



NRT WATER WORKS.

**TENDER DOCUMENTS FOR UNDERTAKING OF KOTILE WATER SUPPLY,
ISHAQBINI HIROLA COMMUNITY CONSERVANCY, GARISSA COUNTY**

TENDER NO: NRT/NOVEMBER/052/2024

Closing Date: 27TH NOVEMBER 2024 At 11.00 AM

**NORTHERN RANGELANDS TRUST
(NRT)**

PRIVATE BAG, 60300

ISIOLO, KENYA.

Email: info@nrt-kenya.org

Website: www.nrt-kenya.org

Tel: +254 (0) 701 555 000



INVITATION TO TENDER NOTICE

The **Northern Rangelands Trust** ("hereinafter referred to as NRT") invites sealed tenders from eligible, interested bidders for furnishing the necessary labour, material and equipment for purposes of tendering to undertake undertaking of Kotile water supply, Ishaqbini hirola community conservancy, Garissa county.

| NO | PROJECT | TENDER NO |
|-----------|---|------------------------------|
| 1. | UNDERTAKING OF KOTILE WATER SUPPLY, ISHAQBINI HIROLA COMMUNITY CONSERVANCY, GARISSA COUNTY | NRT/NOVEMBER/052/2024 |

Interested eligible firms may obtain information and inspect tender documents from this website: <https://www.nrt-kenya.org/vacancies> or ishaqbini@nrt-kenya.org. Bidders who may want to obtain further information or seek clarification can do so by visiting or sending an email to;

**NORTHERN RANGELANDS TRUST-HQ
ISIOLO, KENYA
OR
EMAIL – bids@nrt-kenya.org**

The tender document may be obtained by interested candidates upon payment of a non-refundable fee of Kshs. 3,000.00 (Three thousand Kenya Shillings) to Northern Rangelands Trust. Bidders must pay the required amounts to **NORTHERN RANGELANDS TRUST** account number **0308167747 ABSA BANK NANYUKI BRANCH** and ATTACH deposit slips with their bid documents upon return of the documents. Tender documents must be submitted in plain sealed envelopes clearly marked with the tender project reference number: **NRT/NOVEMBER/052/2024**

Documents must be addressed to;

**The Chairman Tender Committee
Ishaqbini Hirola Community Conservancy;
CC: Northern Rangelands Trust HQ Isiolo, Kenya.**

Dully filled tender documents should be physically submitted to Ishaqbini Conservancy HQ Office, not later than **27th November 2024 at 11: 00am**. Tenders will be opened immediately thereafter in the presence of the candidates 'or their representatives who choose to attend.

Kind Regards

Chief Operation Officer

NORTHERN RANGELANDS TRUST



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FORM OF TENDER

UNDERTAKING OF KOTILE WATER SUPPLY, ISHAQBINI HIROLA COMMUNITY CONSERVANCY, GARISSA COUNTY

1. Having examined the conditions of contract, specifications, design drawings and the bill of quantities for the execution of the above-named works, we the undersigned offer to execute and complete such works and remedy any defects therein in conformity with the conditions of contract, specifications, design report summary, drawings and the bill of quantities and addenda for the sum of:

.....

.....

.....

2. We acknowledge that the attached appendix forms part of our tender
3. We undertake, if our tender is accepted to commence work as soon as reasonably possible after the receipt of the Engineer’s notice to commence, and to complete the whole of the works comprised in the contract within Period of completion
4. We agree to abide by this tender for the period of 210 days from the date fixed for receiving bids and it shall remain binding upon us and may be accepted at any time before the expiry of the period.
5. Unless and until a formal agreement is prepared and executed, this tender, together with your written acceptance thereof, shall constitute a binding contract between us.
6. We understand that you are not bound to accept the lowest or any tender you may receive.

SIGNED.....

NAME.....

ADDRESS.....

DATE.....



APPENDIX TO FORM OF TENDER

(This Appendix forms part of the Tender)

Clauses refer to FIDIC Conditions of Contract 4th Edition 1988

| Item | Condition of Contract | Clause |
|--|------------------------------|---------------|
| Time to submit Performance Bond after date of Letter of Acceptance | 14 days | 10 |
| Time to submit Programme of Works after date of Letter of Acceptance | 14 days | 14 |
| Period of Commencement from Engineer's order to commence | 7 days | 41 |
| Time for Completion | 3 months | 43 |
| Amount of Liquidated Damages | Kshs. 10,000/- per day | 47(1) |
| Period of Maintenance | 6 months | 49(1) |
| Limit of Retention Money | Unlimited | 60(2) |
| Minimum Amount of Interim Statement | Kshs. 1,000,000/- | 60(2) |
| Time within which payment to be made after Certificate approval by | 30 days | 60(10) |

(Signature of Tenderer)

(Date)



INSTRUCTIONS TO TENDERERS



CONDITION OF TENDER AND INSTRUCTIONS TO TENDERERS

1. Scope of Bid

- 1.1 NRT hereinafter together referred to as “The Employer” wishes to receive bids for the Construction of 1no. water pan as referred to in the bidding documents, hereinafter referred to as “the works”.
- 1.2 Throughout these bidding documents, the terms “bids” and “tender” and their derivatives (bidder/tenderer, bid/tendered, bidding/tendering etc.) are synonymous, and “day” means calendar day.

2. Eligible Bidders

- 2.1 This invitation to bid is open to a pre-selected list of bidders.
- 2.2 Bidders shall provide such evidence of their eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 2.3 NRT’s and Ishaqbini employees, committee members, board members and their relative (spouse and children) are not eligible to participate in the tender.

3. Eligible Materials, Equipment, and Services

- 3.1. The materials, equipment, and services to be supplied under the Contract shall have their origin and quality approved by the Employer. At the Employer’s request, any bidder may be required to provide evidence of the origin of materials, equipment, and services satisfactory to the Employer.
- 3.2 For purposes of Clause 3.1 above, “origin” means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided.

4. Qualification of the Bidder

- 4.1 Bids submitted shall comply with the following requirements:
 - (a) The bid shall include all the following information:
 - 1) Copies of original documents defining the constitution of legal status, place of registration, principal places of business with a valid business permit; PIN Number and VAT Number (Insert copies in Documents Section).



- 2) Copies of appropriate government licenses related to the work
 - NCA Registration (NCA 8 and above for water works)
 - 3) Total annual turnover expressed as total volume of construction work performed in each of the last five years (Fill in form CP1);
 - 4) Performance on works of a similar nature and volume over the last five years, and details of other work in hand and contractual commitments (Fill in form CP1);
 - 5) Major items of construction equipment proposed for carrying out the Contract and their present location and condition. (Fill in form CP3)
 - 6) The qualifications and experience of key personnel exposed for administration and execution of the Contract, both on and off site. (fill in Form CP2)
 - 7) Summary of past and present litigation or arbitration history (Fill form CP4)
 - 8) Bid Bond equivalent to Ksh 50,000.00
- 4.2 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 completion time.
- 5. One Bid per Bidder**
- 5.1 Each bidder shall submit only one bid either by himself, or as a partner in a joint venture. A bidder who submits or participates in more than one bid (other than alternatives pursuant to Clause 16) will be disqualified.
- 6. Cost of Bidding**
- 6.1 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.



7. Site visit

- 7.1 The bidder is advised to organize on their own a site visit and examine the Site of Works and its surroundings and obtain for himself on his own responsibility all information necessary for construction of works. The costs of visiting the Site shall be at the bidder's own expenses.
- 7.2 NRT's Senior Water Engineer and the conservancy management will be available to answer questions related to the project

8. Content of Bidding Documents

- 8.1 The bidding documents are those stated below, and should be read in conjunction with any Addenda issued in accordance with Clause 10:
1. Instructions to Bidders
 2. Form of Tender
 3. Conditions of Contract
 4. Technical Specifications
 5. Priced Bills of Quantities (**PROVISIONAL**)
 6. Design Drawings
 7. Tender Security
 8. Any other materials required to be completed and submitted by Tenderers.
- 8.2 The bidder is expected to carefully examine the contents of all the above documents. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Pursuant to Clause 25, bids which are not substantially responsive to the requirements of the bidding documents will be rejected

9 Clarification of Bidding Documents

- 9.1 A 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, email and facsimile) at the Employer's address indicated in the Invitation for Bids. The Employer will respond to any request for clarification that he receives prior to the deadline for submission of bids. Copies of the Employer's response will be forwarded to all bidders, including a description of the inquiry but without identifying its source.

10. Amendment of Bidding Documents

- 10.1 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 addenda.



10.2 Any Addendum thus issued shall be part of the bidding documents pursuant to Sub- Clause 8.1 and shall be communicated in writing or by cable to invited bidders. Prospective bidders shall acknowledge receipt of each addendum by cable to the Employer.

10.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend as necessary the deadline for submission of bids, in accordance with Clause 19.

11. Language of Bid

11.1 The bid, and all correspondence and document related 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 accurate translation of the relevant passages in the above stated language, in which case, for purpose of interpretation of the bid, the English translation shall prevail.

12. Documents Comprising the Bid

12.1 The bid submitted by the bidder shall comprise the documents listed under Sub- Clause 8.1 which shall be filled in without exception.

13. Bid prices

13.1 Unless stated otherwise in the bidding documents, the Contract shall be for the whole Works as described in Sub-Clause 1.1 based on the schedule of unit rates and prices submitted by the bidder.

13.2 The bidder shall fill in rates and prices for all items of the works described in the Bill of Quantities. Items against which no rate or price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

13.3 All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and total bid price submitted by the bidder, and the evaluation and comparison of bids by the Employer shall be made accordingly.



14. Currencies of Bid and payment

14.1 The currency of bid and payment shall be in Kenya shillings.

15. Bid validity

15.1 Bids shall remain valid for a period of 210 days after the date of bid opening specified in Clause 22.

15.2 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 responses thereto shall be made in writing or by cable. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid security for the period of the extension.

16. Alternative Proposals by Bidders

16.1 Bidders shall submit offers which comply with the requirements of the bidding documents including the basic technical design as indicated in the Drawings and Specifications. Alternatives will not be considered. The attention of bidders is drawn to the provisions of Clause 25 regarding the rejection of bids which are not substantially responsive to the requirements of the bidding documents.

17. Format and Signing of Bid

17.1 The bidder shall prepare one original document comprising the bid as described in Clause 12 of these Instructions to Bidders.

17.2 The original bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the bidder. All pages of the bid where entries or amendments have been made shall be initialed by the person or persons signing the bid.

17.3 The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

18. Sealing and Marking of Bids

18.1 The bidder shall seal the original bid in an envelope, duly marking the envelopes.

18.2 The envelope shall

(a) be addressed to:



**The Chairman Tender Committee
Ishaqbini Hirola Community Conservancy HQ
CC: Northern Rangelands Trust HQ Isiolo, KENYA**

(b) bear the following identification:

**BID FOR UNDERTAKING OF KOTILE WATER SUPPLY, ISHAQBINI
HIROLA COMMUNITY CONSERVANCY, GARISSA COUNTY
(Tender Number: NRT/NOVEMBER/052/2024)**

18.3 If the envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

19 Deadline for Submission of Bids

19.1 Bids must be received by the Employer at the address specified in 18.2 not later than the date and time stated in letter of invitation to Tender.

19.2 The Employer may, at his discretion, extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

20 Late Bids

20.1 Any bid received by the Employer after the deadline for submission of bids prescribed in Clause 19 will be returned unopened to the bidder.

21 Modification and Withdrawal of Bids

21.1 The bidder may modify or withdraw his bid after bid submission, provided that written notice of the modification or withdrawal is received by the Employer prior to the deadline for submission of bids.

21.2 The bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with the provisions of Clause 17, with the envelopes additionally marked "MODIFICATION" or "WITHDRAWAL", as appropriate.

21.3 No bid may be modified by the bidder after the deadline for submission of bids.

22 Bid Opening

22.1 The Employer will open the bids, including modifications made pursuant to Clause 21, in the presence of bidders' representatives who choose to attend, at the venue, date and time stated in the letter of invitation to



tender. The bidders' representatives who are present shall sign a register evidencing their attendance.

- 22.2** Envelopes marked "WITHDRAWAL" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause 21 shall not be opened.
- 22.3** The bidders' names, the Bid Prices, the total amount of each bid, any discounts, bid modifications and withdrawals, the presence or absence of bid security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. Any bid price or discount which is not read out and recorded at bid opening will not be taken into account in bid evaluation.
- 22.4** The Employer shall record the information disclosed to those present in accordance with Sub-Clause 22.3 to be signed by both the Employer's and bidders' representatives.

23 Process to be Confidential

- 23.1** Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a 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.

24 Clarification of Bids

- 24.1** To assist in the examination, evaluation and comparison of bids, the Employer may, at his discretion, ask any bidder for clarification of his 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 permitted.

During the evaluation of tenders, the following definitions apply: -

- (a) "*Deviation*" is a departure from the requirements specified in the tender document;
- (b) "*Reservation*" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the tender document; and
- (c) "*Omission*" is the failure to submit part or all of the information or documentation required in the Tender document.



