THE UNITED REPUBLIC OF TANZANIA

PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT

MPWAPWA DISTRICT COUNCIL
P.O.BOX 12
MPWAPWA

CONTRACT DOCUMENT

FOR

. CONSTRUCTION OF THREE IN ONE STAFF HOUSE AT PWAGA HEALTH CENTRE.

CONTRACT NO. LGA/023/2021-22/HQ/W/117

BETWEEN

MPWAPWA DISTRICT COUNCIL

AND

AZHAR CONSTRUCTION COMPANY LIMITED
P.O. BOX 35918
DAR ES SALAAM.

<u>PREPARED BY</u>
THE DISTRICT EXECUTIVE DIRECTOR'S OFFICE
MPWAPWA DISTRICT COUNCIL
P.O.BOX 12
MPWAPWA

FEBRUARY, 2022

FORM OF AGREEMENT

This agreement is made on.....17.....day of.....02.....in the year 2022

BETWEEN

MPWAPWA DISTRICT COUNCIL OF P.O.BOX 12, MPWAPWA, hereinafter called the Employer

AND

M/S AZHAR CONSTRUCTION COMPANY LIMITED, P.O. BOX 35918, DAR ES SALAAM, hereinafter called the "contractor" of the other part

WHERES the Employer desirous these works for : **CONSTRUCTION OF THREE IN ONE STAFF HOUSE AT PWAGA HEALTH CENTRE LGA/023/2021-22/HQ/W/117** should be executed **by the Contractor**

AND WHEREAS the Contractor has accepted a tender for the execution and completion of such works and remedy of any defect therein.

Now it is hereby agreed as follows

1. That, the following documents shall be deemed to form and read and construed as part of this Contract.

    1. Form of agreement
    2. Letter of Acceptance,
    3. Bid Submission Form
    4. General Condition of Contract
    5. Specification
    6. Price Bill of Quantities

2. In consideration of payment to be made by the "Employer" to the Contractor as hereinafter mentioned, the Contractor hereby covenants with "Employer"
    - To execute and complete the Works in conformity in all respects with the provisions of the Contract.

    The "Employer" hereby covenants

To pay the "Contractor" in execution, completion of the Work and the remedying of defects wherein at the Sum of **Tsh 89,860,858.60 (Eighty Nine Million Eight Hundred Sixty thousand Eight hundred Fifty Eighy and Sixty Cent Tanzania Shillings.**

Contract Duration is 120 days. The Works shall Commence on this 17 day of 02 2022 completed on or before this 16 day of 06 in the year 2022 (Hereinafter referred to as the date of Completion) or such others date as may be extended under the provisions of the Contract.

The designated Supervising Officer under the Contract shall be the DISTRICT ENGINEER (DE), Mpwapwa District Council.

In witness whereof the parties have caused this Agreement to be executed the day and year first before written.

FOR AND BEHALF OF THE EMPLOYER

District Executive Director

Name MUGANYIZI HALILI

Position DED

Signature

Date 17/02/2022

MKURUGENZI MTENDAJI HALMASHAURI YA WILAYA S.L.P. 12 MPWAPWA

In the Presence of

Name GEORGE O. FUME

Position M/KITI

Signature

Date 17/02/2022

MKURUGENZI MTENDAJI HALMASHAURI YA WILAYA MPWAPWA

For and on behalf of the Contractor.

Name SALUM SELEMANI RUVEGOYA

Position COMPANY SECRETARY

Signature

Date 17/2/2022

AZHAR CONSTRUCTION COMPANY LIMITED P. O. Box 35918 Tel: 0787 021 444 DAR ES SALAAM

In the Presence of

Name MUHAMMED SEIF

Position MUHASIBU

Signature

Date 17/02/2022

JAMHURI YA MUUNGANO WA TANZANIA
OFISI YA RAIS
TAWALA ZA MIKOA NA SERIKALI ZA MITAA
HALMASHAURI YA WILAYA YA MPWAPWA

Fax DISCO MPWAPWA

Fax Na: 255- 026 -2320122/2020152
Email:ded@mpwapwapwadc.go.tz
Website:www.mpwapwa.go.tz

S. L. P. 12
MPWAPWA
16/02/2022

In reply Plese quote:
Ref.No. HW/MPW/B10/174/84

Azhar Construction Company Limited
P.O. Box 35918
Dar Es Salaam.

REF: No. CONSTRUCTION OFTHREE IN ONE STAFF HOUSE AT PWAGA HEALTH CENTRE LGA/023/2021-22/HQ/W/117

SUB: Letter of award.

The above Mentioned subject refers.

Be informed that Tender No. **LGA/023/2021-22/HQ/W/117** on the mentioned above subject has been accepted as per your quoted price of **Tsh. . 89,860,858.60** (Eighty Nine Million Eight Hundred Sixty thousand Eight hundred Fifty Eighy and Sixty Cent Tanzania Shillings.

This acceptance was adjudicated by Mpwapwa District Council Tender Board Meeting held on 02nd February, 2022. The work should be completed within 120 days from the commencement date.

You are therefore required to contact the District Executive Director with your witness (es) in order to sign the Contract.

NOTE: You are required to submit Performance security as indicated in SCC clause 26, GCC clause 55.1, before starting implementation of the works.

Sincerely,

Mwanahamisi H. Ally
DISTRIC EXCECUTIVE DIRECTOR
MPWAPWA DISTRICT COUNCIL
MPWAPWA

SECTION IV: GENERAL CONDITIONS OF CONTRACT

A. General

1. Definitions 1.1 Boldface type is used to identify defined terms.

The **Adjudicator** is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in Clauses 24 and 25 hereunder.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Tender.

Compensation Events are those defined in Clause 47 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with Sub-Clause 55.1.

The **Contract** is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.3 below.

The **Contractor** is a person or corporate body whose Tender to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the completed tendering document submitted by the Contractor to the Employer.

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

Days are calendar days; months are calendar months.

Dayworks are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

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

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

The **Defects Liability Period** is the period named in the **Special Conditions of Contract** and calculated from the Completion Date.

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

The **Employer** is the party who employs the Contractor to carry out the Works.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

Force Majeure means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of the Employer in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes

The **Initial Contract Price** is the Contract Price listed in the Employer's Letter of Acceptance.

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

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

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

The **Project Manager** is the person named in the **Special Conditions of Contract** (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.

The **Site** is the area defined as such in the **Special Conditions of Contract**.

Site Investigation Reports are those that were included in the tendering documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.

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

The **Start Date** is given in the **Special Conditions of Contract**. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

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

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

responsibilities to other people except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.

7. Communications

7.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.

8. Subcontracting

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

9. Other Contractors

9.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as referred to in the **Special Conditions of Contract**. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification

10. Personnel

10.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the **Special Conditions of Contract**, to carry out the functions stated in the Schedule or other personnel approved by the Project Manager. The Project Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Schedule.

10.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

11. Employer's and Contractor's Risks

11.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

12. Employer's Risks

12.1 From the Start Date until the Defects Correction Certificate has been issued, the following are Employer's risks:

(a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to

(i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or

(ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person

employed by or contracted to him except the Contractor.

(a) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

12.2 From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer's risk except loss or damage due to

(a) a Defect which existed on the Completion Date,

(b) an event occurring before the Completion Date, which was not itself an Employer's risk, or

(c) the activities of the Contractor on the Site after the Completion Date.

13. Contractor's Risks

13.1 From the Starting Date until the Defects Correction Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer's risks are Contractor's risks.

14. Insurance

14.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the **Special Conditions of Contract** for the following events which are due to the Contractor's risks:

(a) loss of or damage to the Works, Plant, and Materials;

(b) loss of or damage to Equipment;

(c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and

(d) personal injury or death.

14.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

14.3 If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a

debt due.

14.4 Alterations to the terms of an insurance shall not be made without the approval of the Project Manager.

14.5 Both parties shall comply with any conditions of the insurance policies.

15. Site Investigation Reports

15.1 The Contractor, in preparing the Tender, shall rely on any Site Investigation Reports referred to in the **Special Conditions of Contract**, supplemented by any information available to the Tenderer.

16. Queries about the Special Conditions of Contract

16.1 The Project Manager will clarify queries on the **Special Conditions of Contract**.

17. Contractor to Construct the Works

17.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.

18.Commence-ment and Completion

18.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Programme submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

19. Approval by the Project Manager

19.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, who is to approve them if they comply with the Specifications and Drawings.

19.2 The Contractor shall be responsible for design of Temporary Works.

19.3 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

19.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

19.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.

20. Protection of the Environment

20.1 The Contractors shall take all reasonable steps to protect the environment and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

20.2 The Contractors shall ensure that emissions, surface discharges and effluent from his activities shall not exceed prescribed values in the

environmental laws.

21. Labour Laws

21.2 The Contractor shall comply with all the relevant labour laws applicable in the Country, including laws relating to workers employment, working hours, health, safety, welfare, immigration and shall allow them all their legal rights.

21.2 The Contractor shall require his employees to obey all applicable laws, including those concerning safety at work.

22. Health and Safety

22.1 The Contractor shall at all times take all reasonable precautions to maintain the health and safety of his personnel.

22.2 The Contractor shall ensure that first aid facilities are available at all times at the site and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

22.3 The Contractor shall notify the Employer details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety, and welfare of persons, and damage to the property, as the Employer may reasonably require.

22.4 The Contractor shall conduct an HIV-Aids awareness programme, and shall take other such measures as specified in the **Special Conditions of Contractor** to reduce the risk of transfer of HIV virus between and among Contractor personnel, the Employers Staff and the surrounding community.

23. Discoveries

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

24. Possession of the Site

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

25. Access to the Site

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

26. Instructions, Inspections and Audits

26.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is

located.

26.2 The Contractor shall permit the Government of the United Republic of Tanzania to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the Government of the United Republic of Tanzania, if so required by the Government of the United Republic of Tanzania

27. Disputes

27. 1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager's decision.

28. Procedure for Disputes

28.1 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

28.2 The Adjudicator shall be paid by the hour at the rate specified in the **Tender Data Sheet** and **Special Conditions of Contract,** together with reimbursable expenses of the types specified in the **Special Conditions of Contract,** and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision will be final and binding.

28.3 The arbitration shall be conducted in accordance with the arbitration procedure published by the institution named and in the place shown in the **Special Conditions of Contract.**[1]

29. Replacement of Adjudicator

29.1 Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator will be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority designated in the **Special Conditions of Contract** at the request of either party, within 14 days of receipt of such request.

B. Time Control

30. Programme

30.1 Within the time stated in the **Special Conditions of Contract**, the Contractor shall submit to the Project Manager for approval a Programme showing the general methods, arrangements, order, and timing for all the activities in the Works.

30.2 An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.

30.3 The Contractor shall submit to the Project Manager for approval an updated Programme at intervals no longer than the period stated in the **Special Conditions of Contract**. If the Contractor does not submit an updated Programme within this period, the Project Manager may withhold the amount stated in the **Special Conditions of Contract** from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.

30.4 The Project Manager's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Project Manager again at any time. A revised Programme shall show the effect of Variations and Compensation Events

31. Extension of the Intended Completion Date

31.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.

31.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

32. Acceleration

32.1 When the Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager will obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date will be adjusted accordingly and confirmed by both the Employer and the Contractor.

32.2 If the Contractor's priced proposals for acceleration are accepted by the Employer, they shall be incorporated in the Contract Price and treated as a Variation.

33. Delays Ordered by the Project Manager

33.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.

34. Management Meetings

34.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.

34.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

35. Early Warning

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

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

C. Quality Control

36. Identifying Defects

36.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover

and test any work that the Project Manager considers may have a Defect.

37. Tests

37.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.

38. Correction of Defects

38.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the **Special Conditions of Contract**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

38.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.

38.3 If the Contractor has not corrected a defect within the time specified in the Employer's notice, a penalty for lack of performance will be paid by the Contractor. The amount to be paid will be calculated as a percentage of the cost of having the defect correct, assessed as described in Clause 49.

39. Uncorrected Defects

39.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

D. Cost Control

40. Bill of Quantities

40.1 The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.

40.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor shall be paid for the quantity of the work done at the rate in the Bill of Quantities for each item.

41. Changes in the Quantities

41.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change.

41.2 The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Employer.

41.3 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the

Bill of Quantities.

