				

BILLS OF QUANTITIES SUMMARY				
DESCRIPTION	AMOUNT			
BILL NO. 1 - GENERAL				
BILL NO. 4 - SITE CLEARANCE				
BILL NO. 5 - EARTH WORKS				
BILL NO. 8 - CULVERTS AND DRAINAGE WORKS				
BILL NO. 9 - PASSAGE OF TRAFFIC				
BILL NO. 11 - WALKWAYS				
BILL NO. 12 - QUARRY FILL STONE FOR SUB-BASE AND QUARRY CHIPS FOR BASE				
BILL NO. 16 - BITUMINEOUS MIX BASES, BINDER COURSES AND WEARING COURSES				
BILL NO. 20 - ROAD FURNITURE				
BILL NO. 22 DAYWORKS				
SUB - TOTAL				
ADD 16% VAT				
TOTAL				

SECTION 17: DRAWINGS

(Standard drawings will be used where applicable)