25 Examination of Bids and Determination of Responsiveness

25.1 Prior to the detailed evaluation of bids, the Employer will determine whether each bid

- (i) has been properly signed;
- (ii) is accompanied by the required securities;
- (iii) is substantially responsive to the requirements of the bidding documents; and
- (iv) Provides any clarification and/or substantiation that the Employer may require pursuant to Sub-Clause 24.

25.2 A substantially responsive bid is one which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation.

A material deviation or reservation is one;

- (i) which affects in any substantial way the scope, quality or performance of the works;
- (ii) which limits in any substantial way, inconsistent with the bidding documents, the Employer's right or the bidder's obligations under the Contract; or
- (iii) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

25.3 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.

26 Correction of Errors

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

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

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



- non-responsive. and
- (c) if there is a discrepancy between words and figures, the amount in words shall prevail

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

27 Evaluation and Comparison of Bids

27.1 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 25.

27.2 In evaluating the bids, the Employer will determine for each bid the Evaluated Bid Price by adjusting the Bid Price as follows:

- (a) making any correction for error pursuant to clause 26;
- (b) excluding Provisional sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork, where priced competitively;

27.3 The Employer reserves the right to accept or reject any unsolicited variation, deviation or alternative offer. Variations, deviations, alternative offers and other factors which are in excess of the requirements of the bidding documents or otherwise result in the accrual of unsolicited benefits to the Employers shall not be taken into account in bid evaluation.

27.4 If the bid of the successful bidder is seriously unbalanced in relation to the Employer's estimate of the cost 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 Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed.

28 Award

28.1 Subject to Clause 29, the Employer will award the Contract to a bidder whose bid has been determined to be substantially responsive to the bidding documents, provided that such bidder has been determined to be

- (i) eligible in accordance with the provisions of Sub-Clause 2.1; and
- (ii) qualified in accordance with the provisions of Clause 4

29 Employer's Right to Accept any Bid and to Reject any or all Bids

29.1 Notwithstanding Clause 28, 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.

30 Notification of Award

30.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder by letter that his bid has been accepted. This letter (hereinafter referred to as the "Letter of Award") shall name the sum which the Employer will pay the Contractor in consideration of the execution, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the conditions of Contract called "the Contract Sum").

30.2 The notification of award will constitute the formation of the Contract.

30.3 Upon the furnishing by the successful bidder of a performance security (and domestic preference security where required), the Employer will promptly notify the other bidders that their bids have been unsuccessful.

31 Signing of Agreement

At the same time that he notifies the successful bidder that his bid has been accepted, the Employer shall prepare the Contract Agreement documents for signature. The Contract Agreement must then be signed by the Contractor.

32 Corrupt and fraudulent practices

32.1 NRT requires that the tenderer observes the highest standard of ethics during the procurement process and execution of the contract. A tenderer shall sign a declaration that he has not and will not be involved in corrupt and fraudulent practices.

32.2 NRT will reject a tender if it determines that the tenderer recommended for award has engaged in corrupt and fraudulent practices in competing for the contract in question.

32.3 Further a tenderer who is found to have indulged in corrupt and fraudulent practices risks being debarred from participating in any future procurement for NRT and its member conservancies.



FORMS ON COMPETENCE

DOCUMENTS 2024

NORTHERN RANGELANDS TRUST

Private bag, Isiolo, 60300, Kenya | info@nrt-kenya.org | www.nrt-kenya.org

COUNTIES

Baringo, Garissa, Isiolo, Laikipia, Lamu, Lower Tana, Marsabit, Meru, Samburu, West Pokot

BUSINESS DEVELOPMENT

NRT Trading

BOARD OF DIRECTORS

Hon. Mohamed Elmi - Chair
Hon. Abshiro Halakhe - Vice Chair
Tom Lalampaa

Hon. Patrick Ole Ntutu
Dr. Saidimu Leseeto
Stefano Cheli

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Golicha Jarso

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Michael Dyer
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Julius Kamau
Clement Ngore'ng
Josephine Nzilani

Lydia Kisoyan
David Lekooomet
Hassan Hussein

Michael Harrison
Richard Vigne
Matt Brown
Juliet King



FORM CP – 1

COMPLETED CONTRACTS FOR LAST FIVE YEARS

(To be completed for projects over Kshs. 5 million undertaken in the period under review)

| PERIOD | PROJECT | SCOPE OF CONTRACT | CONTRACT SUM | CLIENT | CONSULTANTS |
|--------|---------|-------------------|--------------|--------|-------------|
| | | | | | |
| | | | | | |
| | | | | | |

TOTAL ANNUAL TURNOVER

YEAR 2023 KSH.....

YEAR 2022 KSH.....

YEAR 2021 KSH.....

YEAR 2020 KSH.....

YEAR 2019: KSH.....



FORM CP – 2 KEY PERSONNEL

| NAME | QUALIFICATION | TITLE | NATIONALITY | EXPERIENCE and YEARS WITH FIRM |
|------|---------------|-------|-------------|--------------------------------|
| | | | | |
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FORM CP – 3 KEY CONSTRUCTION EQUIPMENTS

3.1 What equipment do you own that is considered suitable and available for the proposed work?

| Name of Equipment | No. of Units | Description:- (type, make, model, capacity, etc.) | Condition | Year of service | Present Location |
|-------------------|--------------|---|-----------|-----------------|------------------|
| | | | | | |
| | | | | | |
| | | | | | |

3.2 What equipment do you intend to purchase for use on the proposed work should the contract be awarded to you?

| Name of Equipment | No. of Units | Description: - (type, make, model capacity, | Condition | Year of Service | Present Location |
|-------------------|--------------|---|-----------|-----------------|------------------|
| | | | | | |
| | | | | | |
| | | | | | |

3.3 Do you propose to rent or lease any equipment for this work? If so, state below type, make model, quantity and reasons for renting.

.....



FORM CP – 4 LITIGATION OR ARBITRATION HISTORY

1.1 List below any court cases brought by or against you in the past five years.

| Description of Case | Year Initiated | Year Completed | Summary of findings and awards |
|---------------------|----------------|----------------|--------------------------------|
| | | | |
| | | | |

1.2 List below any of your projects that have gone to arbitration or mediation in the past five years.

| Description of Case | Year Initiated | Year Completed | Summary of findings and awards |
|---------------------|----------------|----------------|--------------------------------|
| | | | |
| | | | |





CONDITIONS OF CONTRACT

(Additional information available at NRT Office during normal working hours)



PART I-GENERAL CONDITIONS

The form of contract will be the International Federation of Consulting Engineers (FIDIC) conditions of contract for works of Civil Engineering construction (1987 Edition),

If the Contractor considers that compliance with any of the Conditions of Contract of which the headings are set out hereunder involves expenses to him, which are not included elsewhere in his prices he shall set down opposite any such Condition the value he attaches thereto.

Conditions.

1. Definition and interpretations
2. Engineers and Engineers representative
3. Assignment and subcontracting
4. General obligations.
5. Labour.
6. Materials and workmanship.
7. Suspension of works.
8. Commencement and delays
9. Defects liability.
10. Alterations, additions and liability
11. Procedure for claims
12. Contractor's equipment, temporary works, and materials.
13. Measurements.
14. Provisional sums.
15. Nominated subcontractors
16. Certificates of payments.
17. Remedies.
18. Special risks.
19. Release from performance.
20. Settlements of disputes.
21. Notices.
22. Default of employer.
23. Changes in costs and legislation.
24. Currency and rate of exchange

Particulars of the insertions to be made in the Condition of the Contract Part II.



PART II – CONDITIONS OF PARTICULAR APPLICATION. DEFINITIONS

- 1.1 (a) (i) The Employer means Northern Rangelands Trust
(ii) The Engineer means NRT's Senior Water Engineer
- (b)(i) Commencement date means immediately after the issuance of contract, or the Engineers notice to commence the works.
- (ii) Materials means the goods and all other things intended to form or forming part of the works other than (except in clause 70) temporary works.
- (iii) For the purpose of clause 54 as amended hereinafter:-

“Hired plant,” means all contractor’s equipment and temporary works held by the contractor as hired under the agreement for hire thereof.

“Agreement for hire” shall not include agreement for hire purchase or conditional purchase

“Hired purchase plant” means all contractors’ equipment and temporary works held by the contractor as hired under the agreement for hire purchase thereof.

CONDITIONAL DOCUMENTS

Language

- 5.1 (a) the contract documents shall be drawn in English language. All communications shall be in English.

Law

- (b) The contract shall in all respects be construed in accordance with and subject to laws of Kenya

General obligations

- 8.3.1 The contractor shall promptly inform the Engineer of any error, omission, fault and other defect in the design of or specifications for the works, which are discovered when reviewing the contract document, or in the process of execution of the works.

Works Programme

- 14.1 The time within which the Programme shall be submitted is seven days.

Failure to provide Programme, or revision thereof.

- 14.5 If the contractor fails to submit a satisfactory programme, or revisions thereof



within seven days after such programme, or revision is due in accordance with this clause, the engineer may withhold certification of any payment, until such programme or revisions thereof has been submitted.

Report of delays

14.6 The contractor shall promptly report to the engineer the occurrence of any event or condition that might delay or prevent completion of the works in accordance with an approved schedule and to indicate the steps being taken to correct the situation

14.7 The Programme of works referred to in clause 14.1 shall be based with the Programme submitted with tender showing completion within the dates given in the contract. The contractor shall submit two copies of the Programme of works. The Programme shall be revised after two weeks and shall include a chart of the principal quantities of works forecast for execution in the next two weeks.

Contractor's Superintendence

15.2 The contractor's senior representative on site shall be able to read, write and speak English fluently.

16.3 The contractor shall provide such necessary means of interpretation as will enable instructions to be issued without ambiguity at the main site of the works between himself and the Engineer and the Engineers representative.

LABOUR

Supply of water

34.2 The contractor shall so far as reasonably practicable, having regard to local conditions, provide on the satisfaction of the engineer an adequate supply of portable drinking water to Kenya public health standards and other water for use of the contractor's staff and work people.

Disorderly conduct

34.2 The contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst his employees and for the preservations of peace and protection of persons and property in the neighborhood of the works against the same.

Remedy of defaults

34.14 Should a claim be made to the engineer alleging the contractors' default in payment of fare wages or wages of workmen employed in the contract and if proof thereof satisfactory to the engineer is furnished to the engineer, the



employer may failing payment by the contractor pay the claim out of any money due or which may become due to the contractor under the contract.

Ownership of materials

54.9 All materials provided by the contractor shall when brought to site immediately be deemed to become the property of the employer.

The employer will permit the contractor the exclusive use of such materials for the completion of the works until the occurrence of any event, which gives the employers the right to exclude the contractor from the site and proceed with the completion of the site.

Settlement of disputes.

67.1 Disputes or differences arising between the contractor and Client/Engineer in respect of any matter connected with any part of the works, shall initially be referred to the designated representatives of the Parties who shall seek to resolve the matter amicably within a reasonable period no more than 30 days from the date of reference.

67.3 **Arbitration**

If the designated representatives of the Parties are unable to reach agreement in accordance with Clause 67.1 then no arbitration shall be sort. NRT will resolve the issue (s) in finality and all parties shall respect and abide to the verdict.

Fluctuations.

70.1 The contractor may provide to the Engineer evidence of any increase or decrease in minimum wages, duties and taxes and evidence indicating the payments of these additional or decreased amounts before any such increase/decrease are paid or allowed.



TECHNICAL SPECIFICATIONS



1.0 GENERAL

1.1 Description of the works

The Works involve but not limited to the following;

BILL NO. 1: PRELIMINARY

BILL No. 2 - SUPPLY, INSTALLATION AND TESTING SOLAR PUMPING SYSTEM

BILL No. 5 -KOTILE BH AND SOLAR STRUCTURE AREA CONSTRUCTION OF CHAINLINK FENCE - 0.12KM

BILL NO.6- 15M 50 CM PRESSED STEEL TANK

BILL NO: 8 -ALBALATIRO DISTRIBUTION MAIN

BILL NO. 9 CONSTRUCTION OF TOTAL WATER KIOSK (for Abartillo)

1.2 Location of the works

The site is located within Kotile Ishaqbini Hirola Community Conservancy, Garissa County.

1.3 Provision of equipment material and labour

The contractor shall provide all equipment, transport consumable materials and labour necessary for the satisfactory completion of the works in compliance with the specifications herein. The Engineer reserves the right to inspect plant and materials prior to contractor selection and may reject plant or material that in his opinion is substandard or inappropriate. The contractor shall provide full descriptions of all plants to be deployed for these works. The contractor shall present method statements describing in detail the proposed approach to work.

The contractor shall provide summary detail of the experience of key personnel to be deployed for these works.

1.4 Occupation of site

The employer will provide land on which the works shall be constructed. The contractor shall be given possession of such parts of the site that he requires for activities related to construction works including storage of raw materials, equipment and setting up of camp during the period of contract provided his operation does not interfere with the daily activities of the employer.