42. Variations

42.1 All Variations shall be included in updated Programmes produced by the Contractor.

43. Payments for Variations

43.1 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.

43.2 If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work is above the limit stated in Sub-Clause 41.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work.

43.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.

43.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

43.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

44. Cash Flow Forecasts

44.1 When the Programme is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.

45. Payment Certificates

45.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.

45.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor within twenty eight 28 days of receipt of the certificate from the contractor.

45.3 The value of work executed shall be determined by the Project Manager.

45.4 The value of work executed shall comprise the value of the

quantities of the items in the Bill of Quantities completed.

45.5 The value of work executed shall include the valuation of Variations and Compensation Events.

45.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

45.7 The Project Manager shall not bound to certify any payment, if the net amount, after all retentions and deductions would be less than minimum amount of Interim Payment Certificate stated in the **Special Condition of Contract.**

46. Payments

46.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 28 days of the date of each certificate. If the Employer makes a late payment, the Contractor shall be paid interest on the late payment in the next payment Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made as indicated in the **Special Conditions of Contract.**.

46.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.

46.3 Unless otherwise stated, all payments and deductions will be paid or charged in the proportions of currencies comprising the Contract Price.

46.4 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

47. Compensa-tion Events

47.1 The following shall be Compensation Events:

(a) The Employer does not give access to a part of the Site by the Site Possession Date as per Clause 24.1.

(b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.

(c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.

(d) The Project Manager instructs the Contractor to uncover or to

carry out additional tests upon work, which is then found to have no Defects.

(e) The Project Manager unreasonably does not approve a subcontract to be let.

(f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to tenderers (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.

(g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.

(h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

(i) The advance payment is delayed.

(j) The effects on the Contractor of any of the Employer's Risks.

(k) The Project Manager unreasonably delays issuing a Certificate of Completion.

(l) Other Compensation Events described in the Contract or determined by the Project Manager shall apply.

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

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

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

48. Taxes

48.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 28 days before the submission of tenders for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of Clause 50.

49. Currencies

49.1 Where payments are made in currencies other than the Tanzania Shillings, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Tender.

50. Price Adjustment

50.1 The amounts payable to the Contractor, in various currencies pursuant to Sub-Clause 45.1, shall be adjusted in respect of the rise or fall in the cost of labor, Contractor's Equipment, Plant, materials, and other inputs to the Works, by applying to such amounts the formulae prescribed in this clause.

50.2 To the extent that full compensation for any rise or fall in costs to the Contractor is not covered by the provisions of this or other clauses in the Contract, the accepted contract amount shall be deemed to include amounts to cover the contingency of such other rise or fall of costs.

50.3 The adjustment to be applied to the amount otherwise amount payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be as follows;

$$Pn = a + b\frac{Ln}{Lo} + c\frac{Mn}{Mo} + d\frac{En}{Eo} + etc.$$

where;

Pn is the adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in the subject month, where such variations and daywork are not otherwise subject to adjustment;

a is a constant, specified in the **Appendix to Tender,** representing the nonadjustable portion in contractual payments;

b, c, d, etc., are weightings or coefficients representing the estimated proportion of each cost element (labor, materials, equipment usage, etc.) in the Works or sections thereof, net of Provisional Sums, as specified in the **Appendix to Tender**; the sum of a, b, c, d, etc., shall be one;

Ln, Mn, En, etc., are the current cost indices or reference prices of the cost elements in the specific currency of origin for month "**n,**" determined pursuant to Sub-Clause 50.5, applicable to each cost element; and

Lo, Mo, Eo, etc., are the base cost indices or reference prices corresponding to the above cost elements at the date specified in Sub-Clause 50.5

The value of net work done, certified by the Project Manager, in any monthly Interim or Final Certificate as payable by the Employer to the Contractor before deduction of any retention money shall be increased or decreased by an amount of '**F**'.

$$F = PnxPc$$

where;

The effective value **Pc** of work done which is to be subjected to increase or decrease shall be the difference between:

(i) the amount which, in the opinion of the Project Manager, is due to the Contractor under Clause 45 (before deduction of retention money and before deducting sums previously paid on account) less:

- any amount for payment or repayment of any advance payment;
- any amount for materials on site (if any);
- any amounts for nominated sub-contractors (if any)
- any amounts for any other items based on actual cost or current prices; or
- any sums for increase or decreases in the Contract Price paid under this Sub-Clause

and

(ii) the amount calculated in accordance with (i) above of this Sub-clause and included in the last preceding statement.

50.4 The sources of indices shall be those listed in the **Appendix to Tender,** as approved by the Engineer. Indices shall be appropriate for their purpose and shall relate to the Contractor's proposed source of supply of inputs on the basis of which his Contract Price and expected foreign currency requirements shall have been computed. As the proposed basis for price adjustment, the Contractor shall have submitted with his tender the tabulation of Weightings and Source of Indices in the **Appendix to Tender,** which shall be subject to approval by the Engineer.

50.5 The base cost indices or prices shall be those prevailing on the day 28 days prior to the latest date for submission of tenders. Current indices or prices shall be those prevailing on the day 28 days prior to the last day of the period to which a particular Interim Payment

Certificate is related. If at any time the current indices are not available, provisional indices as determined by the Engineer will be used, subject to subsequent correction of the amounts paid to the Contractor when the current indices become available.

50.6 If the Contractor fails to complete the Works within the time for completion prescribed under Clause 58 adjustment of prices thereafter until the date of completion of the Works shall be made using either the indices or prices relating to the prescribed time for completion, or the current indices or prices, whichever is more favorable to the Employer, provided that if an extension of time is granted pursuant to Clause 28, the above provision shall apply only to adjustments made after the expiry of such extension of time.

50.7 The weightings for each of the factors of cost given in the **Appendix to Tender** shall be adjusted if, in the opinion of the Engineer, they have been rendered unreasonable, unbalanced, or inapplicable as a result of varied or additional work already executed or instructed under Clause 43 or for any other reason.

51. Retention

51.1 The Employer shall retain from each payment due to the Contractor the proportion stated in the **Special Conditions of Contract** until Completion of the whole of the Works.

51.2 On completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and the other half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected.

51.3 On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee.

52. Liquidated Damages

52.1 The Contractor shall pay liquidated damages to the Employer at the rate per day stated in the **Special Conditions of Contract** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the **Special Conditions of Contract**. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

52.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in Sub-Clause 46.1.

52.3 If the Contractor has not corrected a defects within the time specified in the Employer's notice, the Employer will assess the cost of having the defect corrected, the Contractor will pay this

amount, and a penalty for lack of performance calculated as described in Clause 38.

53. Bonus

53.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the **Special Conditions of Contract** for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.

54. Advance Payment

54.1 The Employer shall make advance payment to the Contractor of the amounts stated in the **Special Conditions of Contract** by the date stated in the **Special Conditions of Contract**, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on the advance payment.

54.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.

54.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.

55. Performance Securities

55.1 The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee, and until one year from the date of issue of the Completion Certificate in the case of a Performance Bond.

55.2 Where circumstances necessitate the amendment of the contract after signature, and such amendment is effected, the Employer shall require the Contractor to provide additional Performance Security to cover for any cumulative increase of more than ten percent of the Initial Contract Price.

56. Dayworks

56.1 If applicable, the Dayworks rates in the Contractor's Tender shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.

56.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.

56.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

57. Cost of Repairs

57.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

58. Completion Certificate

58.1 The Contractor shall request the Project Manager to issue a certificate of Completion of the Works, and the Project Manager will do so upon deciding that the work is completed.

59. Taking Over

59.1 The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.

60. Final Account

60.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.

61. Operating and Maintenance Manuals

60.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the **Special Conditions of Contract**.

60.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the **Special Conditions of Contract,** or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount stated in the **Special Conditions of Contract** from payments due to the Contractor.

62. Termination

62.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

62.2 Fundamental breaches of Contract shall include, but shall not be

limited to, the following:

(a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Programme and the stoppage has not been authorized by the Project Manager;

(b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;

(c) the Employer or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;

(d) a payment certified by the Project Manager is not paid by the Employer to the Contractor within 84 days of the date of the Project Manager's certificate;

(e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;

(f) the Contractor does not maintain a Security, which is required; and

(g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the **Special Conditions of Contract.**

(h) if the Contractor, in the judgment of the Employer has engaged in corrupt, coercive, collusive, obstructive or fraudulent practices in competing for or in executing the Contract.

For the purpose of this paragraph:

"corrupt practice means the offering, giving receiving or soliciting of anything of value to influence the action of a public officer in the procurement process or contract execution;

"coercive practice" means impairing or harming, or threatening to impair or harm directly or indirectly, any party or the property of the party for the purpose of influencing improperly the action or that party in connection with public procurement or in furtherance of corrupt practice or fraudulent practice;

collusive practices" means impairing or harming, or threatening to impair or harm directly or indirectly, any part or the property of the Party for the purpose of influencing improperly the action or a part or in connection with public procurement or government contracting or in furtherance of a corrupt practice or a Fraudulent Practice

"fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Government or a public body and includes collusive practices among tenderers, prior to or after submission designed to establish tender prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition;

"obstructive practice" means acts intended to materially impede access to required information in exercising a duty under this Act;

62.3 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under Sub-Clause 62.2 above, the Project Manager shall decide whether the breach is fundamental or not.

62.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

62.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

63. Payment upon Termination

63.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the **Special Conditions of Contract**. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.

63.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

64. Property

64.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.

65. Release from Performance

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

carried out afterwards to which a commitment was made.

66. Suspension of Financing

66.1 In the event that the source of financing is suspended to the Employer, from which part of the payments to the Contractor are being made:

(a) The Employer is obligated to notify the Contractor of such suspension within 7 days of having received the financing agency's suspension notice.

(b) If the Contractor has not received sums due it within the 28 days for payment provided for in Sub-Clause 46.1, the Contractor may immediately issue a 14-day termination notice.

67. Force Majeure

67.1 Notwithstanding the provisions of GCC Clauses 31 and 52, the Contractor shall not be liable for forfeiture of its performance security, liquidated damages, or termination for default if and to the extent that it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

SECTION V: SPECIAL CONDITIONS OF CONTRACT

Special Conditions of Contract (SCC)

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract. Except where otherwise indicated, all Special Conditions of Contract should be filled in by the Employer prior to issuance of the bidding documents. Schedules and reports to be provided by Employer should be annexed.

SCC Clause	GCC Clause	Description
1	1.1	**A. General** The Employer is **District Executive Director, Mpwapwa District Council, P.O. Box 12 Mpwapwa.** The Adjudicator is **National Construction Council** The Defects Liability Period is **ONE YEAR.** The Project Manager is **District Engineer, P.O. Box 12, Mpwapwa.** The name and identification number of the Contract is Construction of Three in One staff House at Pwaga Health Centre Identification number is LGA/023/2021-22/HQ/W/117. The Start Date shall be **7 days after signing of the contract agreement** The Intended Completion Date for the whole of the Works shall be **(Contract duration is 120 days)** The following documents also form part of the Contract: **a) Agreement** **b) Letter of acceptance** **c) Contractor's Bid** **d) Special Condition of contract** **e) General Conditions of contract** **f) Specifications** **g) Drawings** **h) Bills of Quantities** The Site is located at **Pwaga Health Centre -PWAGA**
1. 2.	2. 2.2	3. ***Indicate whether there is section completion is specified: not specified*** 4.
3.	2.3(9)	List other documents that form part of the contract if any: **Not applicable**
4.	3.1	The language of the Contract documents is **English** The law that applies to the Contract is the **"Laws of the United**

		Republic of Tanzania"
5.	**9.1**	Include the Schedule of Other Contractors, if any. **Not applicable**
6.	**10.1**	**Include the Schedule of Key Personnel.** • **One Civil Technicians Holding at least Diploma/FTC and One Civil Engineer each Experienced with minimum of (3) years in the works of similar nature.**
7.	**14.1**	The minimum insurance covers shall be: (a) Loss of or damage to the Works, Plant, and Materials Tshs. 3,000,000.00 (b) Loss of or damage to Equipment **Tshs. 4,000,000.00** (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract **Tsh. 3,000,000.00** (d) Personal injury or death **Tshs. 5,000,000.00**
8.	**15.1**	Site Investigation Reports available to the Bidder are: **Not applicable**
9.	**22.4**	The other measures include: a. Minimising the number of migrant workers employed on the project and household in the site camp b. Providing access to voluntary counselling and testing (VCT) c. Providing psychological support and health care including prevention and treatment of opportunistic infections for workers infected and affected, as well as their families d. Providing condoms (male and female) to workers
10.	**24.1 & 47.1**	The Site Possession Date shall be **7 days after receipt of the letter of acceptance**
11.	**28.2**	Hourly rate of fees payable to the Adjudicator is: Types of reimbursable expenses to be paid to the Adjudicator include: **a) Transport costs** **b) Per diem** **c) Documentation**
12.	**28.3**	Arbitration will take place at **Mpwapwa, Tanzania** in accordance with rules and regulations published by **National Construction Council, Arbitration Rules 2001 Edition.**
13.	**29.1**	Appointing Authority for the Adjudicator: **National Construction Council.**
B. Time Control		

14.	30.1	The Contractor shall Submit a Programme for the Works within 7 days of delivery of the Letter of Acceptance
15.	30.3	The period between Programme updates is **10** days
20.	30.3	The amount to be withheld by the Project Manager in the case the contractor does not submit an updated programme is **3% of the contract price**
		C. Quality Control
17.	38.1	The Defects Liability Period is **ONE YEAR**
		D. Cost Control
18	45.1	The interest rate shall be. **N/A** above prevailing interest rate for commercial borrowing from the contractors bank
19.	45.7	Minimum Amount of Interim Payment Certificate will be **25 percent (25%) of the contract price**
20.	47.1(a)	The Site Possession Date shall be **7 days** after receipt of letter of acceptance
21.	50.1	The contract **is not** subject to price adjustment in accordance with Clause 50 of the General Conditions of Contract
22.	51.1	The amount of retention is **5 percent (5%)** of value of works of Interim Payment Certificate'

23.	52.1	The amount of liquidated damages is **0.5 percent (0.5%)** of contract price per day
	52.1	The maximum amount of liquidated damages is **10 percent (10%) of the contract price**
24.	53.1	The bonus for early completion is **not applicable.**
25.	54.1	The amount of advance payment shall be **15 percent** of the contract sum payable within 28 days after provision of the security by the contractor. **Not Applicable**
		Monthly Recovery of Advance Payment: **20 percent** of amount of Interim Payment Certificate. **Not applicable**
26.	55.1	The Performance Security shall be 10 **percent (10%)** of the contract sum. The acceptable Performance security shall be: **Insurance Bond issued by a reputable insurance firm located in The United Republic of Tanzania.**
		E. Finishing the Contract
27.	61.1	As built drawings shall be supplied by the contractor **within 30 days after contract completion date.** Operating and Maintenance Manuals shall be supplied by the contractor by within 30 days after contract completion date.
28.	61.2	The amount to be withheld by the Project Manager in the case the contractor does not submit as built drawings is **3% of contract price.** The amount to be withheld by the Project Manager in the case the contractor does not submit operating and Maintenance manual is **3% of contract price.**

29.	62.2 (g)	Number of days for which the maximum amount of liquidated damages can be paid is **20 days**
30.	63.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is **10 percent**

2. Form of Tender

03 January, 2022

To:
District Executive Director,
Mpwapwa District Council,
P.O.Box 12 , Dodoma.
Tanzania.

1. We, *AZHAR CONSTRUCTION COMPANY LTD of P.O.BOX 35918 Dar es salaam,* offer to execute ***Construction of Three in One Staff House at Mpwawa health Center at Mpwapwa District Hospital, Tender no. LGA/023/2021-22/HQ/W/117.*** in accordance with the Conditions of Contract accompanying.

This Tender for the Contract Price of 89,860,858.60 **TZS** /=VAT Inclusive (Tanzania shillings)

The Contract shall be paid in the following currencies: (ONLY IN TZS)

Currency	Percentage payable in currency	Rate of exchange: one foreign equals [*insert local*]	Inputs for which foreign currency is required
(a)	100%	N/A	N/A
(b)		N/A	N/A

The advance payment required is:-

Amount	Currency
(a)	TZS
(b)	TZS

We declare that our tendering price did not involve agreements with other tenderers for the purpose of tender suppression.

We hereby confirm National Construction Council, to be the Appointing Authority, to appoint the adjudicator in case of any arisen disputes in accordance with ITT 43.1 [Adjudicator]

AZHAR CONSTRUCTION COMPANY LIMITED
P. O. Box 35918
Tel: 0787 021 444

We are not participating, as tenderers, in more than one Tender in this tendering process other than alternative tenders in accordance with the tendering documents.

We declare that, as tenderer(s) we do not have conflict of interest with reference to ITT 3.7 [Eligibility of Tenderers]

With reference to ITT 3.11 [Eligibility of Tenderers], it is our intention to subcontract approximately [*insert the percent*] percentage of the Tender /Contract Price, details of which are provided herein.

Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the contract has not been declared ineligible by the Government of the United Republic of Tanzania under Tanzania's laws or official regulations or by an act of compliance with a decision of the United Nations Security Council.

The following commissions or gratuities of fees have been paid or are to be paid by us to agents relating to this tender, and to contract execution if we are awarded the contract:-

Name and address of agent or recipient	Amount and currency	Purpose of commission or gratuity
NONE	NONE	NONE

(if none has been paid or is to be paid, state "none")

This tender and your written acceptance of it shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Tender you receive.

We hereby confirm that this tender complies with the tender validity and Tender Security required by the tendering documents and specified in the Tender Data Sheet.

Authorized Signature: ____________________

Name and Title of Signatory: SALUM SALEHE RUBEBASIRA

Name of Tenderer: AZHAR CONSTRUCTION CO.

Address: PO BOX 35918 DSM

AZHAR CONSTRUCTION COMPANY LIMITED
P. O. Box 35918
Tel: 0787 021 444
DAR ES SALAAM

5.0 POWER OF ATTORNEY

We, the undersigned, ALHAJI CONSTRUCTION CO. LTD OF P.O BOX 35918 Dsm.
..... (Name of Company)
A company duly incorporated in Tanzania whose office is at ....MWEKA AREA.... by virtue of company's resolution dated .....
Attached hereto, hereby appoint ....SAIDI SAIDI RWEGASIRA.... (Name by donee) with identity/Passport No. AKE 19720228 14118 00004-24 ....Whose signature appears below.
Signature .....

With full powers to act for us in our name and for out use to do the following act related to following project CONSTRUCTION OF THREE IN ONE HOUSE AT ....MPWAPWA HEITH CENTER AS MPWAPWA DISTRICT HOSPITAL TENDER NO LGA/033/2021-22/HQ/W/117 (Name of project)

(i) To negotiate contract of works/services ✓
(ii) To sign, execute, endorse all document ✓
(iii) To open and close accounts: and ✓
(iv) To commence any action or actions, suit of suits or defend us in any action ✓
(Tick whichever is/are applicable).

AND GENERALLY to execute and do things which he/she shall deem necessary or appropriate with the same effect as if we had done, executed or performed it ourselves in relation to the above named project.

In witness hereof we are entitled to sign for and on behalf of
.....ALHAJI CONSTRUCTION Company LTD.....
..... (Name of company) as we have signed this power of attorney of this .3rd....Day of .June.. 20..22...

This power of Attorney is valid until ....3/6/2022.... (Date)

Authorized Officer of the Company
Name SHABANI KAPINGA
Designation: DIRECTOR
Signature .....

Authorized Officer of the Company
Name HAMIDA MOHAMMED
Designation SECRETARY
Signature H. Mohamedi

This is to certify that SHABANI KAPINGA..... and HAMIDA MOHAMMED (Name of donors) have this 03 day of JANUARY 20 22 in my presence signed this power of attorney on behalf of the company above named.

BEFORE ME
.....
Commissioner for Oaths

EMANUELI TIMOTHY MLAKI Advocate, Notary Public & Commissioner For Oaths P.O. Box 04, MOSHI

.....
Official Stamp

EMANUELI TIMOTHY MLAKI Advocate, Notary Public & Commissioner For Oaths P.O. Box 04, MOSHI

CONSTRUCTION COMPANY LIMITED P.O. Box 35918 DSM 021 444

SEC IX 3

HALMASHAURI YA WILAYA YA MPWAPWA

MUHTASARI WA KIKAO CHA MAJADILIANO KATI YA HALMASHAURI NA MKANDARASI M/S AZHAR CONSTRUCTION COMPANY LIMITED KUHUSU UJENZI WA ICU NA UJENZI WA NYUMBA YA MTUMISHI KITUO CHA AFYA PWAGA
TAREHE 01/02/2022

WAJUMBE.
ENG. Deodatus L. Seguke-Mwenyekiti
Martina Batromeo-Mwanasheria-Mjumbe
ENG. Nuru Simkoko--Katibu
Geoege E. Mwakajinga-Afisa Ugavi-Mjumbe
Salaum Rwegasira-Mjumbe- M/S Azhar Construction Company LTD
Muhamed Seif Rashid- M/S Azhar Construction Company LTD

Muht Na. 01/2022 KUFUNGUA KIKAO
Mwnyekiti alifungua kikao mnamo 05:00 Asubuhi

Muht 02/2022 KUTHIBITISHA AGENDA
1. Kufungua kikao
2. Majadiliano kuhusu kupunguza gharama za Ujenzi wa Miradi.
3. Kufunga kikao.

Muht 03/2022: MAJADILIANO
Majadiliano yalifanyika. Wajumbe walipitia BOQ maeneo yaliyoainishwa na Mhandisi kwa ajili ya kupunguza gharama za utekelezaji wa Miradi. Maeneo yaliyoainishwa na kukubaliwa na pande zote mbili kwa ajili ya kupunguza gharama za utekelezaji wa mradi bila kuathiri ubora wa mradi. Maeneo yaliyoanishwa na kufanyiwa marekebisho ya gharama ni yafuatayo;

ICU BUILDING-AMMENDED BOQ AFTER NEGOTIATION

ON MAIN BOQ page No 3/5/12					
ELEMENT No 5, DOOR, SHOULD READ AS FOLLOW					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
A	REF. MAIN BOQ	120	M	15,000.00	1,800,000.00
D	REF. MAIN BOQ	2	NO	300,000.00	600,000.00
E	REF. MAIN BOQ	1	NO	440,000.00	440,000.00
F	REF. MAIN BOQ	2	NO	400,000.00	800,000.00
ON page No 3/8/15					
ELEMENT No 8, FINISIHING					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
J	REF. MAIN	319	M2	20,000.00	

	BOQ				6,380,000.00
L	REF. MAIN BOQ	203	M2	3,500.00	710,500.00
ON page No 3/8/16					
ELEMENT No 8, FINISHING					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
C	REF. MAIN BOQ	325	M2	5,000.00	1,625,000.00
F	REF. MAIN BOQ	203	M2	566.50	114,999.50
K	REF. MAIN BOQ	22	M2	22,000.00	484,000.00
ON page No 3/10/19					
ELEMENT No 10, SANITARY WARE					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
A	REF. MAIN BOQ	4	NO	150,000.00	600,000.00
B	REF. MAIN BOQ	2	NR	200,000.00	400,000.00
D	REF. MAIN BOQ	1	NR	100,000.00	100,000.00
ON page No 3/10/20					
ELEMENT No 10, SANITARY WARE					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
A	REF. MAIN BOQ	2	NO	100,000.00	200,000.00
B	REF. MAIN BOQ	2	NR	25,000.00	50,000.00
D	REF. MAIN BOQ	2	NR	25,000.00	50,000.00
E	REF. MAIN BOQ	2	NR	60,000.00	120,000.00
ON page No 3/10/21					
ELEMENT No 10, SANITARY WARE					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
C	REF. MAIN BOQ	23	NO	2,500.00	57,500.00
G	REF. MAIN BOQ	5	NO	5,000.00	25,000.00
J	REF. MAIN BOQ	20	NO	2,500.00	50,000.00