The Contractor shall not enter upon or occupy with men, tools, equipment and materials any land other than the land or right of way provided by the employer.



1.5 Tender drawings, bills of quantities and specification

The Tender Drawings are as listed and these may be supplemented from time to time by the Engineer during the period of the contract.

The Specifications, Bills of Quantities, and the Tender Drawings are intended to describe and provide for a complete and finished project. They are intended to be co-operative, e.g. all items of work called for by any shall be as binding as if called for by all. The Contractor is to understand that the work herein described shall be complete in every detail, notwithstanding the fact that every item necessarily involved is not particularly mentioned or shown. The Contractor will be held to provide all labour and materials necessary for the completion of the works described and shall not avail himself of any errors or omissions which are manifestly unintentional.

Before commencing any work, the Contractor shall check all drawings, Bills of Quantities and Specifications and report to the Engineer any errors or inconsistencies and shall verify

all dimensions given on the drawings. The Specifications are divided into trades and divisions for the distinct purpose of facilitating the work. However, the Contractor will become responsible for furnishing all labour and materials necessary to provide the complete project as contemplated by the drawings and specifications. Any item mentioned under any heading of the Specifications must be supplied even though it is not called for again under the heading for the respective work. At the award of contract, the contractor shall sign one set of drawings and specifications and such signed set of contract documents shall be deposited with the Engineer as an additional evidence of the Contractor's understanding of the work required.

1.6 Diligent performance

The contractor shall at all times perform the Works diligently and in accordance with sound professional practice. He/she shall not proceed from one stage of works to another without the express permission of the Engineer.

Decisions regarding Temporary halt, discontinuing of any element or part of any element of these works, or abandonment of these works, shall be discussed jointly between the contractor and the Engineer before any further actions are authorized by the Engineer. The Engineer's decision shall be final.

The Engineer will require a written submission justifying any steps taken by the successful bidder taken without the Engineer's approval. An unsatisfactory explanation shall lead to non-payment for works undertaken without prior



agreement and may be included for consideration as liquidated damages.

1.7 Record drawing

As the work proceeds, the Contractor shall mark “As Built” details on a set of prints of the contract Drawings modified to portray the works as actually constructed and issue to the Engineer’s representatives for approval within 7 days of completion of the works covered by each drawing.

1.8 Level datum

The Engineer will establish on site temporary benchmark and will assign a value to it. The Contractor shall establish and maintain such additional benchmarks as are necessary; the form of such benchmarks shall be approved by the Engineer.

1.9 Contractor’s staff, communication, offices etc.

1.10.1 General

The contractor shall advise the Engineer at which of his offices any notices may be served in accordance with the conditions of contract.

1.10.2 Language of correspondence and records

All communication from contractor to the Engineer and the Engineer’s Representative shall be in English language.

All site books, time sheets, records, notes drawings, documents, specifications etc. shall be in English language

1.10.3 Contractor’s duty staff & offices

At least one responsible senior representative of the contractor shall be immediately available at all times and he shall be on site during normal working hours.

To such representative shall be delegated full authority to confer with Engineer’s Representatives or his deputy and to take all steps and to issue all those instructions which may be required in an emergency to ensure the safety of all personnel of the works and of all the Employer’s and other property on the site and in the immediate vicinity thereof. The Engineer’s Representative may from time to time at his discretion after taking into consideration all the prevailing conditions allow some relaxation of this clause but such relaxation shall be made only with his written permission and subject to any special conditions which he may then require.



The contractor shall provide and maintain at the site, offices for the use of representative and to which written instructions by the Engineer's Representative can be delivered. Any instructions delivered to such offices shall be deemed to have been delivered to the contractor.

1.10.4 Public Relations

The contractor shall designate within his site organization competent staff whose responsibility shall be to ensure good relations with the neighboring community with support from the employer.

The location of all yards, stores, workshops, offices, etc. shall be agreed beforehand with the Engineer's Representatives and shall be such as to avoid obstruction and nuisance to public and/or the client.

The contractor shall provide and maintain at or near the site suitable and sufficient shelters, mess rooms, washrooms, latrines etc. as are necessary and customary, to the satisfaction of the Engineer and in accordance with the law and regulations of the relevant authorities.

1.11 Accommodation for workmen

Where the contractor wishes to construct camp to accommodate his labour, all requirements shall be adhered to and shall also be subject to the requirement made by the local Authority and the respective public health authority covering the area.

1.12 Demolition of contractor's temporary structures

The Engineer may at any time before the end of the period of maintenance give the contractor notice in writing to demolish and remove those buildings and works which are no longer required, whereupon the title to such buildings and works and materials connected therewith shall revert to the contractor. After the demolition and removal of building and works as required by the Engineer, and contractor shall level, clear, restore and make good the sites and surrounding ground and fill in and compact all latrines, drains, pits and similar works leaving the satisfaction of the Engineer's Representative.

1.13 First aid outfits

The contractor shall provide and maintain in an easily accessible place at the site of the works adequate first aid outfits for the whole duration of the contract, to the satisfaction of the Engineer's Representative. The contractor shall have



available at all times a suitable vehicle for conveyance of the sick or injured people to hospital.

1.14 Protective clothing

The contractor shall provide all protective or any other special clothing or equipment for his employees that may be necessary.

1.15 Inspection by engineer during period of defects liability

The engineer will give the contractor due notice of his intention to carry out any inspection during the period of Defects Liability and the contractor shall hereupon arrange for a responsible representative to be present at the times and dates named by the Engineer. This representative shall render all necessary assistance and take note all matters and things to which his attention is directed by the Engineer.

1.16 Advertisement

No advertisements shall be placed on any boarding or scaffolding erected for any purpose connected with the contract without the written permission of the Engineer.

1.17 Site investigations

- a. Ground levels shown on the drawings are believed to be correct. Should the contractor consider the levels shown to be inaccurate he must draw the attention of the Engineer to the discrepancy before interfering with the existing ground.
- b. The Contractor must make such site investigations as he thinks fit and satisfy himself as to the nature of the ground and availability of materials.

1.18 Water Diversion

The contractor shall make all necessary provision for dealing with water flows in the site during the construction of the works and shall submit details of his proposal for the Engineer's approval.

The contractor will be responsible for the adequacy of the design and construction of any temporary works he may construct.

1.19 Work Programme

The contractor shall submit a work programme showing the sequence and timing



of the various stages in the execution of the works.

1.20 Facilities for the engineer

The Contractor shall provide for the Engineer or his representative:

- a. Such instruments as are necessary to enable the engineer to check the setting out and make such inspections as he may deem necessary.
- b. Such labour and assistance as may be required.
- c. Any facilities necessary to enable the Engineer to take samples

1.21 Water supply

The contractor will arrange to provide water for use in the camps and on the works. The Contractor must provide any treatment necessary to ensure it is suitable for use as in accordance to health regulations.

1.22 Electrical supply

The Contractor must provide his own source of electricity if he so requires.

1.23 Security

The Contractor will be responsible for the security of the Works and of site installations during the Contract period. He must provide such fencing, watching & lighting as he deems necessary. However, the employer will provide armed scouts to provide extra security when so desired.

1.24 Description of the materials and workmanship

- a. Materials

Materials, commodities, components and equipment are to be new and unused unless otherwise specified. Handle, store, fix and protect all commodities with care to ensure that they are in perfect condition when incorporated into the work and handed over on completion.

- b. Manufacturer's recommendation

Handle, store and fix every commodity strictly in accordance with the printed or written recommendations of the manufacturer and/or supplier. Supply the Engineer with copies of the manufacturer's recommendations. Inform the



Engineer if the manufacturer's recommendations conflict with any other specified requirements and obtain his instructions before proceeding.

c. Standards

Where commodities or workmanship are specified by reference to Kenya Bureau of Standards (K.S.), or British Standards (B.S.) or Codes of Practice (C.P.) or International (I.S.O.), or other standards, such standards are deemed to be the latest published at the time of tendering. The Contractor will be deemed to have read and understood the standards specified, and no claim for want of knowledge will be allowed. The substitution of commodities or standards of workmanship complying with other standards may be allowed at the discretion of the Engineer, but application for permission for such substitution must be made in writing in sufficient time to allow adequate investigation. Obtain Certificates of Compliance with standards and supply to the Engineer on request.

d. Local conditions

All materials, commodities, components and equipment must be suitable for use in tropical climates.

1.25 Samples

The Contractor shall submit to the Engineer samples of materials to be used in the works, the samples must be fairly representative of the bulk to be supplied. Samples should be subject to relevant tests before submission and Test Certificates should accompany the samples.

1.26 Precautions against contamination of the works

The Contractor shall ensure that all his personnel working on the site are medically suitable to be in contact with a public water supply and his personnel shall undergo any necessary medical test at the Contractor's expense to show that they are free from infectious diseases and are not carriers of any such diseases.

The Contractor shall at all times take every possible precaution against contamination of the works and existing Water Mains. The Contractor shall give strict instructions to all persons employed by him to use the sanitary accommodation provided.

Throughout the Contract, the Site and all permanent and temporary works shall be kept in a clean tidy and sanitary condition



1.27 Clearing site on completion

The site, including borrow pits and spoil dumps shall be carefully tidied up on completion, and shaped to avoid ponding, holes, and dangerous slopes. The borrow pits and spoil dumps must be covered with topsoil neatly trimmed and the whole site left in a tidy and satisfactory condition.

1.28 Order of construction of works

Construction of the Works shall be carried out as directed by the Engineer. Following detailed discussions with the Engineer, and before he begins the work, the Contractor shall submit to the Engineer a programme which shall be reviewed and brought up to date at frequent intervals as the work proceeds. The programme shall be adhered to and only varied by permission of the Engineer.

1.29 Quality of materials and workmanship

All materials and workmanship shall be to the approval of the Engineer. In the reading of this Specification the words “to the approval of the Engineer” shall be deemed to be included in the description of all materials or articles incorporated in the Works and in the descriptions of the operation for the due execution of the works.

Specifications of the British Standards Institution current at the date of tender shall apply for all materials and workmanship unless otherwise directed by the Engineer.

The words “British Standards Specifications” are hereinafter abbreviated to B.S.

1.30 Rejected Materials

Should any materials or manufactured articles be brought on to the Site of the Works which are in the judgment of the Engineer unsound or of inferior quality or in any way unsuited for the work in which it is proposed to employ them, such materials or manufactured articles shall not be used upon the Works but shall forthwith be removed from the Site of the Works all at the Contractor’s expense and in each case as the Engineer and/or Engineer’s Representative shall decide and direct.

1.31 Existing Services

The Contractor shall take every precaution to ensure that all existing services pipes cables drainage and ditches and the like are located supported and safeguarded from damage even though they may not be in the line of excavation



but near to it. Any damage caused to any such services pipes culverts cables drainage and ditches and the like attributable to the Contractor's operations or to his negligence shall be made good by or for the Contractor at his own expense or the satisfaction of the Engineer and of the owner or responsible Authority. In the event of the owner or responsible Authority electing to repair such damage the Contractor shall pay the cost of his or their so doing the work. Should the Contractor fail to pay the cost of the said work within a reasonable period of the account being presented the Employer reserves the right to settle the account and deduct the sum paid by him from moneys due or which may become due to the Contractor.

1.32 Care of Existing boundary hedges, walls, fences and trees

The Contractor shall not cut through or remove any section of any boundary, hedge, wall, or fence without the prior approval of the Engineer's Representative who will determine the limits of such cutting or removal. Approval for the cutting or removal of boundary hedges walls and fences will normally be limited to those crossing the route of mains and pipelines and the contractor shall so conduct his operations as to minimize the extent of such cutting through or removal.

In the case of boundary hedges walls and fences being part of enclosed paddocks or grazing areas the Contractor shall provide erect maintain and remove on completion of all work adequate temporary fencing or shall by other means ensure that animals and other livestock cannot stray from the previously enclosed paddocks or grazing areas.

The Contractor shall repair and reinstate in a manner similar to the original or by other approved means any hedging wall or fence which he may have cut through or remove with or without the approval of the Engineer's Representative or damaged during his operations and all such repairs and reinstatement shall be the contractor's sole liability and shall be carried out to the satisfaction of the Engineer and the responsible Authority or owner.

The Contractor shall not cut down grub up or remove any tree without the prior permission of the Engineer

2.1 EARTHWORKS

2.2 Condition of Site



Before carrying out any work on any site the site shall be inspected in conjunction with the Engineer's Representative to establish its general condition which shall be agreed and recorded in writing.

Details recorded shall include the location of all boundary and survey beacons the condition of buildings surfaces terracing (if any) ditches watercourses roads tracks fences and other information relating to the site and elsewhere which may be affected by the Contractor's operations. In the case of way leaves for mains and pipelines the boundaries of the way leaves will be defined by the Employer and the contractor shall provide, erect and maintain in position from commencement to final completion of all work and all reinstatement in every section substantial timber stake or similar approved markers not less than 1.5m high indicating the position of every beacon at 100m or such other intervals as the Engineer's Representative may require. Payment for this work will be made at the tendered rate.