M	REF. MAIN BOQ	12	NO	2,500.00	30,000.00
ON page No 3/10/22					
ELEMENT No 10, SANITARY WARE					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
A	REF. MAIN BOQ	10	NO	5,000.00	50,000.00
B	REF. MAIN BOQ	10	NO	5,000.00	50,000.00
F	REF. MAIN BOQ	14	NO	2,500.00	35,000.00
H	REF. MAIN BOQ	5	NO	5,000.00	25,000.00
K	REF. MAIN BOQ	4	NO	10,000.00	40,000.00
M	REF. MAIN BOQ	4	NO	10,000.00	40,000.00
N	REF. MAIN BOQ	7	NO	15,000.00	105,000.00
S	REF. MAIN BOQ	4	NO	5,000.00	20,000.00
T	REF. MAIN BOQ	22	NO	5,000.00	110,000.00
ON page No 3/10/23					
ELEMENT No 10, SANITARY WARE					
ITEM	DISCRIPTION	QUANTITY	UNITY	RATE	AMOUNT
A	REF. MAIN BOQ	60	M	5,000.00	300,000.00
B	REF. MAIN BOQ	41	NO	5,000.00	205,000.00
H	REF. MAIN BOQ	40	M	7,000.00	280,000.00
K	REF. MAIN BOQ	4	NO	5,000.00	20,000.00
L	REF. MAIN BOQ	18	NO	5,000.00	90,000.00
N	REF. MAIN BOQ	48	M	6,000.00	288,000.00
S	REF. MAIN BOQ	10	NO	10,000.00	100,000.00
ON page No 3/10/24					
ELEMENT No 10, SANITARY WARE					
ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	2	NO	70,000.00	140,000.00
B	REF. MAIN BOQ	6	NO	10,000.00	60,000.00

C	REF. MAIN BOQ	1	NO	50,000.00	50,000.00
D	REF. MAIN BOQ	1	NO	100,000.00	100,000.00
E	REF. MAIN BOQ	1	NO	50,000.00	50,000.00
ON page No 3/11/25					
ELEMENT No 11, ELECTRICAL INSTALLATION					
ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
J	REF. MAIN BOQ	22	NO	60,000.00	1,320,000.00

STAFF HOUSE-AMMENDED BOQ AFTER NEGOTIATION

ON MAIN BOQ page No 3/1/9

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	78	M2	1,800.00	140,400.00
E	REF. MAIN BOQ	150	M2	250.00	37,500.00

ON page 3/1/8

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANITY	UNIT	RATE	AMOUNT
B	REF. MAIN BOQ	150	M2	1,000.00	150,000.00
E	REF. MAIN BOQ	150	M2	2,000.00	300,000.00
H	REF. MAIN BOQ	8	M3	250,000.00	2,000,000.00

ON page No 3/2/1

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	7	M3	170,000.00	1,190,000.00

ON page No 3/4/11

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	198	M2	21,553.00	4,267,494.00

Maeneo tajwa hapo juu ni kazi zilizopo kwenye BOQ ambazo ndizo zilizofanyiwa majadiliano kwa ajili ya kupunguza gharama za utekelezaji wa Mradi. Hizi ndo gharama zilizokubaliwa na pande mbili za majadiliano ambazo ndo zitatumika kufanyiwa malipo kwa kazi hizo husika..

Muht 03/2022: MAJADILIANO: KUFUNGA KIKAO

Mwenyekiti alifunga kikao mnamo saa 08:00 mchana.

MUHTASARI UMETIWA SAINI NA

MWENYEKITI Deodatus Soguke [signature] KATIBU Neema Simsokwe [signature]

TAREHE..

STAFF HOUSE-AMMENDED BOQ AFTER NEGOTIATION

ON MAIN BOQ page No 3/1/9

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	78	M2	1,800.00	140,400.00
E	REF. MAIN BOQ	150	M2	250.00	37,500.00

ON page 3/1/8

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANITY	UNIT	RATE	AMOUNT
B	REF. MAIN BOQ	150	M2	1,000.00	150,000.00
E	REF. MAIN BOQ	150	M2	2,000.00	300,000.00
H	REF. MAIN BOQ	8	M3	250,000.00	2,000,000.00

ON page No 3/2/1

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	7	M3	170,000.00	1,190,000.00

ON page No 3/4/11

ELEMENT NO 1, SUBSTRUCTURE

ITEM	DISCRIPTION	QUANTITY	UNIT	RATE	AMOUNT
A	REF. MAIN BOQ	198	M2	21,553.00	4,267,494.00

Eng. Deodatus Lyuka

Eng. NURU SIMKOKO

PRESIDENT'S OFFICE

REGIONAL ADMNISTRATION AND LOCAL GOVERNMENT

BILL OF QUANTITIES FOR THE PROPOSED CONSTRUCTION OF THREE IN ONE SEMI DETACHED STAFF HOUSE URBAN TYPE

November, 2021

DISTRICT ENGINEER WORKS
MPWAPWA

Mr. MADEMLA
AgDE
21/12/2021

CONSTRUCTION COMPANY LIMITED
P.O. Box 35918
787 021 444

COUNCIL HOSPITAL

GENERAL SUMMARY

GENERAL DESCRIPTIONS	AMOUNT
BILL No 01 - PRELIMINARIES	300,000 ✓
BILL No 02 - SPECIFICATIONS	~~118,259,770/=~~ ~~116,663,770/=~~
BILL No 03 - MEASURED WORKS {STAFF HOUSE -URBAN YPE) ...	75,953,270 ~~84,509,770~~
BILL No 04 - PRIME COSTS AND PROVISIONAL SUMS	100,000 ✓
SUB-TOTAL	75,953,270 ~~117,063,770/=~~ ~~118,359,770/=~~ ~~84,509,770~~
INSURANCE CLAUSES:	
. Clause 13 - Contractor to maintain in joint names of the Employer and Contractor, Insurance Against Loss and Damages to the works by fire, earthquakes, etc.	100,000
. Clause 54 - Performance Security	100,000 ~~85,509,770~~
SUB-TOTAL ---------- (1)	76,153,270 ~~117,263,770/=~~ ~~118,559,770/=~~
ADD: 18% Value Added Tax (VAT) ---------	13,707,588 ~~21,107,478.60~~ ~~21,394,758.60~~
SUB-TOTAL ---------- (2)	89,860,858.6 ~~140,254,528.60~~ ~~138,971,246.60~~
AMOUNT CARRIED TO FORM OF TENDER TShs.	89,860,858 100,429,528.60

Signed by ..... For and on behalf of ..... AZHAR CONSTRUCTION CO. LTD

In the capacity of ..... this ..... day of 2021

AZHAR CONSTRUCTION COMPANY LIMITED P.O. Box 35918 Tel:0787 021 444

NOVEMBER 2021

ITEM	DESCRIPTIONS OF WORKS	TSHS.
	DESCRIPTION OF SITE:	
A.	The site is located District/Councils WITHIN TANZANIA COUNTRY	
B.	The Contractor shall provide and maintain any necessary temporary roads; sleeper tracks; and temporary cross over during the execution of the works; clear away the same at completion and reinstate and make good any work disturbed to the satisfaction of the Local Authority and the Employer.	Committed
C.	The Contractor shall be deemed to have visited the site and satisfied himself as to:- i) The nature of the site ii) The amount of bush; rubbish or debris to be cleared away before. commencement. iii) The nature of proximity and size of adjoining building and property. iv) The nature of existing communications by roads or otherwise. v) The means of access to the site. vi) The availability of land for the erection and positioning of all temporary structures; plant and materials necessary for the execution of the works. vii) The source of adequate supplies of labour, plant and materials for the completion of the works.	Committed AZHAR CONSTRUCTION COMPANY LIMITED P. O. Box 35918 Tel: 0787 021 ... DAR ES S.
D.	If the Contractor wishes to execute trial holes before submitting his tender; he may do so in positions to be agreed with the Employer and at his sole expenses; Including the reinstatement of the ground if so required by the Employer.	
E.	The whole of the site will be available to the Contractor immediately upon the issue of the order to commence.	Committed
F.	Any sand; aggregate to or other building materials shall be the property of the Employer and shall not be used in the construction of the works without the written consent of the Employer.	
G.	The Contractor is to satisfy himself as to any difficulties that the site may present and to make all necessary enquiries to any point which in his opinion requires further elucidation as no claim for lack of information on any of the above will be entertained.	
	TO COLLECTION TSHS.	

AZHAR CONSTRUCTION COMPANY LIMITED P. O. Box 35918 Tel:0787 021 444

DISTRICT ENGINEER WORKS MPWAPWA

Eliam G. Madema

ITEM	DESCRIPTIONS OF WORKS	TSHS.
A.	**DESCRIPTION OF WORKS:** The work within this contract comprises of: ***Substructure, Frames ,Walls,ramp,Stairs, Roof, Doors, Windows, Service Engineering, Finishings, Decorations and External Works on Construction of Two Bedroom Staff house three In one urban type***	
B.	**SINGULAR AND PLURAL** Word importing the singular only also includes the plural.	
C.	**LAW GOVERNING CONTRACT** The contract shall be in all respect to be constructed and operated in accordance with the law of Tanzania.	
	METHOD OF MEASUREMENT:	
D	These Bills of Quantities have been prepared in accordance with the standard method of measurement of Building Works for East Africa first edition (metric) published by the architectural association of Kenya chapter of Quantity Surveyor Act; 1970; and applied equally to the measurement of proposed works and of variations by Quantity Surveyors.	
E	Variation of 'Builder's Work' will be subject to the same amended rates of percentage of adjustment.	
	DEFINITIONS OF ABBREVIATIONS:	
F	The Contractor should take due notice of the under mentioned abbreviations:- mm - millimetres cm - centimetres M^3 - cubic meters M^2 - square metres M - linear metres No - Number Kg - Kilograms P.C - Prime cost	
G	The Contractor shall allow for keeping all records appertaining to the work and shall keep on the site a daily diary recording weather conditions; temperature; visitors to the site, etc.	
H	The Contractor is to supply to the Employer such information as he may be required in connection with the work; including statement showing the number of men employed in all trades daily; and delivery notes (stating the name of the project) for all materials delivered to the site.	
	TO COLLECTION TSHS.	

ITEM	DESCRIPTIONS OF WORKS	TSHS.
A.	**EMPLOYER'S INSPECTION:** No work shall be covered up until it is inspected and approved by the Employer.	
B.	The Employer may at any time before the end of defects liability period or during any extended time where any defect are being made good, instruct the Contractor to open up; pull down; test or expose any part of the works in order to satisfy himself as to the quality of materials or workmanship used. If in the opinion of the Employer such parts are not in strict accordance with the contract documents he may order the Contractor to remove all defective work, replace with approved materials and reinstate any such part of the works and any other disturbed at his own expenses and to the entire satisfaction of the Employer. If any such parts of the works are found to be in accordance with the contract documents the Contractor will be reimbursed with the General conditions of contract.	
C.	**DISTURBANCE OR NUISANCE:** The Contractor shall allow for taking all necessary precautions in the order and execution of the work so as to avoid causing disturbance or nuisance to the occupants of existing buildings and those adjacent to the works and for complying with the Employer's instructions in this respect. The Contractor shall be in tort for such nuisance and shednets.	
D.	**TRESPASS, DAMAGE AND CARE OF WORKS:** The Contractor shall prevent any trespass on the opinion adjoining property and he shall take all reasonable precautions during the progress of the contract to prevent any damage to the adjoining property or plant or private roadways and to prevent material; plant; rubbish and debris; etc. collecting on the adjoining property or roadways.	
E.	Should the Contractor wish to erect scaffolding or to make use of adjoining property; he shall obtain prior permission from the Employer and clear away at a completion of his work or when directed and make good any damage to his satisfaction. Except as provided for in the General conditions of contract; the Contractor; shall be held responsible for the care of works generally until their completion; including all works executed and materials deposited on the site by himself or his Sub-Contractors or supplier together with all risks arising from weather; carelessness of operatives; damages and he shall make good all such damage or loss at his own expense	
F.	The Contractor shall be responsible for the protection of any adjacent building; boundary walls; fences; services either overhead or underground and for the making good of or paying for all damage thereto; should such be caused in the course of building operations.	
G.	The Contractor shall allow for making good all damage to the road; kerbs; surface water channels; etc. occasioned by heavy traffic; delivery of materials and building operations generally to the entire satisfaction of the Employer and shall be responsible for observing any by law of Local Authority regarding keeping the road free from mud; filth dirt; etc, out of the execution of the works.	
	COLLECTION TSHS.	