In the event of any boundary or survey beacon being disturbed or displaced as a result of the Contractor's operations the Contractor shall forthwith at his own expense replace the beacon and shall employ the services of an approved licensed surveyor for this purpose.

2.3 Site Clearance

Before beginning excavation or other work on any site the areas to be occupied by the permanent works shall be cleared of all trees stumps bushes and other vegetation and all roots shall be grubbed out. The felling and disposal of trees other than coffee trees exceeding 1000mm girth at a height of 1.0m above ground level shall be measured separately and paid for in accordance with the tendered rates.

All debris shall be burnt or removed and disposed of by other means to the satisfaction of the Engineer. The limits of the areas to be cleared shall be as indicated on the drawings or as will be defined by the Engineer.

In the case of way leaves for cables, mains, pipelines and the like the area to be cleared shall extend over the full width of the way leaves but the Contractor shall preserve as far as practicable all grass and other vegetation outside the limits of trenches and permanent works within the way leaves and shall not unnecessarily destroy crops, coffee trees and the like the removal of which is not essential to his operations.

The Engineer may require that individual trees shrubs and hedges are to be preserved and the Contractor shall take all necessary precautions to prevent their damage. In the case of trees etc. which the Engineer requires to be preserved the cutting or grubbing out and disposal of roots encountered within the net



dimensions of any excavation or the minimum required width of any trench shall be paid for in accordance with the Schedule for day work contained in the Bill of quantities.

Before beginning clearance within any way leaves the Contractor shall give seven days written notice of his intention to the Engineer who will determine the extent and limits of such clearance having regard to the Contractor's requirements the rate of Contract progress the reasonable wishes of owners and occupiers weather conditions and other factors which in the opinion of the Engineer may affect or be affected by the Contractor's proposals.

The Contractor shall take particular care at all times to prevent erosion on every site and elsewhere on land which may be affected by his operations and the Engineer may impose such reasonable limitations and restrictions upon the method of clearance and upon the timing and season of the year when clearance is carried out as the circumstances seem to him to warrant.

2.4 Ground Levels

Following the completion of site clearance and before the commencement of any earthworks the sites shall be surveyed in conjunction with the Engineer's Representative to establish existing ground levels and these agreed ground levels shall form the basis for the calculation of quantities of any subsequent excavation and filling.

2.5 Excavation Generally

Excavation shall be made in open cutting unless tunneling or heading is specified or approved by the Engineer and shall be taken out as nearly as possible to exact dimensions and levels so that the minimum of infilling will afterwards be necessary. It shall be the Contractor's responsibility at all times to ensure the stability and safety of excavations and the Contractor shall take all measures necessary to ensure that no collapse or subsidence occurs.

The sides of all excavations shall be kept true and shall where necessary be adequately supported by means of timber, steel or other type struts wallings poling boards sheeting bracing and the like. All supports shall be of sound design and construction and shall be sufficiently watertight to permit excavation concreting and other work to be completed satisfactorily. Excavations shall be kept free from water and it shall be the Contractor's responsibility to construct and maintain temporary diversions and drainage works and to carry out pumping and to take all



measures necessary to comply with this requirement.

In the event of soft or otherwise unsuitable ground being encountered at formation level in any excavation the Contractor shall forthwith inform the Engineer's Representative and shall excavate to such extra depth and refill with compacted granular or other approved fill or Class '10' concrete as the Engineer may require. Payment for such additional excavation and additional refilling will be made at the tendered rates provided always that the formation has not become soft or otherwise unsuitable due to the fault of the Contractor. The requirements of this paragraph shall apply also to the side face of any excavation with which concrete or other work will be in contact except that in the case of a side face the Engineer may alternatively require that the net dimensions of the concrete or work shall be increased.

2.6 Excavation in excess

If any part of any excavation is in error excavated deeper and/or wider than is required the extra depth and/or width shall be filled with class Class 10 concrete or compacted granular or other approved fill to the original formation level and/or dimensions at the Contractor's expense as the Engineer may require.

2.7 Mechanical Excavation

A mechanical excavator shall be employed by the Contractor only if the subsoil is suitable and will allow the timbering of the trenches or other excavations to be kept sufficiently close up to ensure that no slips falls or disturbance of the ground take place or there are no pipes cables mains or other services or property which may be disturbed or damaged by its use.

When mechanical excavations are used a sufficient depth of materials shall be left over the bottom of the excavations to ensure that the ground at formation level is not damaged or disturbed in any way. The excavation shall then be completed to formation level by hand.

2.8 Restoration of Borrow areas, Spoil tips and Quarries

Any quarries or other borrow areas developed by the Contractor for the soil purpose of the works shall be finished to safe and fair slopes to the approval of the Engineer. Where directed by the Engineer areas shall be re-soiled with at least 100 mm of topsoil and grassed. The cost of such work shall be included in the Contractor's prices.



2.9 Headings

The excavations for all pipelines pumping mains and works mains are to be made in open-cutting unless the permission of the Engineer for the ground to be tunneled is given in writing or a heading is shown on the Drawings. If the Contractor applies to the Engineer for permission to use headings and if this is given there shall be no additional cost whatsoever to the Employer.

Where a heading is specified or shown on the drawings or permitted to be used it shall be constructed to the approval of the Engineer and to dimensions which will permit a proper inspection to be made. The heading shall be properly and securely timbered. The pipe shall be laid on a minimum thickness of 150mm of Class '15' concrete.

After the pipe has been laid, jointed and tested the heading shall be filled in short lengths not exceeding 1 metre with Class '15' or '10' displacer concrete as directed. Great care shall be taken to ensure that the heading is completely filled with concrete and hard filling shall be rammed into the concrete at the crown of the heading. Special precautions shall be taken to prevent a slump in the concrete and to ensure that no slips or falls of the heading or in the ground above or in the shafts can take place. The Contractor shall allow for leaving in all timbering.

The Contractor shall be responsible for the proper restoration of any road surfaces, pipes, cables or other things or property that may be damaged.

2.10 Excavation for Foundations, Thrust blocks and Anchor Blocks

Excavations for foundations and for thrust and other blocks shall be to such depths as the Engineer may direct and no concrete or other material shall be placed until the formation has been examined and approved. Due notice shall be given to the Engineer's Representative to enable him to examine the formation well in advance. The Engineer may direct that a layer of excavation of not less than 75mm thickness shall be left undisturbed and subsequently taken out by hand immediately before concrete or other material is placed. Similarly, where concrete or other material is to be placed in contact with the side face of an excavation the Engineer may direct that the final 75mm thickness of the excavation to that face shall be left undisturbed and subsequently taken out neatly to profile by hand.

Areas of excavation which are to receive a layer of site concrete as a screed under the structural concrete shall be covered with the screed immediately the excavation has been completed. If in the opinion of the Engineer due to the fault of the Contractor the ground becomes weathered prior to the placing of concrete or other material the Contractor shall excavate the weathered soil and replace it with Class '10' concrete to the original formation level at his own expense.



2.11 Excavation in Rock

Rock will be defined as follows for the purposes of payment: - Solid ledge or bed rock which cannot be removed without systematic drilling and blasting or barring and wedging, conglomerate deposits which are firmly cemented that they possess the characteristics of solid rock and which cannot be removed without systematic drilling and blasting or barring and wedging; boulders exceeding 0.3 cubic metres in volume.

No excavation in materials which can be excavated by the use of pick and shovel will be considered or paid for as rock excavation

The breaking of concrete or road surface or road base will not be considered or paid for as rock excavation. The Engineer's decision as to the necessity or otherwise of rock excavating methods or appliances shall be final.

2.12 Keeping rock faces dry

The contractor shall keep free of running water pools the surfaces of rock upon or against which concrete is to be deposited and no concrete shall be placed until surfaces of the rock are properly drained. Special precautions are to be taken to prevent running water from washing out cement or concrete while it is setting or in any other way from injuring the Works. Drains and pipes shall be provided in or behind concrete as may be necessary for the temporary conveyance of water and shall afterwards be grouted up and such laying and grouting shall be at the Contractor's cost.

2.13 Cleaning rock surfaces

The faces and surfaces of all rock against which concrete is to be placed shall after being excavated to the required limits be properly cleaned and left free from all dust loose pieces of rock mud dirt and other loose material and they shall be perfectly clean when the concrete is deposited.

2.14 Excavated materials suitable for re-use

In so far as they may be suitable and comply with the specification materials arising from excavations may be used in the works. The Contractor in excavating shall ensure that all materials suitable for re-use are kept separate and set aside and protected as necessary to prevent loss or deterioration.

The materials forming the surface and foundations of roads tracks and footways shall when excavated and if required for further use be carefully separated all hard materials being kept free from soil or other excavated materials.

Paving slabs bricks and similar surfaces shall be carefully removed and stacked.



Prior to the commencement of excavation the number of badly broken and unusable paving slabs bricks etc. on the line or the excavation shall be agreed with the Engineer's Representative and only the cost of replacing these shall be paid as an extra to the Contractor.

In verges and other grass surfaces the grass and topsoil shall be stripped and separately stacked.

In particular the Contractor in excavating shall ensure that all granular or other approved material suitable for filling around and over pipes shall be kept separate and re-used for this purpose and the Contractor shall not be entitled to payment for screening or transport

2.15 Refilling Excavations

All refilling of excavations and trenches shall be thoroughly compacted in layers not exceeding 150mm. compacted thickness and by means which will not damage the works.

2.16 Hard Filling

Hard filling shall consist of approved clean mixed ballast, broken stone, and/or concrete. All the materials shall be broken so as to pass through 75 mm. internal diameter rings and be evenly graded between that size and 3 mm. mesh size thereby enabling them when thoroughly compacted to form a hard solid mass. Filling shall be free from all earth clay vegetable or other organic matter shall contain no broken plaster lime mortar or other rubbish. It shall be laid in 300mm. layers each layer being properly spread and thoroughly compacted with rollers and/or rammers.

2.17 Refilling Pipe Trenches

Filling around and for 300mm over the top of the pipe shall be completed using approved suitable material obtained from excavations. Materials for such refilling shall be free from stones greater than 25mm and to the approval of the Engineer. If the quantity of suitable material is insufficient the Contractor shall either screen the excavated soil to exclude stones and other materials likely to damage the pipes or transport suitable material from other excavations or borrow pits as the Engineer may require. The cost of such work shall be paid for at tendered rates provided always that the Contractor has complied with the requirements of Clause 2.13 of this specification

Filling around and for 300 mm over the top of pipes shall be carried out with the utmost care special attention being paid to joint holes so as to obtain the greatest



possible compactness and solidity.

The remainder of the trench may be filled in with selected approved filling by hand or alternatively mechanical equipment if approved by the Engineer. Hand rammers and mechanical equipment shall be to the approval of the Engineer.

2.18 Making good subsidence after refilling

All refilling whether over foundations or in pipe trenches shall be thoroughly compacted by ramming and any subsidence due to consolidation shall be made up by the Contractor at his own expense with extra compacted material. Should subsidence occur after any temporary or permanent surface reinstatement has been completed the surface reinstatement shall first be removed the hollows made up and then the surface reinstatement re-laid.

2.19 Removal of Timber from Excavations

Timbering shall be removed from the excavations before or during the process of refilling except in so far as this removal of timber would be likely to cause damage to adjacent property structures or structure foundations in which event the Contractor shall leave in the excavations which event the Contractor shall leave in the excavations such timber as he considers necessary to prevent damage the proper repair or which the Contractor shall be solely responsible for in the event of any such damage occurring.

Except as provided for below no extra payment will be made for timber left in excavations and the Contractor will be deemed to have allowed for this contingency in pricing his Tender.

The Engineer will however certify for payment in respect of such timber does not arise from any negligence of the Contractor.

2.20 Reinstatement of Surfaces

All surfaces whether public or private that are affected by the works shall be reinstated temporarily by the Contractor in the first instance and in due course when the ground has consolidated fully, he shall reinstate the surfaces permanently. The temporary reinstatement and maintenance and permanent reinstatement and maintenance of all surfaces of roads streets paths fields, verges gardens and any other surfaces which have been affected by the operations of the Contractor shall be his sole liability and shall be carried out to the satisfaction of the Engineer and of the responsible authority.

Temporary reinstatement shall be carried out immediately the trenches are refilled.

Permanent reinstatement shall not be carried out until the ground has consolidated



completely and the Contractor shall apply to the Engineer for permission to carry out this work in the event of further settlement occurring after the completion of the permanent reinstatement and during the currency of the Contract the Contractor shall forthwith make good the reinstatement to the approval of the Engineer or responsible authority. For the purposes of temporary and permanent reinstatement roads tracks and footpaths the surface width of trenches shall be increased by 150mm on each side of the trench for a depth of 75mm to provide a solid abutment for the surfacing material.

Materials forming the surface and foundations of roads, tracks and footways may if they are approved by the Engineer be used by the Contractor in the temporary reinstatement of surfaces. The contractor shall provide additional materials necessary for the reinstatement.

In verges and other grass surfaces and after the refilling has been thoroughly consolidated the topsoil shall be re-laid rolled planted with grass as may be necessary watered and attended until the grass has become well established.

Should the grass fail it shall be replanted as required until a satisfactory growth is obtained.

Trenches in fields and gardens shall be reinstated to the condition in which the field or garden was before excavation was commenced. The final surface of the trench shall be flush with the surrounding ground. The Contractor shall take all necessary precautions to ensure that no toxic materials which may cause damage to vegetation or livestock or pollute streams or watercourses are used in any temporary or permanent reinstatement and shall indemnify the Employer against any claims arising out of the use of such materials.

If at any time any trench becomes dangerous the Engineer shall be at liberty to call on the Contractor to restore it to the proper condition at 3 hours' notice. If the work of reinstatement as carried out by the Contractor is not to the satisfaction of the Engineer and/or the responsible authority and should the Contractor not remedy the defect forthwith any remedial work considered necessary may be undertaken by the Employer and/or the responsible authority at the Contractor's expense.

2.21 Disposal of Surplus Excavated Material

All surplus excavated material shall be disposed to the approval of the Engineer. The cost of disposing of surplus excavated material included any specified soiling and grassing shall be allowed for in the rates for excavation.

2.22 Free Drainage Fill

Free draining fill for use as backing to walls shall consist of sound hard stone or broken rock or concrete derived from demolition of structures. The particles shall



be roughly cubic form and shall be between 75 mm and 25 mm in size. All smaller particles dust rubbish and organic matter shall be excluded.

2.23 Graded Gravel for Drains

Graded gravel surround to drains shall be clean washed stone or crushed hard rock graded between 20 mm and 5 mm.

2.24 Rock Pitching

Rock pitching shall consist of a free draining mixture of broken hard stone obtained from quarries approved by the Engineer which shall have a maximum size of 3000 mm and which shall not contain more than 5% by weight of material which will pass a 10mm B.S. sieve. Between these limits the material shall be reasonably well graded so as to form a free draining blanket without large voids.

2.25 Reinstatement of Trench Surfaces in Roads

Materials for both temporary and permanent reinstatement of trenches in road verges, tracks and unmade roads shall be excavated material selected to form a surface similar to the adjoining surface. The surface shall be well compacted.

Temporary reinstatement of trenches in surfaced roads shall comprise a layer of compacted hardcore, of minimum thickness 150 mm, topped with a 75 mm layer of surface material taken from the original surface material taken from the original surface together with any additional material to form a satisfactory running surface. The surface shall be well rolled and sealed with a coat of approved cold applied bituminous emulsion, applied with an approved sprayer at the rate of about 2 litres/m². The emulsion shall be blinded immediately with quarry dust or sand approved by the Engineer's Representative and then rolled with an 8 ton roller.

The quality and grade of bitumen shall be suitable for the climatic conditions of the area and shall otherwise conform to BS 434.

Permanent reinstatement of surfaced roads shall be carried out to the approval of the competent Authority but shall in no way be inferior to that specified elsewhere in the Specification for base of wearing courses to road works. In all cases, the top layer of the temporary reinstatement shall be removed to expose the compacted hard-core which shall be topped up and re-rolled as necessary



3.0 CONCRETE WORKS

3.1 General

a. Code of practice

All workmanship, materials, tests and performances in connection with the reinforced concrete work are to be in conformity with the latest edition of British Standard Code of Practice (C.P. 8110 for “Structural Use of Concrete”) where not inconsistent with these specifications.

b. Contractor’s plant

Not less than 30 days prior to the installation of the Contractor’s plant and equipment for processing, handling, transporting, storing and proportioning ingredients, and for mixing, transporting and placing concrete, the Contractor shall submit drawings for approval by the Engineer, showing proposed general plant arrangements, together with a general description of the equipment he proposes to use.

After completion of installation, the operation of the plant and equipment shall be subject to the approval of the Engineer.

3.2 Materials

3.2.1 Cement

Cement, unless otherwise specified, shall be Portland cement of the Blue Triangle brand, or Bamburi Portland Cement brand. Any other brand must be approved by the Engineer and shall comply with the requirements of B.S. 12 with the exceptions that it may contain reactive volcanic ash (of not more than 10% of total weight) and the quantity of insoluble residue permitted in B.S. 12 may be exceeded. A manufacturer’s Certificate of Test in accordance with B.S. shall be supplied for each consignment delivered to site.

Should the Contractor require using cement of the rapid hardening variety, he shall obtain the approval of the Engineer and also obtain any instructions regarding the modifications to the preambles caused thereby. Any additional cost that may be caused by the use of the rapid hardening cement shall be at the Contractor’s expense.

Cement may be delivered to site either in bags or in bulk. If delivered in bags, each bag shall be properly sealed and marked with the manufacturer’s name



and on the site is to be stored in a weather- proof shed of adequate dimensions with a raised floor. Each consignment shall be kept separate and marked so that it may be used in the sequence in which it was received. Any bag found to contain cement which has set or partly set shall be completely discarded and not used in the Works. Bags shall not be stored more than 1500 mm in height.

If delivered in bulk the cement shall be stored in a weather-proof silo either provided by the cement supplier or by the Contractor, but in either case the silo shall be to the approval of the Engineer.

3.2.2 Aggregates

The aggregates shall conform to the requirements of B.S. 882 and the sources, and all types of all aggregates are to be approved in all respects by the Engineer before work commences.

The grading of aggregates shall be one within the limits set out in B.S. 882 and as later specified and the grading, once approved, shall be adhered to throughout the Works and not varied without the approval of the Engineer. Fine aggregate shall be clean, coarse, siliceous sand of good, sharp, hard quality and shall be free from lumps of stone, earth, loam, dust, salt, organic matter and any other deleterious substances. It shall be graded within the limits set out in zone 1 or 2 of B.S. 882. Coarse aggregate shall be good, hard, clean approved black trap or similar stone, free from dust, decomposed stone, clay, earthy matter, foreign substances or friable thin elongated or laminated pieces. It shall be graded within the limits of Table 1 of B.S. 882 for its respective nominal size.

If in the opinion of the Engineer the aggregate meets the above requirements but is dirty or adulterated in any manner it shall be screened and/or washed with clean water if he so directs at the Contractor's expense.

Aggregates shall be delivered to the site in their prescribed sizes or grading and shall be stockpiled on paved areas or boarded platforms in separate units to avoid intermixing.

3.2.3 Fine aggregate

Fine aggregate shall be sand free from impurities and complying with British Standard No. 882. Grading zone 2 of Table 2.



3.2.4 Coarse aggregate

Coarse aggregate shall be hard crushed rock free from impurities and complying with British Standard No. 882 "graded aggregate" 20 mm to 5 mm nominal size as Table 1.

3.2.5 Water

Water for concrete shall be free from impurities, complying with BS 3148

3.2.6 Hardcore

Hardcore for filling under floors shall be good, hard stone ballast or quarry waste, to the approval of the Engineer, broken to pass through not greater than a 150 mm ring or to be 75% of the finished thickness of the layers being compacted, whichever is the lesser. Hardcore shall be free from all weeds, roots, vegetable soil, clay, black cotton soil or other unstable materials.

It shall be graded with smaller stones and fine materials to give a dense compact mass after consolidation. Sufficient fine material shall be added to each layer to give gradation of material as necessary to obtain a solid compact mass after rolling. Hardcore filling is to be laid in layers each of a consolidated thickness not exceeding 250 mm. Each layer shall be compacted by at least 8 passes of a 10-tonne smooth-wheeled roller or a 2-tonne vibrating roller until all movement ceases. Sufficient water is to be added to obtain maximum compaction to the Engineer's approval. To each layer a 25 mm thick layer of sand complying with the specification of fine aggregate for concrete shall be spread over the surface and forced into the hardcore by the use of a vibrating roller weighing not less than 2 tones. This operation should be carried out when the materials are dry and repeated whilst the sand is well watered. Should all the sand be absorbed the Engineer may require a further layer to be applied and the process repeated.

The top surface of the hardcore shall be leveled or graded to fall as required, and shall then be blinded with a layer of similar material broken to 25 mm gauge and finished with a 10-tonne smooth-wheeled roller. The surface so obtained shall be to the Engineer's approval.

3.2.7 Compacted hardcore

The sub-grade shall be compacted by a smooth-wheeled roller of 8 to 10 tons weight or the vibrating roller of minimum 1300 Kg., or other approved plant. The



number of coverage shall be at least 10 and there shall be a 50% overlap of successive coverage. If so instructed by the Engineer, water shall be added during compaction to obtain optimum water content. Filling shall be compacted as above but in maximum 200 mm deep layers.

3.2.8 Sand

The sand shall be as described for fine aggregate but that for plastering shall be light in colour and well graded to a suitable fineness in accordance with the nature of work in order to obtain the finish directed.

3.3 Finishes

3.3.1 General

The Contractor will be required from an early stage in the contract to prepare samples, for the approval of the Engineer, of the various concrete finishes specified hereafter. Samples are to be prepared using the same materials and the same methods of construction, compaction, curing, etc. as the Contractor proposes to use for executing the full quantity of the work. A record of the mix, water content, method of compaction, any additives used, etc., is to be kept for each sample prepared. When the Engineer has approved a sample it will be kept on site in an approved location. The finishes in construction will be expected to be up to a standard equal to the approved sample. Consistency in cement colour, and the colour, grading and quality of aggregates must be maintained in all finished concrete work.

3.3.2 Mortars

Cement mortar shall consist of one part of Portland cement to three parts sand by volume. The cement/lime mortar shall consist of one part of Portland cement, one part of lime and six parts of sand by volume.

The ingredients of mortar shall be measured in proper gauge boxes on a boarded platform, the ingredients being thoroughly mixed dry, and again whilst adding water. In the case of cement/lime mortar, sand and lime shall be mixed first and then the cement added.

All mortar is to be thoroughly mixed to a uniform consistency with only sufficient water to obtain a plastic condition suitable for troweling. No mortar that has commenced to set is to be used or re-mixed for use.



3.3.3 Tamped finish

Areas so specified shall be finished at the time of casting with a tamped finish to the Engineer's approval produced by an edge board. Board marks are to be made to a true pattern and will generally be at right angles to the traffic flow. Haphazard or diagonal tamping will not be accepted.

3.3.4 Fair face

Fair face surfaces shall be clean, smooth, even, true to form, line and level, and free from all board marks, joint marks, and honeycombing, pitting, and other blemishes. Forms are to be provided with a smooth lining of plywood, steel, or other approved material which will achieve the required finish without any general rubbing down. Rubbing down will only be permitted to remove any projecting fins at corners or joints.

3.3.5 Fine face

Fine face surfaces shall be for Fair face above, but to a higher standard obtained from forms provided with an impervious sheet lining of metal or plastics faced plywood in large panels arranged in an approved pattern. Rubbing down shall only be permitted after an inspection by the Engineer. The finished surfaces shall be capable of receiving a painted finish.

3.3.6 Chisel-dressed finish

Chisel-dressed finish is to be carried out on any grade of concrete but not until it is at least 30 days old. The surfaces are to be fully chisel-dressed to remove a maximum of 12 mm (average 9 mm) of the surface by shearing and exposing the aggregate without excessive cracking of the surrounding matrix. Arises of columns, beams, etc., are pre-formed fair face with timber fillets set in the formwork and care must be taken in working up to these to preserve a clean line.

For vertical surfaces of walls and columns particular care must be taken to remove all sharp projections. For beam soffits this requirement is not necessary. All surfaces requiring this treatment are to have margins chisel-dressed by hand for a minimum width of 75 mm commencing from the fillet edge.

Thereafter, mechanical chisel-dressing may be used, but the Contractor must ensure that a uniform texture and even plane surface is achieved. The use of sharply pointed steel tools for both hand and mechanical chisel-dressing is essential. Upon completion the surfaces are to be thoroughly wire brushed and



washed down.

3.3.7 Protection of finishes

Wherever possible, in-situ exposed concrete finishes should be commenced at the highest level and worked progressively down the building. Precaution shall be taken to avoid staining or discoloration of previously finished concrete faces by leakage of grout from newly placed concrete. The Contractor shall, during all stages of construction, adequately protect all concrete finishes from damage by leaking grout, knocking, paint stains, falling plaster, etc. In cases of balustrade walls to staircases and members where damage is otherwise likely, concrete finishes shall be protected by cladding with timber, Celotex, or other approved sheeting. All Sub-contractors shall be informed accordingly on the precautions to be taken.

3.4 Blinding

All blinding concrete to be 1:3:6, or as otherwise instructed by the Engineer in writing.

3.5 Formwork

The method and system of formwork which the Contractor proposes to use shall be approved of by the Engineer before construction commences. Formwork shall be substantially and rigidly constructed of timber or steel or pre-cast concrete or other approved material.

All timber for formwork shall be good, sound, clean, sawn, well-seasoned timber, free from warps and loose knots and of scantings sufficiently strong for their purpose.