AZHAR CONSTRUCTION COMPANY LIMITED ★ DAR ES SALAAM ★ P. O. Box 35918 Tel: 0787 021 444

Edmund L. Madenla
A.1 DISTRICT ENGINEER WORKS ... MAPWA.

Scanned with CamScanner

A.	**PROTECTION FROM THE WEATHER:** The Contractor shall allow for covering up and protecting all new work from injury by weather or any other cause. Any damage; loss or expense caused by non-compliance with the clause shall be at sole risk of the contract.	
B.	**TOOLS, PLANT AND SCAFFOLDING:** Provide all necessary cranes, hoists, concrete mixer and other plant including ladder, staging, access gangways tackle, tarpaulins, tools, moulds templates and other requisites necessary for proper executing, adapting from time to time as may be necessary and maintain all plant and equipment during the course of the contract.	
C.	The Contractor shall allow for providing adapting from time to time as may be necessary and maintaining all scaffolding scaffold boards and temporary staging, etc, necessary for the execution of the works.	
D.	The Contractor is to provide everything necessary for the proper execution of the works according to the true intent and meaning of the drawings; etc. whether the same may or may not be particularly shown on the drawings; specifications provided that the same is reasonably to be inferred there from.	
E.	**SITE ACCOMODATION:** The Contractor shall provide and maintain any necessary temporary office accommodation required by himself and his Sub-Contractors suitably equipped with desks; chairs; drawing boards; and electric lighting and telephone.	300,000
F.	The Contractor shall provide and maintain for his workers latrine facilities washing and drinking water, first aid equipment's and shelters equipped with tables; benches and checking facilities all to the reasonable satisfaction of the workers and approved by the Employer and Health Authorities.	
G	The Contractor shall provide and maintain any temporary storage, shed or buildings which in his opinion are necessary for himself and his Sub-Contractors for the execution of the works.	
H	**WATER FOR THE WORKS** The Contractor shall allow for all necessary clean fresh water for the works, including that required by Sub-Contractors and for any temporary plumbing metres and storage facilities and pay all charges in connection therewith and clear away on completion and make good works disturbed.	
J	The Contractor shall allow for providing and maintaining a temporary electricity supply for the works including that required by Sub-Contractor and for any meters and fittings to give artificial lighting and power necessary for the execution of the works and pay all charges, in connection and make good all works disturbed.	
	TO COLLECTION TSHS.	

ITEM	DESCRIPTIONS OF WORKS	TSHS.
A.	**WATCHING AND LIGHTING:** The Contractor shall allow for providing and maintaining any barriesrs; hoalding; watching; lighting which must comply with the By-laws of requirements of the Local Authority and polycy regulations and the Contractor must give all requiste policies to those authorities and provide everything necessary to protect the general public workmen; plant; materials and the whole of the works	
B.	No advertisement will be permitted without the written authority of the Employer.	
C.	**SIGN BOARD:** The Contractor shall provide and erect a large sized sign board on the site showing the title of the contract, the name and address of the Employer; consultant, nominated suppliers and Sub-Contractor and such information as may be required by the Employer who shall provide the sign layout and colours of the Board. The board shall be repainted when necessary and removed when no longer required.	
D.	**PROTECTION:** The Contractor is required to protect works section until completion.	
E.	**TESTING:** Allow for testing all materials as will be identified by Project Manager like concrete cube test,reinforcements etc, submit sample and allow for installations required to be tested and provide everything necessary for this purpose and leave the whole in perfect working order to the satisfaction of the Employer and Local Authority.	
F.	**REMOVING RUBBISH AND CLEANING:** The Contractor shall make good all defects and injuries to the works, clean down external faces wash off stains to face work, clean off marks mortar and cement, clean windows inside and out, scrub floors, flush drains run and leave all parts of the works clean, free from rubbish and waste materials and perfect on completion.	
G.	The Contractor shall clean and cart away all rubbish as it accumulate and keep the works in orderly condition to the satisfaction of the Employer	
	TO COLLECTION	
	COLLECTION	
	Page No. 8/1/1	
	Page No. 8/1/2	
	Page No. 8/1/3	
	Page No. 8/1/4	
	Page No. 8/1/5	200,000
	BILL No. 01= PRELIMINARIES CARRIED TO GENERAL SUMMARY	300,000

CONSTRUCTION COMPANY LIMITED * DAR ES SALAAM * P. O. Box 35918 Tel: 0787 021444

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NR. 1 : SUBSTRUCTURE				
	EXCAVATION AND EARTHWORK				
A	Site clearance of small trees, shrubs and the like including grubbing up roots	184	m²	500	92,000
	Excavating				
B	Surfaces to reduce levels average 150mm deep vegetable soil and remove from site	184	m²	500	92,000
	Trenches in natural ground; to receive foundations; starting from reduced level				
C	Not exceeding 1.50 meters deep	71	m³	5000	355,000
	Pits; to receive foundations; starting from stripped level				
D.	Not exceeding 1.50 meters deep	1	m³	5000	5000
E.	Extra over all kinds of excavations irrespective of depth for breaking up rock	1	m³	10,000	10,000
F.	Backfilling; depositing and compacting in layers maximum 150mm thick impoted material around foundations	33	m³	10,000	330,000
G.	Remove away from the site surplus excavated materials.	39	m³	8000	312,000
	Disposal of water				
H.	Keeping all excavation free from all water by pumping, bailing or other means including spring or running water		Item		200,000
	Plunking and Strutting				
J.	Allow for provision and subsequent removal for planking and strutting to uphold and maintain all faces of excavations		Item		200,000
	To Collection				1596,000

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Filling				
A	Sand filling in making up levels; average 150 mm thick	35	m³	15,000	525,000
	Hardcore and the like				
B.	150mm thick stone hardcore bed; leveled compacted and sand blinded to receive damp proof ;membrane; measured separately.	150	m²	1000 10,000	150,000 150,000 1,500,000
	Soil Sterilization				
C	Chemical anti termite treatment around the building plinth	66	m	2000	132,000
D	Aldrin' solution applied at a rate of 7 litres per square metre	150	m²	2000	300,000
	Concrete works				
	Plain in-situ concrete; grade 15N/sq.mm nominal mix (1:3:6)			2000	300,000
E	100mm Bed	150	m²	20,000	3,000,000
F	Ditto to ramp	1	m²	20,000	20,000
G	Foundation footing	17	m³	200,000	340,000 3,400,000
	Vibrated Reinforced In-situ concrete; grade 25 nominal mix (1:11/2:3)				
H	Plinth beam	8	m³	270,000	2,160,000
	Reinforcement; bars; BS 4449:1969 hot rolled round high yield steel straight or bent			250,000	2000000
J	12mm Diameter bars	472	kg	2000	944,000
K	8mm Diameter bars	196	kg	2000	392,000
	Collection				7,963,000

NOVEMBER 2021 3/1/8 EDGAR G. MADEMLA PO-RALG 12,373,000

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Sawn Formwork to:			1800	148 400
A	Sawn to vertical sides of beams	78	m²	18,000	1,484,000
B	Edges of slab over 75mm not exceeding 150mm	66	m	4000	265,000 264,000
	Walling				
	Concrete block B.S 2028 type A; 5N per square millimetre; solid in cement sand mortar (1:4)				
C	230mm Thick wall	80	m²	29,000	2,320,000
	Damp-proof Courses (DPC)				
D	230mm Wide	130	m	2500	325,000
	Damp-proof Membrane (DPM)			3712500	
E.	500Gauge polythene sheet laying on blinded hardcore with 150mm sides and end laps	150	m²	250,00 250	375,000
	Sundries				
F.	12mm Cement and sand (1:3) external rendering to concrete block wall	33	m²	4000	1132,000
G.	Prepare and apply two coats of black bituminous paint on rendered or concrete surfaces, externally	33	m²	4000	132,000
	To Collection			42,077,000	4,952,000
	COLLECTION				1,516,000
	Page 2/1/1			12,373,000	2,963,000
	Page 2/1/2			8,327,000	4,952,000
	Page 2/1/3			42,077,000	
	ELEMENT NO. 1 - SUBSTRUCTURE CARRIED TO SUMMARY				14,511,000

56,046,000.
27,296,000

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2 - FRAME				
	Concrete Work				
	Vibrated Reinforced in-situ concrete; grade 25 nominal mix (1:11/2:3)			170,000	1,190,000
A	Beams; horizontal or sloping not exceeding 15 degrees from horizontal	7	m³	270,000	1,890,000 ✓
	Reinforcement; bars; BS 4449:1969 hot rolled round high yield steel straight or bent				
B	12mm Diameter bars	561	kg	2000	1,122,000 ✓
C	8mm Diameter bars	180	kg	2000	360,000 ✓
	Sawn formwork to.				
D	Horizontal sides and soffites of beams	80	m²	2000	160,000 ✓
	ELEMENT NO. 2 - FRAME CARRIED TO SUMMARY				3,532,000 ✓

NOVEMBER 2021

NATIONAL CONSTRUCTION COMPANY LIMITED P.O. Box 35918 Tel:0787 021 444 DAR ES SALAAM

3/2/1

EDWIN G. MADEMLA
AgDE
21/12/2021
DISTRICT ENGINEER. WORKS
M P W A P W A

PO-RALG

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO 5: DOORS				
	Hardwood Mninga or equal and approved				
A	50x150mm Frame with one labour	130	m	20,000	2,600,000
B	50x150mm Transome or Mullon	17	m	20,000	340,000
C	25 x 25mm Glazing beads	66	m	10,000	660,000
	Hardwood Mninga or equal and approved				
D	45mm thick panelled door hardwood size 1180 x2100mm double door; comprising of 45x100mm rebated stiles; all panel filled in with and including 25mm thick hardwood boards; (DI)	3	Nr.	557,550	1,672,650
E	Ditto Size 900 x 2100m single door (D2)	13	Nr.	42,500	552,500
F	Size 800 x 2100m single door (D3)	5	Nr.	380,000	1,900,000
	Ironmongery: supply and fix the following as manufactured by Union ltd."or other equal and approved to hardwood with matching screws"				
G	150mm Brass butt hinges.	36	Pairs	15,000	540,000
H	3 Lever Mortice lock	15	Nr.	55,000	825,000
J	Two Lever Mortice lock	6	Nr.	50,000	300,000
	Clear glass				
	6mm thick clear glass sheet; glazed with hardwood beads:				
K	Glass panes over $0.1m^2$ not exceeding $0.5m^2$	8	m²	35,000	280,000
	ELEMENT NO 5: DOORS CARRIED TO SUMMARY				9,670,150

CONSTRUCTION COMPANY LIMITED
P.O. Box 35918
Tel: 0787 021 444
DAR ES SALAAM

EDGAR G. MADEMLA
ADE
21/12/2021
DISTRICT ENGINEER WORKS

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO 6: WINDOWS				
	Aluminium glazing approved by the Architect; single glazed combination frame and windows, 45 x 50mm Aluminium section framing, all mullions and transomes; epoxy power coat RAL 9006 finish, 6.14mm laminated glass pre assembled with stainless steel plates and screws window ironmongery, glazed beads, fiber mosquito net, rubber gaskets and backer rods and fixing to mansory or concrete grounds, sealing all around with non-hardening EPDM silicone sealant; screws bolts and fasterners				
A	Size 1500 x 1500mm high	16	Nos	270,000	4,320,000 ✓
B	Ditto, Size 900 x 600mm high	6	Nos	64,800	388,800 ✓
	Composite items				
	Mild steel; welded together with welding fillets; protected from rust by applying three coats of zinc chromate primer and two full coat of gloss painting; including fixing in position.				
C	Supply and fix in position "WINDOW GRILLES"; comprising of 25x25x3mm SHS pipes framing; filled in with 40x6mm flat; bars cut and bent to patterns spaced at not more than 150mm centres complete to the aproval of Architect for window Size 1500 x 1500mm high	16	Nos	157,500	2,520,000 ✓
D	Ditto, for window size 900 x 600mm high	6	Nos	37,800	226,800 ✓
E	Ditto for door vent size 1180 x 400mm high	3	Nr.	33,040	99,120 ✓
F	Ditto for door vent size 900 x 400m high	13	Nr.	25,200	327,600 ✓
	ELEMENT NO6: WINDOWS CARRIED TO SUMMARY				7,882,320