3.6 Construction of formwork

All formwork shall be of sufficient thickness and with joints close enough to prevent undue leakage of liquid from the concrete and fixed to proper alignment, level and plumb and supported on sufficiently strong bearers, shores, braces, plates etc. properly held together by bolts or other fastenings to prevent displacement, vibration or movement by the weight of materials, men and plant on same and so wedged and clamped as to permit easing and removal of the formwork without jarring the concrete. Where formwork is supported on previously constructed portions of the reinforced concrete structural frame, the Contractor shall by consultation with the Engineer ensure that the supporting concrete is capable of carrying the load and/or sufficiently propped from lower floors or portions of the frame to permit the load to be temporarily carried during



construction.

Soffits shall be erected with an upward camber of 5 mm for each 5 meters of horizontal span or as directed by the Engineer.

Great care shall be taken to make and maintain all joints in the formwork as tight as possible, to prevent the leakage of grout during vibration. All faulty joints shall be caulked to the Engineer's approval before concreting. The formwork shall be sufficiently rigid to ensure that no distortion or bulging occurs under the effects of vibration. If at any time the formwork is insufficiently rigid or in any way defective the Contractor shall strengthen or improve such formwork as the Engineer may direct.

The Contractor's attention is drawn to the various surface textures and applied finishes required and the faces of formwork next to the concrete must be of such material and construction and be sufficiently true to provide a concrete surface which will in each particular case permit the specified surface treatment or applied finish.

All surfaces which will be in contact with concrete shall be oiled or greased to prevent adhesion of mortar. Oil or grease shall be of a non-staining mineral type applied as a thin film before the reinforcement is placed. Surplus moisture shall be removed from the forms prior to placing of the concrete.

Temporary openings shall be provided at the base of columns, wall and beam forms and at any other points where necessary to facilitate cleaning and inspection immediately before the pouring of concrete. Before the concrete is placed the shuttering shall be trued-up and any water accumulated therein shall be removed. All sawdust, nails, chips and other debris shall be washed out or otherwise removed from within the formwork. The reinforcement shall then be inspected for accuracy of fixing. Immediately before placing the concrete the formwork shall be well wetted and inspection openings shall be closed. The erection, easing, striking and removing of all formwork must be done under the personal supervision of a competent foreman, and any damage occurring through faulty formwork or its incorrect removal shall be made good by the Contractor at his own expense.

After removal of formwork, all projections, fins etc., on the concrete surface shall be chipped off, and made good to the requirements of the Engineer. Any voids or



honeycombing shall be treated as described in “Faulty Concrete”.

3.6.1 Stripping formwork

All formwork shall be removed without undue vibration or shock and without damage to the concrete. No formwork shall be removed without the prior consent of the Engineer and the minimum periods that shall elapse between the placing of the concrete and the striking of the formwork will be as follows:

| | |
|---|---------|
| Beam sides, wall and columns | 2 days |
| Slab Soffits (props left under) | 3 days |
| Beam Soffits | 7 days |
| Removal of props (partly subject to 7 days concrete cube strength being satisfactory) to: | |
| Slabs | 10 days |
| Beams | 14 days |
| Cantilevered Beams and Slabs | 28 days |

If the Contractor wishes to take advantage of the shorter stripping times permitted for beams and slab soffits when props are left in place, he must so design his formwork that sufficient props are agreed with the Engineer can remain in their original positions without being moved in any way until the expiry of the minimum time for removal of props. Stripping and re-propping will not be permitted.

The above times may be reduced in certain circumstances, at the discretion of the Engineer provided an approved method is adopted at the Contractor’s expense to ensure that the required concrete strength is attained before the forms are stripped.

Solid strips in composite slabs shall be considered as beams. The tops of retaining walls shall be adequately supported with stout raking props at intervals required by the Engineer. These props are not to be removed until 7 days after casting of the floor slab is over.

3.6.2 Supporting props to wall and beam soffits

When directed by the Engineer, supporting props to wall and beam soffits are to



be left in position until the completion of the whole of the reinforced concrete structure. The props are to be to the approval of the Engineer and the Contractor must submit the suggested method of propping to the Engineer prior to removal of formwork to the relevant surfaces.

3.7 Concrete mixes

Concrete to be used shall be of the classes specified in "Ministry of Works standard Specification" Section 17.

| Class | Nominal mix | Trial Strength in N/mm ² | | Where used in this Contract |
|-------|-------------|--|-----------|---|
| | | 7 day | 28 day | |
| 15 | 1:3:6 | 13 | 19.5 | Blinding to foundations |
| 20 | 1:2:4 | 25 | 32.5 | Ground Slab, RING Beams Column and roof slab |

3.8 Concrete mixing and placing

The concrete shall be mixed only in approved power-driven mixers of a type and capacity suitable for the work, and in any event not smaller than 0.04/0.28 cu.m. capacity. The mixer shall be equipped with an accurate water measuring device. All materials shall be thoroughly mixed dry before water is added and the mixing of each batch shall continue for a period of not less than two minutes after the water has been added and until there is a uniform distribution of the materials and the mass is uniform in colour.

The entire contents of the mixed drum shall be discharged before recharging. The volume of mixed material shall not exceed the rated capacity of the mixer. Whenever the mixer is started, 10% extra cement shall be added to the first batch and no extra payment will be made on this account.

As a check on concrete consistency slump tests may be carried out and shall be in accordance with B.S. 1881. The Contractor shall provide the necessary apparatus



and carry out such tests as are required.

The slump of the concrete made with the specified water content, using dry materials, shall be determined and the water to be added under wet conditions shall be so reduced as to give approximately the same slump.

The concrete shall be mixed as near to the place where it is required as is practicable, and only as much as is required for a specified section of the work shall be mixed at one time, such sections being commenced and finished in one operation without delay. All concrete must be efficiently handled and used in the Works within twenty (20) minutes of mixing. It shall be discarded from the mixer direct either into receptacles or barrows and shall be distributed by approved means which do not cause separation or otherwise impair the quality of the concrete. Approved mechanical means of handling will be encouraged, but the use of chutes for placing concrete is subject to prior approval of the Engineer.

Concrete shall be placed from a height not exceeding 1,500 mm directly into its permanent position and shall not be worked along the shutters to that position. Unless otherwise approved, concrete shall be placed in a single operation to the full thickness of slabs, beams, and similar members, and shall be placed in horizontal layers not exceeding 1,500 mm deep in the walls and similar members.

Concrete in columns may be placed to a height of 4 meters with careful placing and vibration and satisfactory results. Where the height of the column exceeds 4 meters suitable openings must be left in the shutters so that this maximum lift is not exceeded.

Concrete shall be placed continuously until completion of the part of the work between construction joints as specified hereinafter or of a part of the approved extent. At the completion of a specified or approved part a construction joint of the form and in the positions hereinafter specified shall be made. If stopping of concrete be unavoidable elsewhere, a construction joint shall be made where the work is stopped. A record of all such joints shall be made by the Contractor and a copy supplied to the Engineer.

Any accumulation of set concrete on the reinforcement shall be removed by wire brushing before further concrete is placed. The Contractor shall provide runways for concreting to the satisfaction of the Engineer. Under no circumstances will the runways be allowed to rest on the reinforcement. Care shall be taken that



the concrete is not disturbed or subjected to vibrations and shocks during the setting period. Mixing machines, platforms and barrows shall be clean before commencing mixing and be cleaned on every cessation of work. Where concrete is laid on hardcore or other absorbent materials, the base shall be suitable and sufficiently wetted before the concrete is deposited.

3.9 Works cube tests

Work cubes are to be made at intervals as required by the Engineer in accordance with C.P. 114, and the Contractor shall provide a continuous record of the concrete work. The cubes shall be made in approved 150 mm moulds in strict accordance with the Code of Practice. Three cubes shall be made on each occasion. Each cube shall be marked with a distinguishing number (numbers) to run consecutively and the date, and a record shall be kept on site giving the following particulars:-

- a) Cube No.
- b) Date made
- c) Location in work
- d) 7-Day Test, Date, Strength
- e) 28-Day Test, Date, Strength

Cubes shall be forwarded, carriage paid, to an approved Testing Authority, in time to be tested two at 7 days and the remaining one at the discretion of the Engineer. No cube shall be dispatched within three days of casting. Copies of all Works Cube Tests shall be forwarded to the Engineer and one shall be retained on site. If the strengths required above are not attained and maintained during the carrying out of the contract, the Contractor will be required to increase the proportion of cement and/or substitute better aggregates so as to give concrete which does comply with the requirements of the contract. The Contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by Works Cube Tests.

3.10 Compaction

At all times during which the concrete is being placed, the Contractor shall provide adequate trained and experienced labour to ensure that the concrete is compacted in the forms to the satisfaction of the Engineer. Concrete shall not be placed at a rate greater than will permit satisfactory compaction or to a depth greater than 400 mm before it is compacted.



During and immediately after placing, the concrete shall be thoroughly compacted by means of continuous tamping, spading, slicing and vibration. Vibration is required for all concrete of classes 40, 35, 25, and 20. Care shall be taken to fill every part of the forms, to work the concrete under and around the reinforcement without displacing it to avoid disturbing recently placed concrete which has begun to set. Any water accumulating on the surface of newly placed concrete shall be removed and no further concrete shall be placed thereon until such water is removed.

Internal vibrators shall be of a frequency not less than 7000 cycles per minute and shall have a rotating eccentric weight of at least 0.05 Kg. with an eccentricity of not more than 12 mm. Such vibrators shall visibly affect the concrete within a radius of 250 mm from the vibrator. Internal vibrators shall not be inserted between layers of reinforcement less than one- and one-half times the diameter of the vibrators apart. Contact between the vibrators and reinforcement, and vibrators and formwork shall be avoided. Internal vibrators shall be inserted vertically into the concrete at not more than 500 mm centers and shall be moved constantly from place to place. No internal vibrator shall be permitted to remain in any one position for more than ten seconds and it shall be withdrawn very slowly from the concrete.

In consolidating each layer of concrete the vibrating head shall be allowed to penetrate and re-vibrate the concrete in the upper portion of the underlying layer. In the area where newly placed concrete in each layer joins previously placed concrete more than usual vibration shall be performed, the vibrator penetrating deeply at close intervals along these contacts. Layers of concrete shall not be placed until layers previously placed have been vibrated thoroughly as specified. Vibrators shall not be used to move concrete from place to place in the formwork.

At least one internal vibrator shall be of the high frequency, low amplitude type applied with the principal direction of vibration in the horizontal plane. They shall be attached directly to the forms at no more than 1200 mm centers. In addition to internal and external vibration the upper surface of suspended floor slabs shall be leveled by tamping or vibrating to receive finishes. Vibrating elements shall be of the low frequency high amplitude type operating at a speed of not less than 3000 r.p.m.



3.11 Curing and protection

Care must be taken that no concrete is allowed to become prematurely dry and the fresh concrete must be carefully protected, within two hours of placing, from rain, sun and wind by means of Hessian sacking, polythene sheeting, or other approved means. This protective layer and the concrete itself must be kept continuously wet for at least 7 days after the concrete has been placed. The contractor will be required to provide complete coverage of all fresh concrete for a period of 7 days. Hessian or polythene sheeting shall be in the maximum widths obtainable and shall be secured against wind. The Contractor will not be permitted to use old cement bags, Hessian or other materials in small pieces. Concrete in foundations and other underground work shall be protected from admixture with falling earth during and after placing. Traffic or loading must not be allowed on the concrete until the concrete is sufficiently matured, and in no case shall traffic or loading be of such magnitude as to cause deflection or other movement in the formwork or damage to the concrete members. Where directed by the Engineer props may be required to be left in position under slabs and other members for greater periods than those specified hereafter.

3.12 Faulty concrete

Any concrete which fails to comply with these specifications, or which shows signs of setting before it is placed shall be taken out and removed from site. Where concrete is found to be defective after it has set, the concrete shall be cut out and replaced in accordance with the Engineer's instructions. On no account shall any faulty, honeycombed, or otherwise defective concrete be repaired or patched until the Engineer has made an inspection and issued instructions for the repair. The whole cost whatsoever, which might be occasioned by the need to remove faulty concrete, shall be borne by the Contractor.

3.13 **Pre-cast units:** Pre-cast reinforced concrete slabs are to be cast with Grade 20 concrete in approved formwork, suitably vibrated and cured for 28 days before use.



4.0 REINFORCEMENT

4.1 Material

Reinforcement shall be as specified by the Engineer.

4.1.1 Bending and placing reinforcement

Reinforcement shall be cleaned before placing and secured with space blocks in the correct position. It shall be bound with suitable wire and have such cover as shown on the drawings.

4.1.2 Strength of reinforcement

Characteristic strengths of reinforcement are as given in B.S. 4449, 4461, and 4483.

4.1.3 Rod reinforcement

The steel reinforcement shall comply with the latest requirements of the following British Standards: - Hot Rolled bars for the Reinforcement of concrete to B.S. 4449 (metric units), Cold worked steel for the reinforcement of concrete to B.S. 4461 (metric units)

The Contractor will be required to submit a test certificate of the rollings. Reinforcement shall be stored on racks above ground level. All reinforcement shall be free from loose mill scale or rust, grease, paint or other substances likely to reduce the bond between the steel and the concrete.

4.1.4 BRC

The BRC should be electrically cross-welded steel wire mesh reinforcement to B.S. 4483: 1969, or as directed by the Engineer, and of the size and weight specified in the Drawings.

The fabric shall be free from scale, dust, rust, grease or other substance likely to reduce the bond between the steel and the concrete and shall be laid with a minimum 300 mm laps and bound with No. 18 S.W.G. annealed iron wire.



4.2 Fixing reinforcement

Reinforcement shall be accurately bent to the shapes and dimensions shown on the Drawings and in accordance with B.S. 4466 (1969). Reinforcement must be cut and bent cold and no welded joints will be permitted, unless so detailed. Reinforcement shall be accurately placed as shown on the Drawings, and before and during concreting, shall be secured against displacement by using No. 18 S.W.G. annealed binding wire or suitable clips at intersections, and shall be supported by concrete or metal supports, spacers or metal hangers to ensure the correct position. No concreting shall be commenced until the Engineer has inspected the reinforcement in position and until his approval has been obtained and Contractor has given two clear days' notice of intention to concrete.

The Contractor is responsible for maintaining the reinforcement in its correct position, according to the drawings, before and during concreting. During concreting, a competent steel fixer must be in attendance to adjust and correct the position of any reinforcement which may be displaced. The vibrators are not to come into contact with the reinforcement.

4.3 Position and correctness of reinforcement

Irrespective of whether any inspection and/or approval of the fixing of the reinforcement has been carried out, it shall be the Contractor's sole responsibility to ensure that the reinforcement complies with the details on the Drawings and is fixed exactly in the positions shown therein and in the positions to give the prescribed cover. The Contractor will be held entirely responsible for any failure or defect in any portion of the reinforced concrete structure and including any consequent delay, claims, third party claims. etc., where it is shown that the reinforcement has been incorrectly positioned or is incorrect in size or quantity with respect to the detailed Drawings.

4.4 Concrete cover to reinforcement

Unless otherwise directed, the concrete cover to rod reinforcement over main bars in any face shall be:-

| | |
|------------------------------|-------|
| Foundations against blinding | 50 mm |
| Strip foundations | 40 mm |
| Columns/Floor slab/Walls | 40 mm |
| Beams | 25 mm |



4.5 Projecting reinforcement

Where reinforcement projects from a concreted section of the structure and this reinforcement is expected to remain exposed for some time, it is to be coated with a cement grout to prevent rust staining on the finished concrete. This grout is to be brushed off the reinforcement prior to the continuation of concreting.

4.6 Fixtures

No openings, chases, holes or other voids shall be formed in the concrete without the prior approval of the Engineer. Details of any fixtures to be permanently built into the concrete including the proposed position of all electrical conduits 25 mm and over in diameter shall be submitted to the Engineer for his approval before being placed.

4.7 Chases, holes, etc., in concrete

The Contractor shall be responsible for the co-ordination with the Electrical and other Sub-Contractors for incorporating electrical conduits, pipes, fixing blocks, chases and holes in concrete members as required and must ensure that adequate notice is given to such Sub-Contractors informing them when concrete members incorporating the above are to be poured. The Contractor shall submit full details of these items to the Engineer for approval before the work is put in hand. All fixing blocks, chases, holes, etc., to be left in the concrete shall be accurately set out and cast with the concrete. Unless otherwise instructed by the Engineer, all electrical conduit to be positioned within the reinforced concrete shall be fixed inside the steel cages of beams and columns and between the top and bottom steel layers in the slabs and similar members.

The proposed position of all electrical conduits 25 mm and over in diameter which are to be enclose in the concrete shall be shown accurately on a plan to be submitted to the Engineer, whose approval shall be obtained before any such conduit is placed.



5.0 PIPEWORK

5.1 GI. pipes and fittings

All pipework through the weir wall shall be GI pipe while draining pipework to storage tank shall be HDPE PN 16 and above.

5.2 Sluice valves

Valves shall confirm to BS 1218

Sluice valves shall have heads for key operation unless otherwise stated. Valves shall be securely fixed with the spindle in vertical position, unless otherwise stated. They shall be checked for ease of operation and water tightness. Valve glands shall be repacked if necessary. Unless otherwise stated, sluice valves should be able to withstand the working pressure of the class of pipe adjoining the valve.

5.3 Air valves

Air valves shall be of cast iron conforming to BS 1452, grade 14. They shall be suitable for working pressures not less than the specified for the class of pipe specified. To which they are connected.

5.4 Manufacturer's instructions.

The contractor shall be responsible for obtaining copies of any manufacturer's instructions for pipes jointing and shall familiarizes himself and his employees with these instructions.

All necessary tools and equipment required for the laying, jointing and testing of pipes and joints shall be provided by the contractor at no extra costs.

5.5 Step Irons

Step irons shall be galvanized malleable iron and shall comply with B.S 1247.

5.6 Surface Boxes

Surface boxes shall confirm to B.S 1426.

5.7 Trench excavation.

Excavated material shall be placed tidily and compactly at the sides of the trench so as to occupy as little space as possible and to create as little nuisance as possible.

The bottom of the trench shall be absolutely smooth and completely free from stones and sharp objects so as to ensure that the pipes rests uniformly



upon original ground throughout its length.

Backfilling with excavated material beneath the pipe at low spots will not be permitted. Excavation below the bottom of the trench at pipe joints must be kept to a minimum.

If the bottom of the trench materials that is unsuitable for pipe laying, the Engineer may instruct the contractor to excavate below formation level and backfill to formation with suitable approved material properly compacted.

No pipe laying is to take place until the bottom of the trench is carefully examined by the Engineer's representative.

5.8 Minimum trench depth

The minimum depth for pipe trenches shall be that which provides a cover of 600 mm above the top of the pipe.

5.9 Backfilling in pipe trenches

Backfilling around the pipe and to a height of 300 mm above it is to be carried out by using material that is free from stones and carefully compacted in layers not exceeding 150 mm thick.

Backfill to trenches shall be properly compacted and subsequent subsidence shall be the Contractor's responsibility and shall make it good at his own expense.

All topsoil shall be kept aside during excavation and replaced after backfilling. All surplus material from the excavations shall be disposed.

5.10 Removal of timbering

All timbering materials shall be removed from trenches before or during backfilling unless, in the opinion of the Engineer, its removal will cause any subsidence in which case he may instruct the contractor to backfill leaving the timbering in place.

5.11 Reinstatement

Immediately backfilling of trenches has been completed, temporary reinstatement of the ground surface shall take place.

When in the opinion of the Engineer's representative a suitable period has elapsed after the temporary reinstatement and expects no further settlement, he shall allow the contractor to carry out the permanent reinstatement. This shall in any way relieve the contractor of his



responsibility for the reinstatement and, should any further unforeseen settlement take place, the contractor will be required to make good the reinstatement at his own expense.

Permanent reinstatement means the ground surface shall be restored to its original form and condition.

5.12 Handling and storing pipes

Particular care shall be taken during loading, unloading, handling and transportation to avoid distortion, flattening, denting, scoring or any damage to external or internal coating, sheathing or lining of the pipes, fittings, etc.

Pipes shall be stacked clear of the ground on the timbers of adequate dimensions to prevent damage to the pipes and successive tiers shall be separated by timber of similar dimensions. Wooden wedges shall be fixed to these timbers to prevent the wedges from rolling.

Fittings etc. shall be stacked clear of the ground on timbers not more than 1 tier high.

All valves rubber joint rings, gaskets, nuts, bolts, washers and similar fittings shall be stored in approved locked premises and shall not be distributed to the trench until immediately prior to fixing. All rubber joint rings and gaskets must be stored in a cool place.

All UPVC pipes and fitting should be stored under cover and protected from weather to the satisfaction of the Engineer.

5.13 Examination of pipes

Before laying, each pipe must carefully be examined for damage. Any defects in the external coating or internal lining shall be made good. The pipes shall be carefully examined for cracks or chipped ends. Damaged ends shall be cut off beyond the damaged area and machined true.

All pipes shall be cleaned internally before laying.

5.14 Laying of pipes

Pipes shall be laid true to line by means of a string line stretched along the sides of the pipes and true to level by means of a straight edge of at least 4 metres long kept inside the pipes and pulled forward to pegs boned in at suitable intervals between sight rails set to the proper levels



Where pipes are to be laid on 'normal' or imported material the floor of the trench shall be compacted and shaped so that the barrel rests over a width of the least one third of its diameter and throughout the length of the barrel upon the floor. Holes shall be excavated under the joints and sockets so that the sockets do not bear on the ground. The underside of the barrel and socket shall then be packed hard with earth or gravel fill material as directed by the Engineer and of maximum particle size not exceeding 25mm diameter and rammed solid

Mains shall be boned to even gradients using site rails no dips or bumps permitted.

All pipes shall be solidly bedded on the trench bottom. Joint holes shall be as small as possible and filled in compactly before the refilling of the trench commences.

The contractor shall make full allowance for all cuttings and jointing of pipes.

5.15 Concrete surround to pipelines

Where pipelines pass under streams and rivers or under roads the sections of pipeline under the stream river or road and for a minimum distance of 1.0m clear on either side of the bank or edge thereof or such greater distance as the Engineer's Representative may require shall be surrounded with Class 15 concrete in accordance with the typical detail shown on the Drawings so as to provide a minimum 150mm thickness protective surround to the pipe.

Similar class 15 concrete surround shall be provided elsewhere as may be required by the Engineer for the added protection of the pipeline at any point along the pipeline route.

5.16 Thrust and anchor blocks

Concrete thrust and anchor blocks shall be formed at bends tees and valves in accordance with the typical sections shown on the Drawings or otherwise as directed by the Engineer. The additional excavation shall be made after the bends etc. have been jointed and the concrete shall then be placed with all possible speed. The back of supports and blocks shall abut on to solid ground all loose material being removed before concreting. The concrete used for thrust and anchor blocks shall be Class 15 and after placing shall be kept in view for not less than six hours. No pressure shall be applied in any section of main until the concrete has had at least three days curing.



5.17 Flotation of pipeline

The Contractor shall be solely responsible for ensuring that flotation of the pipeline does not occur during construction. The extent of the backfill placed over each pipe after laying and before testing shall be such as will prevent flotation of the pipeline

Should any section of the pipeline float out of line or level, the section of pipeline so affected shall be removed and re-laid in accordance with the Specification to the satisfaction of the Engineer's representative.

5.18 Fixing surface boxes and penstocks

Valves penstocks and other fittings shall be securely fixed and where required extension spindles and headstocks shall be properly aligned and fixed in a vertical position. They shall be tested for ease of operation and water tightness and valve glands shall be repacked where necessary. Any damaged protective coating shall be made good and they shall be left clean in all respects.

5.19 Surface water

No surface water or other extraneous matter shall be allowed to enter the pipes during or after laying. Should this happen, the contractor shall arrange for the necessary cleaning of the pipe at his own expense.

Plans to divert lagga flow through the existing pipes should be discussed and confirmed with the engineer.

5.20 Painting of exposed pipes, valves, fittings and metalwork

All pipes, valves, tubes, manhole covers and the like, that are left exposed to the air at river crossings, in manholes, chambers etc., except where galvanized, shall be thoroughly cleaned and painted with two coats of approved bituminous paint after erection.

5.21 Testing of pipes

All pipes and apparatus that are to contain water under pressure shall be tested to the working pressure plus 50%. If the pipes are in the trench they shall be backfilled for the two thirds of the distance between joints, leaving joints exposed. The fill shall be a minimum of 450mm deep.

Testing shall take place in the presence of the Engineer's representative as



the work proceeds, test lengths being approved by the Engineer. The maximum length of the pipe laid without pressure testing must not exceed 3 km.

Pipes shall be securely anchored, and pipe ends shall be closed by means of caps or blank flanges. Sluice valves shall not be used at the end of a test length.

The contractor shall give the Engineer's representative a minimum of 24 hours' notice of his intention to carry out a test.

All water, materials and apparatus for carrying out the tests are to be provided by the contractor at no extra cost.

The procedure for testing is as follows.

- (a) The test length shall be filled with water and brought to the required test pressure by means of a pressure pump. When the required is obtained, indicated by an approved pressure gauge, the pump shall be disconnected, and the pressure of the water watched for a period of 60 minute, any drop in pressure being carefully monitored.
- (b) If there is a drop in pressure at the end of the 60 minutes period, the pump should be reconnected, and the test pressure re-established. The pump should then be disconnected, and the pressure lowered immediately by bleeding off the water from the mains through a tap into a container. When the pressure reaches the same pressure that was indicated at the end of, the 60 minutes test period, the tap is closed, and the amount of water collected in the container is measured. This amount of water is the leakage and for the test to be successful must not be greater than the "allowable leakage" as calculated below.

$$\text{Allowable leakage (litres)} = d \cdot l \cdot p / 1,227,000$$

Where;

- d –Diameter of pipe (mm)
- l-length of pipe under test(m)
- p- Average pressure in pipe(m)

- (c) If the test fails, it is the contractor's responsibility to locate the leak and remedy it so that the pipeline passes the test.