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO.7: ROOFING				
	Sawn soft wood; Impregnated with Preservatives				78,0,000 ✓
A	50X150mm Beam	156	m	5000	94,000 ✓ 940,000
B	50X150mm Rafters	188	m	5000	1,035,000
C	50X100mm Struts	230	m	4500	2,97,000 ✓
D	50X100mm Wall Plate	66	m	4500	620,000 ✓
E	50X50mm Purlins	210	m	3000	
	Selected Hardwood				
F	Fascial/Barge board; 25 x 250mm; with semi-circular decorative mouldings along the bottom edges	68	m	15,000	1,020,000 ✓
	Roofing; 28gauge Resin Colour Coated IT5 aluminium sheets; single length; supplied by Aluminium Africa Ltd. or equal and approved; fixed to timber purlins with 150mm end laps fixed with roofing nails				
G	Roof covering;sloping not exceeding 45 degrees from horizontal	210	m^2	3200	672,000 ✓
H	Ridge capping	33	m	15,000	495,000 ✓
J	Valley capping	19	m	15,000	285,000 ✓
	Metal Works and Plates				
K	16mm Diameter Anchor Bolts, 850mm long, one end fish-tailed and cast into concrete	32	No	10,000	320,000 ✓
L	10mm thick steel plate	16	No	25,000	400,000 ✓
					6,874,000
	ELEMENT NO. 07 - ROOFING CARRIED TO SUMMARY				6,028,000 ✗

3/7/14

EDWARD G. MADEMLA
DISTRICT ENGINEER
MPWARWA

PO-RALG

21/12/2021

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 08: FINISHINGS				
	Insitu finishings				
	Plaster; 12mm first coat cement and sand (1:6); 3mm second coat of cement and lime (1:5) steel trowelled to smooth surfaces; internally:				
A	15mm To walls	364	m²	600	218,400 ✓
B	15mm to sides of beams	80	m²	6000	480,000 ✓
	External cement sand (1:4); rendering with approved plasticizer trowelled smooth:				
C	22mm To walls	158	m²	6000	948,000 ✓
	TILES, SLAB OR BLOCK FINISHINGS				
	Glazed ceramic wall tiles with cushion edges to BS 1281 fixed to backings with cement sand mortar and pointing with white cement				
D	400 x 250 x 6mm Tiling to walls	110	m²	30,000	3,300,000 ✓
	Graniti GN 572 Mid Grey porcelain tiles "high quality" bedding in premixed thin set cement mortar and grouting with coloured sandless tile grout				
E	600x600x8mm; 4mm diagonally joints ways; to floors to level; to cement and sand base	130	m²	4000	520,000 ✓
F	400 x400 x 8mm; 4mm diagonally joints ways to floor level of toilets, cement and sand base	26	m²	35,000	910,000 ✓
G	150mm Thick skirting	220	m	4500	990,000 ✓
	Floor edge strips				
H	GENESIS ESA 10(10mm high) or similar and approved, aluminium straight edge trim; junctions of flooring finishes	50	m	4000	200,000 ✓
	To Collection				7,566,400

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Weather Bars				
A	6 x 25mm Brass weather bar strip at external door thresholds; in prepared groove	6	m	100,000	600,000
	Beds and Backings				
	Cement and sand (1:4) wood floated surface finish				
B	32mm Bed to receive floor tiles	156	m²	5000	780,000
C	12mm Backing to receive wall tiles	110	m²	5000	550,000
	Gypsum plasterboard BS 1230 Pt. 2 1970 tapered wallboard self tapping galvanized drive screws				
D	9mm Thick ceiling; horizontal; internal	156	m2	1400	218,400
E	Cornice	180	m	5000	900,000
F	Extra; moulding gypsum	38	m	5000	190,000
G	Extra ceiling access panel	3	Nr.	40,000	120,000
H	Supply and fix PVC ceiling complete including PVC and corner joints, shoe nail and all accessories	53	M²	10,000	530,000
	Sawn softwood pressure impregnated with preservatives				
J	50x50mm brandering fixed at 600mm centre to centre	533	m	2000	1,066,000
	WORKTOP AT KITCHEN				
K	Supply and fix Worktop at kitchen and cabinet as per Architectural drawings and details including associated finishing with mable and any other to the aproval of Architect	10	m2	50,000	500,000
					5454,400
	To Collection				
	COLLECTION				7,566,400
	Page 2/8/1				5,454,400
	Page 2/8/2				13,020,800
	ELEMENT NO 08: FINISHINGS CARRIED TO SUMMARY				

3/8/16

EDGAR G. MADEMCA PO-RALG

NOVEMBER 2021

DISTRICT ENGINEER

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 09: PAINTING AND DECORATIONS				
	Internal works				
	Prepare and apply one thinned coat and two full coats of wash 'n' ware paint				2,664,000 ✓
A	Plastered walls	444	m²	6000	936,000 ✓
B	Gyspum ceiling	156	m²	6000	
	External works				
	Prepare and apply one thinned coat and two full coats of weather guard paint to				
C	Rendered surfaces	158	m²	6000	948,000 ✓
	Varnishing; Internal work; prepare and apply three coats of clear polyurethane clear varnish; wood surfaces.				
D	General surfaces	81	m²	4000	324,000 ✓
E	Frames, linings and associated mouldings 200-300mm girth	130	m	2000	260,000
					513,200 ✓
					5,132,000 ✓
	ELEMENT NO. 09 : PAINTING AND DECORATIONS CARRIED TO SUMMARY				5,571,000 ✓

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 10: SANITARY WARE INSTALLATIONS				
	KITCHEN SINK				
	Stainless steel kitchen single with single drainer complete with tap hole provided on the sink the waste unit as manufactured by castleware: sink Model No. D10050A including all fixing fixtures				
A	Overall size L1000 X W500mm x D180mm bowel size L380 x W330mm	3	Nr.	40,000	120,000 ✓
	WASH HAND BASIN				
B	White vitreous wash hand basin (HWB), size 450x440x200mm complete with self closing; semi pedestal and chain stay hole; fairline ½in pillar taps with clear acrylic handles; 1¼in bead chain waste and plug; 80cm slotted tail bolt stay; isovalve servicing valves. rubber plug with slotted tail; 32mm plastic bottle trap with 75mm seal, flexible pipes, angle valves and other accesories as manufactured by castleware or equal and approved	6	No	28,000	168,000 ✓
	SOAP DISH				
C	Ceramic soap dish Model A:101 as manufactured by castleware or equal aproved including fixing fixtures, fixed to the wall as per manufacturer recommendations	6	Nr.	20,000	120,000 ✓
	WC				
D.	Western type low level W.C suite vitrious china to B.S 3402 s/p-trap, 9litres flushing tank with single push button complete with all necessary accessories. "Casterware "	6	No	20,000	120,000 ✓
E.	80mm Diameter high quality plastic floor drain (ALBETONY) trap built in concrete bed.	6	No	20,000	120,000 ✓
	TOILET PAPER ROLL HOLDER				
F	Wall mounted stainless Toilet paper holder Model BC 70 complete with fixing accessories as manufactured by castleware or equal and approved	6	Nr.	15,000	90,000 ✓
					738,000 ✓

To Collection

NATIONAL CONSTRUCTION COMPANY LTD P.O. Box 35... Tel:0787 021 44... DAR ES SALAAM

3/10/18

EDGAR G. MADEMA
PO-RALG

NOVEMBER 2021

21/12/2021

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SHATTAF				
A	Wall mounted 'trigger spray' shattaf Oasis chrome finish complete with fixingaccessories as manufactured by castleware or equal and approved	6	Nr.	20,000	120,000
	MIRROR				
B	600 X 800 X4mm Thick mirror with JX -S501 as per castleware or other approved, fixed on lacquer with double sided self adhesive pads finished with bevelled edges.	6	Nr.	150,000	90,000
	COLD WATER INSTALLATION:				
	IPS pipes, Class D painted with special paint; including joints in running length.Fixing in accordance with maufacture's instructions.				
	Distribution pipes IPS pipes including screwed and socketted joints in running length: complete with all accessories like elbows, Unon, Tee etc				
C	25mm Diameter Polypipe, class D	18	M	3500	63,000
D	19mm Diameter Polypipe, class D	30	M	3500	105,000
E	19 mm Diameter supply IPS pipes; in blockwork chase.	27	M	3500	94,500
F	Angle valve	15	No	115,000	225,000 75,000
G	Bib tape pex 1/2	3	No	200,000	600,000
H	Pillar tape pex 1/2	6	No	25,000	150,000
J	Stop cock pex 3/4	3	No	20,000	60,000
	UPVC pipes;Class 'E'; Including fittings in running length complete with all accessories, elbows, plug etc				
K	38mm Diameter pipe; in chase in block work.	30	M	10,000	300,000
L	50mm pipe	27	M	10,000	270,000

TO COLLECTION

BILL NO: 04 - PRIME COST AND PROVISIONAL SUMS

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BILL NR.4: PRIME COST AND PROVISIONAL SUM				
	Prime Cost (PC) Sums for works to be carried out by Nominated subcontractors or Nominated suppliers				50,000
A	Electrical Connection and meter		Sum		50,000
B	Manholes 10Nr., Septic tank (1Nr.) & soakaway pit (1Nr.)		Sum		
	BILL NR.4- PC AND PROVISIONAL SUMS WORK CARRIED TO GENERAL SUMMARY				169,000

EDGAR G. MADEMLA
BSDE
21/12/2021
DISTRICT ENGINEER WORKS
MPWAPWA

AZHAR CONSTRUCTION COMPANY LIMITED
P.O.Box 35918
Tel:0787 021 444
DAR ES SALAAM

NOVEMBER 2021

4/PC/24

PO-RALG

21/12/2021

ITEM	DESCRIPTIONS OF WORKS	QTY	UNIT	RATE	AMOUNT
	SOIL AND PIPES:				
	UPVC pipes and fittings; Class 'B'; in running lengths; BS 4660 for underground pipes and B.S 3506 for pipes above ground complete with all accessories				
A	100mm. Diameter pipes; fixed to walls.	40	M	10,000	400,000
B	Ditto; laid in trenches.	30	M	10,000	300,000
	Ancillaries:				
	Draw off taps; stop valves; copper alloy to BS 5154 or BS 1010:				
C	25mm Diameter stop valve	3	No	25,000	75,000
D	19mm Diameter stop valve	3	No	20,000	60,000
E	13mm Diameter bib taps	3	No	30,000	90,000
	GULLY TRAPS				
F	Construct a standard gully trap 300x300x300mm deep;in thick concrete block walls complete with benching and all fittings and gully trap cover	9	No	160,000	990,000
	TESTING				
G	Allow for testing and commisioning the whole plumbing and drainage isntallation as per service Engineer approval	-	Item		100,000
H	Builders work in connection to plumbing	-	Item		100,000
	SUNDRIES:				
J	Allow for preparation and production of four (4) copies of 'AS BUILT DRAWINGS' of plumbing and engineering installations to Engineer's satisfaction.	-	Item		100,000
	COLLECTION				2,125,000
	COLLECTIONS				
	Page 3/10/1			1,537,500	1,387,500 X
	Page 3/10/2				2,125,000
	Page 3/10/3				
	ELEMENT NO. 10 SANITARY WARE AND INSTALLATIONS CARRIED TO SUMMARY				5,512,000 X

EDGAR G. MADEMLA 3,662,500/=

DISTRICT ENGINEER WORKS
MPWAPWA
AJDE
21/12/2021

P.O. Box 35918
Tel:0787 021 444

S/No	DESCRIPTION OF MATERIALS	UNIT	QTY	RATE	AMOUNTS
	ELEMENT NR. 11: ELECTRICAL INSTALLATIONS				
	DISTRIBUTION SYSTEM				
A	4Ways TPN distribution board (DB 3) with 100A/300mmA RCCB incomer and outgoing MCBs as shown in Schematic diagram as ABB or approved equal.	No	3	120,000	360,000
	POWER POINTS				
B	2 x 13A Double switch socket as ABB or HAGER or LEGRAND make	No	12	25,000	300,000
C	20A DP control switch with neon indicator c/w steel box for Air Conditioners, Security lights and Hand driers as ABB or HAGER or LEGRAND make	No	0		
D	45A DP Cooker Control Unit with neon indicator c/w steel box as ABB or HAGER or LEGRAND make	No	3	35,000	105,000
E	2.4KW Hand dryer c/w sensing unit automatically controlled as GET Ex UK	No	0		
	LIGHT FITTINGS, FANS AND SWITCHES				
F	Single fluorescent fitting complete LED philips or other equal approved	No	6	36,000	216,000
G	LED: Fluorescent fitting 60mm cassette type	No	0		
H	Ceiling light complete with energy saver 18W	No	15	35,000	525,000
J	80W 56" Sweep ceiling fan c/w regulator, ceiling rose and hooks as Panasonic or National or KDK of Japan.	No	0		
K	52W 16" Sweep ceiling fan c/w regulator, ceiling rose and hooks as Panasonic or National or KDK of Japan.	No	0		
L	10A 1 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	5	15,000	75,000
M	10A 2 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	10	15,000	150,000
N	10A 1 gang 2 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
P	10A 2 gang 2 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
Q	10A 3 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
R	Twin switch socket ABB or other equal approved	No	3	17,000	51,000
S	10A 3 gang 2 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
T	10A 4 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
	LIGHTNING PROTECTION SYSTEM				
V	Soil treatment and interconnection to general earthing of building to meet the requirement of IEE regulations.	Item	1	250,000	250,000
	To collection				1,857,000

SECTION VI: SPECIFICATIONS

TECHNICAL SPECIFICATIONS

1.0 *EXCAVATION AND EARTHWORK 1.1 Nature of excavation*

The contractor/Project Engineer must ascertain for him the nature of the material to be excavated and price work accordingly as no allowance will be made beyond the contract sum of any alleged ignorance in this respect.