5.22 Sterilization

Treated water mains should be washed out and sterilized before being put into service. Sterilization should consist of introducing water containing a quantity of chlorine such that there is a concentration of chlorine throughout the mains at not less than 30 parts per million. This solution is to remain in the pipeline for a period of 24 hours after which the main shall be thoroughly flushed out with water to be used for the supply.

The inside of water retaining structures shall, after being thoroughly cleaned, be filled to overflow level with water containing 20 parts per million of chlorine and left for at least 24 hours before flushing out.

After flushing, bacteriological samples of water shall be taken in accordance with the Engineers instructions. If any of the samples proves to be inferior to that of the supply water, the sterilization and flushing shall be repeated.

All costs of sterilization shall be the contractor's responsibility. The cost of sampling and testing shall be the responsibility of the employer if successful but if not shall be borne by the contractor.

5.23 Manholes and Chambers

Manholes and chambers shall be constructed in accordance with the standard manhole detail drawings. Where the Contractor wishes to construct manholes or chambers other than in accordance with the said drawings, he shall submit details to the Engineer for his approval at least 14 days prior to the intended date of commencement of construction.

The incoming and outgoing lengths of pipes shall terminate at the internal face of the concrete with spigot ends which in the case of concrete pipes shall not be cut ends. The concrete surrounding the spigot ends shall be placed in the single operation to at least 150mm. over the top of the pipes for the full thickness of the wall and the whole of the base wall brought up to the same level. The concrete shall be of a minimum thickness of 40mm. between the pipe and structural floor and particular care shall be taken to ensure that the concrete completely fill the spaces beneath pipes and that a sound joint is made all round each pipe.



Access opening to manholes shall be sited on the downstream side of manholes unless another position is necessary for accommodating the rodding-eye of a backdrop. Manholes and chambers are no necessary to be placed centrally over pipelines but shall be so located that the best use can be made of the area of the bottom of the manhole of chamber when arranging channels, particular regard being paid to backdrop.

5.24 Channels and Benches

Channels in manholes and chambers are to be formed in Class '20' concrete benching finished with 50mm, minimum Class '20' fine concrete or as directed by the Engineer. The invert of the channel is to be formed to a fall not less than the lesser gradient of the two adjacent pipelines. All branch drains are to be connected to the main channel with half-channel branches of a proper angle and radius to lead into the run of the main channel the bends being as "slow" as possible.

Sides of channels and benches are to be finished with 50mm thick Class '20' fine concrete and all shall be homogeneous. Special care shall be taken to produce perfectly smooth finish all over and to ensure the uniformity of the slope of the benching of the top of the nosing and of the invert and that proper clearance is given round valves, penstocks and other fittings.

Sides of channels shall be carried up vertically above the half round channel and shall join the benchings with nosings of 25mm. radius. Benchings shall rise at a slope of one in six from the edge of the main channel starting from an assumed line between the crowns of the incoming and outgoing pipes. Inverts sides of channels and benchings of each manhole are to be completed before the chamber slab is placed in position.



BILLS OF QUANTITIES AND DRAWINGS

PREAMBLE

- 1.1 Documents to be read in conjunction with the bill of quantities**
The bill of quantities shall be read in conjunction with the tender documents comprising the conditions of contract, specifications and drawings.
- 1.2 Description of items**
Description of items in the bills of quantities are given only sufficient details to ensure identification of the works covered by the respective items with that shown on the drawing and described in the specification.
- 1.3 Quantities**
Actual quantities shall be determined by the Engineer's representative on site as works proceed. The contractor shall ensure at all times that his representative is present to witness and agree on the measurement by the engineer's representative.
- 1.4 Quantities for payment**
All quantities for payment will be determined by the engineer on the basis of the actual net quantities in the accepted permanent works in accordance with clause 56 of the condition of contracts.
- 1.5 Each item to be priced**
A rate shall be entered against each item in the bill of quantities. In neither the rate or the price is entered against any time, the cost thereof shall be assumed to be include elsewhere.
- 1.6 Excavation**
The rate of excavation shall include that of setting aside for re-use or disposal to spoil as appropriate.
- 1.7 Provisional sums**
The contractor shall not carry out any work in respect of any provisional item for which a provisional sum is included in the bills of quantities until he has a written instruction from the engineer regarding such items.
- 1.8 Housing and labour**
The contractor will provide housing for the construction staff, security and storage for his equipment and materials.



1.9 VAT and Other Taxes

All prices are to be stated inclusive of VAT. Withholding Tax and VAT will be withheld from all payments as per current GoK regulations.

1.10 Drawings

The list of the provided drawings to aid in tendering include:



EVALUATION CRITERIA

PROPOSAL AWARD RECOMMENDATION

Selection Evaluated criteria

The Evaluated Proposal that will be recommended for the award of the contract will be the one found to be the most competitive proposal under the Technical and Financial (Price) Evaluation Criteria Selection Method – Quality and Cost Based selection (QCBS)

The received proposals will be evaluated in three stages as detailed below:

1. Stage 1: Compliance with Mandatory Requirements;
2. Stage 2: The Technical Evaluation (Capacity to Deliver the Service)
3. Stage 3: The Financial Evaluation (Quoted Price)

STAGE 1: MANDATORY REQUIREMENTS (MR)

The following mandatory requirements must be met notwithstanding other requirements in the documents:

| NO | REQUIREMENTS | BIDDER'S RESPONSE |
|------|--|-------------------|
| MR 1 | Provide documentary evidence of the company's Certificate of Incorporation (Legal Structure). | |
| MR 2 | Provide Firms CR12 for Limited liabilities companies, or copy of Identification for card for sole proprietors or CR13 for partnership/Copy of partnership deed Showing list of directors and share holdings | |
| MR 3 | Provide copy of the company's current Certificate of Tax Compliance issued by Kenya Revenue Authority (KRA) valid at least up to the date of opening the tender. | |
| MR 4 | Provide Tender Security (bid bond) of Kshs 50,000.00 (Kenya Shillings fifty thousand only) from a bank or an Insurance Company approved by PPR. | |
| MR 5 | Registration with National Construction Authority (NCA) | |
| MR 6 | Payment of a non-refundable fee of Kshs. 3,000.00 (Three thousand Kenya Shillings) to Northern Rangelands Trust account number 0308167747 ABSA BANK NANYUKI BRANCH and ATTACH deposit slips with their bid documents upon submission of the documents. | |



STAGE 2 & 3: TECHNICAL EVALUATION / SCORING CRITERIA

The proposals of Consulting Firms shall be evaluated based on the following criteria and sub-criteria:

EVALUATION CRITERIA

| A | MANDATORY AND TECHNICAL EVALUATION | | | | |
|--|---|-----------|---|-------------------|---------------------|
| 1 | MANDATORY REQUIREMENTS | | TENDERERS RESPONSE | REFERENCE | TICK AS APPROPRIATE |
| 1.1 | Provide documentary evidence of the company's Certificate of Incorporation (Legal Structure). | | | | |
| 1.2 | Provide Firms CR12 for Limited liabilities companies, or copy of Identification for card for sole proprietors or CR13 for partnership/Copy of partnership deed Showing list of directors and share holdings | | | | |
| 1.3 | Provide copy of the company's current Certificate of Tax Compliance issued by Kenya Revenue Authority (KRA) valid at least up to the date of opening the tender. | | | | |
| 1.4 | Provide Tender Security (bid bond) of Kshs 50,000.00 (Kenya Shillings fifty thousand only) from a bank or an Insurance Company approved by PPRA. | | | | |
| 1.5 | Registration with National Construction Authority (NCA) | | | | |
| 1.6 | Tender Fee of Ksh 3,000.00- Provide evidence of actual receipt/deposit slip paid | | | | |
| IF ALL THE ABOVE IS NOT PROVIDED AND VERIFIED - THE SUPPLIER/CONTRACTOR IS AUTOMATICALLY DISQUALIFIED | | | | | |
| 2. | TECHNICAL EVALUATION | POINTS | WEIGHTED SCORE | TENDERER S REPOSE | MAX SCORE |
| | ADMINISTRATIVE | 25 | 25 | | |
| 2.1 | Contractors Particular | 5 | <ul style="list-style-type: none"> ▪ Company profile-1 mark ▪ Physical Address (Postal Address, Cell/phone/Email)- 1 Mark ▪ Organizational Structure – 3 marks | | |
| 2.2 | General Construction Experience Experience under construction contract in the role of prime contractor, Joint Venture member, Sub contractor or Management contractor for the last 5 years. | 10 | 5 years and above award 10 marks others prorate at No. of years x 10/5 | | |



| | | | | | |
|---------------------------------|--|------------|---|--|--|
| 2.3 | Key Personnel and their experience: Attach Cvs, Evidence of Qualifications (Certificates, recommendation. | 10 | <ul style="list-style-type: none"> ▪ <u>Civil/Construction Engineer Qualification</u> Degree and above -3 marks. Diploma (of over 4yrs) - 3 marks Diploma less than 4 years– 1mark ▪ Site Agents- 2 marks ▪ Foreman -(Water/Infrastructure Works)1 mark ▪ Equipment operators- 1 mark ▪ Others Include Works inspector, Plumber, Mason, Electrician , Artisan etc. (One provided- 1 mark More than 2 provided- 2 marks) | | |
| EXECUTION OF THE PROJECT | | 75 | | | |
| 2.4 | Past Specific Experience. Provide a list of all clients with references (names and telephone of contact persons) to which the company has done similar works in the last 3 years | 40 | 4 Clients of similar works or More 40 Points, others prorate at Number of clientsx40/4 Must provide a list evidenced by Offer letter, signed contract/LPO's/ project completion certificates/project recommendation letters related to the project in Question | | |
| 2.5 | Equipment Holdings Schedule of contractor's equipment's with proof evidence of ownership logbooks, lease or hiring | 5 | <ul style="list-style-type: none"> ▪ Vehicle suitable for the works – 2 marks ▪ Concrete Mixers – 2 marks ▪ Other equipment to be used in the delivery of the work- 1 marks | | |
| 2.6 | Submission of Work schedule List of activity schedule, timelines and deliverables | 15 | Has Provided work schedule -15 marks Has not provided work schedule- 0 marks | | |
| 2.7 | Completion period quoted in the form of Tender | 15 | Shortest period 15 points Others Prorate at <u>Shorted</u> <u>Periodx15/Bidders</u> Quoted Period. | | |
| TOTAL TECHNICAL SCORES | | 100 | | | |
| B FINANCIAL EVALUATION | | 100 | | | |
| 1.1 | Bill of Quantity Checking that the Tenderer has quoted prices based on all costs including duties and taxes. | 10 | Comprehensive Filled Bill of quantities | | |
| 1.2 | Historical Financial Performance Provide Certified Audited Financial reports for the last 2 year | 20 | Year 1 <ul style="list-style-type: none"> ▪ Audited Financial statements -7 marks ▪ Bank statement - 3 marks Year 2 <ul style="list-style-type: none"> ▪ Audited Financial statements - 7 marks ▪ Bank statement statements -3 marks | | |



| | | | | | |
|------------------------------|--|------------|--|--|--|
| 1.3 | Average Annual Turnover - defined as annual sales from company operations as provided in the audited financial report for the past 2 years. | 10 | <ul style="list-style-type: none"> ▪ Average turnover of above Ksh 10 million - (10 marks) ▪ Average turnover of Ksh 10 million to Ksh 5 million - (5 marks) ▪ Average turnover of ksh 5 million to Ksh 2 million per year- (3 marks) ▪ Average turnover of up to Ksh 2 million per - (2 marks) | | |
| 1.4 | Evidence of Financial Resources (cash in hand/Bank, lines/letter of credit, over draft facility etc.) | 10 | <ul style="list-style-type: none"> ▪ Has financial resources between 100-51% of the cost of the project- (10 marks) ▪ Has financial resources between 50%-20% of the cost of the project-(5 marks) ▪ Has financial resources below 20% of the cost of the project – (2.5 marks) ▪ Has not indicated sources of financial resources – (0 marks) | | |
| 1.5 | Evaluated price Comparison to the quoted price to the Engineers Estimates. | 50 | Engineers estimates 50 points; others prorate as; Bidders' points= $\frac{\text{bidders quote} \times 50}{\text{Engineers estimates}}$ | | |
| TOTAL FINANCIAL SCORE | | 100 | | | |
| | AVERAGE SCORE | 100 | $\frac{(\text{TTS} * 100\% + \text{TFS} * 100\%)}{2}$ TTS - Weight given to the total technical Score TFS- Weight given to the total Financial Score | | |

D. AWARD OF CONTRACT

The contract will be awarded to the Quotation that:

1. Will have complied with all the Mandatory Requirements.
2. Has attained highest score but must be exceeding 70% under scoring criteria.