1.2 *Excavations generally*

Excavations have been measured from the drawings including the Engineer's site plan showing existing contours. It is the responsibility of the contractor/Project Engineer to check the commencing levels prior to commencing the work as no extra payment will be made in respect of any alleged excavations carried out due to the commencing levels being above that shown upon the drawings without the prior written agreement of the Structural Engineer prior to commencement of excavation.

1.3 *Site clearance*

The contractor shall clear the construction areas within the site of all bushes, roots, boulders, natural obstructions, rubbish and any other natural or artificial obstructions, which would interfere with construction of buildings, roads, paths and drains.

1.4 *Over-site excavation*

Excavated material suitable for back-filling around foundations and for making up levels under roads, floors etc., is to be kept separate from soil spoil heaps and to be re-used as directed or spread and levelled on the site at the end of excavation operations when found to be surplus. The amount of any such disposal will be measured on site by the Quantity Surveyor. Vegetable soil is not to be used for back filling around foundations.

1.5 *Excavation for foundations and structures*

Excavations for foundations and the reinforced concrete structure shall be to the widths, depths and levels to accommodate the structure shown on the drawings. Working space has been allowed for in the measurement of excavation quantities in accordance with the rules of measurement laid down elsewhere in these bills, namely 1.00m from the face of any work which required formwork over 1m deep below the starting level of excavation and 0.30m from the face of any work which requires formwork not exceeding 1m deep below starting level of excavation.

Generally formwork has not been measured for plain concrete foundations or column bases and, therefore, excavations for these have been measured, net. Formwork has been measured to reinforced concrete foundation and column bases and all faces of columns and walls and working space excavation has been measured and included accordingly. Adjustments to excavations widths as measured will therefore be made only in the case of the Structural Engineer ordering the addition of formwork to plain concrete foundations etc., or the omission of formwork to reinforced concrete foundations or column bases. Ordinary use of planking and strutting along foundations to prevent earth falls and to save concrete will not be considered as formwork.

1.6 *Inspection*

When the excavations have been made to the sizes and depths required from the drawings, the Structural Engineer shall be called to the site immediately for an inspection, and upon approval the Contractor shall proceed with the work to prevent rainwater or other surface water draining into the foundations. The excavations are to be left open until any variation in depth has been measured and agreed.

1.7 *Excavation below required depths*

Should any excavation be made below the levels or lines shown on the drawings or otherwise required by the Structural Engineer, the contractor must fill up the resultant

over-excavation to the proper levels or lines with concrete nominal mix (1:4:8) at his own expense (see "concrete work").

1.8 Filling

The fill shall be clean, selected coarse sand or gravel. It should be taken from borrow pits if the soil on the site is found to contain too much fines and to have too low plasticity limit to be used as fill.

The fill shall be deposited in horizontal layers of max. 200mm Thickness. As soon as possible after the fill is laid out, it should be compacted in min. three passes of a vibratory-roller and/or vibrating- plate compactor. The equipment to be used must be approved by the Engineer.

At each area (control area) of 500m2-compacted fill, three field density tests (e.g. by the sand-replacement method) should be taken randomly.

The Control area to be accepted if all three test results are above 97% of the max. Density as determined at a homogenous mixing of all three samples by the Standard Proctor Method. Otherwise, repeat the test, each time with three new samples until the above requirement is met or re-compact and test again.

1.9 Return, fill in and ram

Return, fill in and ram suitable filling material as described above around foundations and other concrete structure in layers not exceeding 150mm thick and carefully ram and consolidate with power rammer. No filling in shall be executed until concrete foundations etc., have been inspected and approved by the Structural Engineer.

Regardless of the means of back filling and compaction adopted, the contractor is responsible not only for the standard of the work but also for any possible damage of the permanent work or adjacent structure.

1.10 Levelling

No item is measured for levelling and consolidating ground and rates for excavation must include for levelling and preparing the ground for concrete or other works including ramming or rolling.

1.11 Soil sterilisation

Anti-termite treatment is to be carried out by an approved specialist firm who will be required, upon completion of the soil sterilisation, to furnish a written guarantee qualifying the following: -

That the chemicals applied comply with the requirements specified herein for chemical concentration and rates of application.

That the treatment will remain effective against termite infestation for a period of five years.

The free re-treatment by the firm of any areas showing signs of infestation before the expiry of the five year period.

The chemicals used shall be one of the following: -

i) Gamalin 0.5% applied in oil solution or water emulsion.

ii) Benzene hexachloride, 0.8% of gramma isomer applied in oil solution or water emulsion.

iii) Chlordane 1.0% applied in solution or water emulsion. iv) Dieldrin 0.5% applied in oil solution or water emulsion.

v) Lindane; 0.8% in oil solution or water emulsion

vi) Pentachlorophenol; 5% in oil solution. vii)

Trichlorobenzene; 1 part to 3 parts oil.

Some of the chemicals listed above are toxic to animal and plant life and must therefore, be applied only with caution by an experienced person. Where individual water supply systems are proposed precautions must be taken to prevent in filtering and endangering the water supply. Treatment shall not be made when a soil of fill is excessively wet or immediately after heavy rain.
Precautions must also be taken to prevent disturbance of the treatment by animals or human contact with the treated soil. The treated area is to be covered as quickly as possible after treatment.
The rate of application is to be 5 litres per square metre and the areas measured include those under floor and round wall and column foundations.
The contractor shall notify the structural engineer in sufficient time before the filling of foundation trenches and laying of concrete floor bed in order that the Architect/Engineer may nominate a specialist firm to execute the soil sterilisation.

Any additional costs caused by the contractor not rendering sufficient prior notice to the Architect/Engineer will be borne entirely by the Contractor.

1.12 *Disposal of surplus excavated material*

Surplus excavated material will be carted away from the vicinity of the walls and deposited, spread and levelled on areas to be allocated by the Structural Engineer, reasonably adjacent to the site.

1.13 *Disposal of water*

The contractor shall keep the excavations free from standing water and silt (or excavated material softened by water) and he shall include for the cost of pumping, construction of temporary drains; soak-way pits, etc., as deemed necessary to achieve this. An item has been included for this in the Bills in each relevant section. The cost of pumping to dispose of any spring or running water has been covered by a Provisional Sum. If spring or running water is encountered the cost of any pumping ordered by the Structural Engineer will be paid for in accordance with the Dayworks schedule.

1.14 *Planking and strutting*

Sides of all excavations must be supported in order to prevent falls from or collapse of the earth face. The "Planking and Strutting" is deemed to include any method or methods, which the contractor elects to adopt to uphold, protect and maintain the sides of excavations. The contractor will be responsible for any consequences of his failure in this respect including clearing away fallen materials and any extra concrete or other works including formwork ordered by the Structural Engineer due to such failure. An item has been included in these Bills in each relevant section.

1.15 *Hardcore*

Hardcore shall be hard crushed stone to pass a 100mm ring in all directions. No sand, quarry dust or fine material will be permitted. All hardcore beds shall be topped with a layer of fine stone or aggregates minimum size 12mm to fill the voids on the surface to receive concrete beds. Rates for hardcore shall include for levelling or finishing or laying to falls and consolidating by rolling as described for "Filling" above.

2.0 *CONCRETE WORK 2.1 Materials and workmanship generally*

The recommendations of the recent British Standard Codes of Practice BS 8110 for the Structural use of reinforced concrete in buildings shall be deemed to be incorporated in these preamble clauses unless otherwise specifically stated.

2.2. *Materials generally*

All materials to be used in the works shall conform as to quality and description as specified hereunder and shall be equal to approved samples. In particular no materials shall be used until approved samples shall be supplied to the Consulting Engineer for approval at least one week before ordering in bulk and delivery to the site. Any material delivered to the site, which has not been previously approved by the Structural Engineer shall be the Contractor's liability. All materials shall be transported, handled and stored on site so as to preclude damage deterioration or contamination. All condemned materials are to be removed from the site within 24 hours.

2.3 *Cement*

The cement, unless otherwise specified on the drawings shall be Ordinary Portland Cement of approved manufacture, delivered in the manufacturer's bags and shall comply in all respects with the requirements of the latest British Standard 12. The consignments of cement shall be delivered in sealed bags and shall be stored on the site so as to be used in the order in which they are delivered. The structural engineer shall have the right to take samples for testing in accordance with BS. 12 and the contractor are to obtain current certificates of test from the manufacturer prior to bulk deliveries. Under no circumstances is High Alumina Cement to be used.

Rapid hardening cement may be used in lieu of ordinary Portland cement only with the prior approval of the Architect/Engineer or Engineer, provided that all conditions applying to its use are strictly observed. Any additional expenses in connection with the use of such cement shall be borne by the Contractor.

2.4 *Aggregate generally*

All aggregate shall be from approved reputable sources and shall be strong, hard, durable or limited porosity, free from dust, soft materials, earth or other extraneous matter, and washed and / or screened by the Contractor if so required by the Structural Engineer. Samples shall be provided as often as called upon by the Structural Engineer for testing in accordance with BS. 882. Normal aggregates will have particle densities of greater than 2000 Kg / m^3 but not exceeding 3,000 Kg/ m^3. Only approved materials shall be used.

Graded samples of all types of aggregate shall, after approval, be kept on site behind glass for visual checking of subsequent deliveries for grading, shape and where applicable, colour. Aggregate shall be stored on site on paved areas with divisions between each type of aggregate, and shall be used in the order in which they are received on site. No aggregate shall be stored directly on the ground.

2.5 *Fine Aggregate*

The Contractor shall ensure that the grading of fine aggregate shall be such that not more than 10% by weight shall exceed 5mm in size and not more that 10% by weight shall pass a sieve BS. No. 100. Between these limits the grading shall conform to the grading for either zone, 1, 2 or 3 (B.S.882).

2.6 *Coarse aggregate*

Coarse aggregate shall be clean, well-graded crushed granite stone or other equal and approved stone from an approved quarry and washed if required by the Structural

Engineer. The pieces shall be angular or rounded in shape and shall have granular or crystalline or smooth (but not glassy) non-powdery surface. Flakey and laminated pieces, mica and shale shall only be present in such quantities as not to affect adversely the strength and durability of the concrete.
The four nominal aggregate sizes shall be 40mm (1½"); 20mm (3/4"); 10mm (3/8"); 6mm (¼"); and the grading when analysed as described in BS. 812 shall be within the limits given in BS. 882. Structural Engineer will specify sizes of aggregates to be used in specific areas. For most work 20 mm maximum size aggregates will be used. The nominal maximum size of coarse aggregates should be not greater than ¼ of the minimum thickness of concrete section or element.

2.7 *Water*

Water used for mixing of concrete, washing out of shuttering and similar purpose shall be clean, fresh and free from organic impurities in amounts likely to impair the quality of the concrete and should comply to requirements of BS 5328 and BS 3148:1980 "Methods of test for water for making concrete".

2.8 *Admixtures*

Structural Engineer will approve all concrete admixtures after submission of specifications or proprietary brands and relevant trial mix verification at site by Contractor. Admixtures to comply with BS 5075 "Concrete Admixtures".

2.9 Steel reinforcement

Steel for reinforced concrete shall comply with the following specification:-

i) Mild steel rod reinforcement shall comply with BS. 4449.

ii) High tensile steel reinforcement shall be either cold worked deformed steel bars of circular octagonal section complying with BS. 4461 or hot rolled deformed high tensile bars having a guaranteed minimum yield stress of 460 N/mm2 and other physical qualities in accordance with BS. 4449

iii) Welded steel fabric reinforcement shall comply with BS. 4483 iv) BS. 8110, the structural use of reinforced concrete in buildings.

All steel reinforcement shall be supplied by an approved manufacturer; and the contractor may be required to obtain a manufacturer's test certificate in respect of steel reinforcement supplied. In the absence of such a test certificate, the contractor may be required to submit samples to be tested at the contractor's expense in such manner as to comply with BS 8110 requirements.
The steel shall be stored so that it is kept clean and reasonably free from rust.
The placing of all reinforcement shall be checked by the Engineer and in no circumstances is concrete to be deposited around any steel that has not been passed. At least twenty-four hours notice shall be given to the Engineer that reinforcement will be ready for inspection.

2.10 Bending and fixing of reinforcement

All bending, cutting and fixing to be in compliance with the British Standard code of Practice, BS 8110 and BS 4466 Bending schedules are incorporated in the contract drawings.
The number, size, form and position of all reinforcement shall unless otherwise directed or permitted by the Architect/Engineer, be strictly in accordance with the

drawings. Bars shall be of the required lengths, and lapping, except where indicated on the drawings, is not permitted unless approved by the Engineer.
Overall dimensions shall not be exceeded and shall not be less than 6mm below the required dimensions. The sizes of links and the like shall be within tolerance of 3mm under or over the specified dimensions. Any tolerance in the total length of the bar as cut shall be taken up in the end hooks or other approved portions of the bar. The internal radius of the bends at corners of links and the like shall equal half the diameter of the bar embraced by the link.
Laps in bars of random lengths shall be staggered in such a way that no more than 1/3 of bars having same number are to be lapped in the same section.
The steel reinforcement shall be assembled and fixed in the form of a rigid cage. To prevent displacement before or during concreting the bars shall be secured to each other with approved wire. Concrete distance blocks shall, unless otherwise directed, be used between the reinforcement and the bottom and sides of the forms to ensure correct concrete cover to the bars, as specified on the drawings. The specified cover shall be provided and maintained within the specified tolerance.

The minimum clear distance between adjacent bars shall be 25mm horizontally and 25mm vertically. Spacer bars shall be inserted at such intervals that the bars do not perceptibly sag.
Great care must be taken to ensure the correct positioning of beam and column starter bars and to secure projecting bars against displacement both during and after concreting.
At the time of fixing and when concrete is being placed, all reinforcement shall be free from oil, paint, grease excessive dust and scale or any other coating, which would destroy its bond with the concrete.

2.11Formwork to produce a fair face board finish *(wrought formwork)*

Formwork described as wrought shall be constructed of or lined with 100mm wide planed boards well cramped together or plywood to leave a fair smooth finish in the exposed concrete face when the shuttering is removed.

2.12Construction and Movement joints

The positioning, type and frequency of construction joints are to conform to requirement of BS 8110 and be approved by Engineer. Methods of forming movement joints to follow drawings and the requirements of BS 8110.

2.13Concrete grades

Only designed concrete mixes complying with BS 5328 shall be used. Concrete must comply with the requirements set out in the following table according to the grade (This is for guidance only)

	MIX	OF COARSE AGGREGATE	CEMENT RATIO BY WEIGHT	CRUSHING STRENGTH OF WORKS TEST CUBES (N/mm2)

GRADE	NOMINAL	MAX.SIZE	MAX WATER	MINIMUM 7 DAYS	28 DAYS
30	1:1:2	20mm	0.50	20	30
25	1:1½:3	20mm	0.55	17	25.5
20	1:2:4	20mm	0.60	14	20
15	1:3:6	25mm	0.60	8	14
10	1:4:8	40mm	0.60	-	10

2.14Concrete Production, Supervision and Tests

Concrete should be produced in accordance with BS 5328 which requires tests to be made on constituent materials in accordance with relevant British Standards and control tests be made on concrete to ensure compliance with specified requirement. Engineer will in addition approve procedures for placing, compacting, curing and working in hot weather.

Concrete should meet appropriate requirements specified in BS 5328 for a)

Characteristic compressive strength

b) Specified mix proportions
c) Maximum and minimum cement content
d) Maximum free water/cement ratio
e) Workability

f) Air content of concrete
g) Temperature of fresh concrete
h) Density of fully compacted concrete.

2.15Preliminary cube tests

The contractor shall specify the sources from which the aggregate will be obtained and shall deliver at his own cost sufficient materials enable preliminary cube tests to be carried out and approved by the Engineer. The Contractor will be responsible for submitting his proposals for the concrete mix proportions together with aggregate grading curves to the Architect/Engineer for approval and for the payment of the fees of an approved Testing Authority in carrying out the crushing tests. The strength of the preliminary cubes must be a minimum of 33% above those in the above table, which is the minimum works strength.

The approval of any mix by the Engineer will not relieve the contractor of the responsibility for ensuring that all concrete used in the works obtain the minimum works strength shown above.

In proportioning the concrete the quantity of cement shall be determined by weight and the quantities of fine and coarse aggregate by either volume or weight, due allowance being made for the moisture content of the aggregate.

Only sufficient water shall be added to the cement and aggregate during mixing to produce a concrete having sufficient workability to enable it to be well consolidated, to be worked into the corners of the shuttering and around the reinforcement, to give the specified surface finish and to have the specified strength. When a suitable amount of water has been determined the resulting consistency shall be maintained throughout the corresponding parts of the work and the slump test or compaction factor test shall be carried out from time to time to ensure the maintenance of this consistency. In no case should the slump be more than 65mm as determined by the standard slump test nor should the compaction factor be more than 0.87 as determined by the standard compaction factor test as described in BS. 1881.

Should the Contractor wish to use patent, plasticising compounds or other admixes, those shall be approved by the Engineer and be used in accordance with the manufacturer's publications.

2.16Work cube tests

Work cube tests shall be made throughout the contract. Each cube shall be inscribed with the date of manufacture and identification mark. A record shall be kept for each batch of cubes showing the position in the works which the concrete represents, the date of manufacture, the mixture and slump of the concrete, particulars of the cement and aggregate used, a statement of whether or not the cubes were vibrated and other information relating to the subsequent history of the cubes.

The cube shall be made, cured and tested in accordance with the requirements of BS. 1881 when directed by the Engineer and in his presence or that of the Approved Testing Authority. A sample of concrete shall be taken at random on eight separate occasions during each of the first 5 days of using that mix.

/10 Thereafter at least one sample shall be taken on each day any concrete of that particular mix is used. From each sample four cubes shall be made two for testing at 7 days and two for testing at 28 days. The works cube results shall be examined both individually and in consecutive (but not overlapping) sets of four, for which the average and the range of each set are calculated.

The mix proportions shall be modified to increase the strength if, in the first and consecutive (but not overlapping) sets, any of the following conditions are not satisfied:-

i) Not more than 2 individual results of the 40-cube test should fall below the specified work cube strength.

ii) No value of the range in any set should exceed 4 times the designed standard deviation.

iii) Not more than one set should have an average, which is less than the specified strength plus 1.1/3 times the designed standard deviations.

iv) No value of the average for any set should be less than the specified strength plus the designed standard deviation.

After 10 consecutive sets of results have been obtained the overall average and the standard deviation of the 40 results shall be calculated and any appropriate modifications made. Subsequently, if any of the foregoing conditions are not satisfied, the overall average and the standard deviation of the previous consecutive 40 results, including the non-complying sets, should be calculated and the appropriate steps taken if the overall average strength twice the standard deviation is less than the specified work cube strength.

2.17Quality control requirements

2.17.1 Supervision

A competent person shall be employed whose duty shall be to supervise all stages in the preparation and placing of the concrete. He shall supervise all tests on the materials and cubes and the maintenance and calibration of mixing and measuring plant. This person shall also be responsible for keeping an accurate record of the dates on which concrete is poured and where. Where the Engineer is not satisfied with the performance of concrete supervisor he shall recommend to the Architect/Engineer for removal from site.

2.17.2 Batching and mixing plant

The quantities of cement and of fine and coarse aggregate shall be determined by weight. The amount of water added shall be measured, allowance being made for the water content of the aggregate. The accuracy of weighing and measuring equipment shall be 2.½%. Measuring equipment for water shall be maintained in a clean serviceable condition.

2.18Workmanship

2.18.1 Placing of reinforcement

Reinforcement shall be accurately placed and maintained in the position described on the drawings or elsewhere to the entire satisfaction of the Engineer. Bars intended to be in contact at passing points shall be securely wired together with 16 gauge annealed soft iron tying wire.

Binders and the like shall tightly embrace the bars and any slackness or misplacement of bars shall be rectified before the Engineer is called for inspection. Spacers of approved design shall be used for ensuring the correct positioning of the bars and diagonal wiring shall be provided to ensure rigidity of all assembled units of reinforcement. The vertical distance required between successive layers of bars in beams or similar members shall be maintained by the provision of mild steel spacer bars inserted at such intervals that the main bars do not perceptibly sag between spacers. The rates for reinforcement must include for all requisite wiring, spacers and precast concrete blocks to maintain the required spacing and cover. All bars are to be bent in accordance with BS. 4466, 1969. Cover of concrete to the reinforcement shall be, unless shown otherwise:-

Columns - 40mm minimum to main bars Base - 50mm minimum to main bars
Beams - 25mm minimum to main bars

Slab	-	15mm minimum to main bars
Wall	-	25mm minimum to main bars
Raft slab	-	100mm minimum to main bars

Splices to future work shall be covered in a manner approved by the Engineer to prevent rusting and deterioration. Before any concreting is carried out the approval of the Engineer as to the correctness of the fixed reinforcement shall be obtained but such approval shall not remove the responsibility for the correctness of the placing from the contractor. During concreting a competent steel fixer shall be in attendance on the concrete gang to make minor adjustments to the position of bars should they become displaced.

2.18.2 Formwork generally

Formwork design and construction should take into account of safety and surface finish required and to conform to requirements of BS 8110 and BS 5975. Dimensional deviations of insitu concrete shall be to limitations set in BS 5606

All formwork and moulds shall be rigidly constructed to accurate shape and dimensions as described on the drawings and to requirement of BS 5975. Timber shall be well seasoned, free from loose knots and be of a kind and thickness that will avoid deflection and warping, remaining true to line and level. Faces in contact with the concrete shall be free from adhering grout, projecting nails, splits or other defects and shall be coated with an approved mould oil so as to prevent grout adhering to them, care being taken to prevent such coatings from any contact with the reinforcement.

Formwork shall be braced and strutted to prevent deformation under the weight and pressure of the wet concrete, construction loads, winds and other forces. The bottoms of beam boxes shall be erected with an upward camber so as to prevent downward deflection. Maximum tolerances, which will be permitted in the finished concrete work, are to BS 5606 as follows:-

Dimensions less than 3m	$\pm$3mm
Dimensions between 3m & 15m	$\pm$6mm
Dimensions over 15m	$\pm$10mm

Joints in the moulds of formwork shall be carefully made so as to prevent leakage of cement grout and particular care shall be exercised to this respect for moulds in which it is intended to place vibrated concrete. Openings in the formwork for inspection of the inside and for the escape of water used for washing out accumulated debris shall be formed in such a manner that they can effectively be closed before placing the concrete.

Formwork connections and joints shall be constructed so as to permit easy removal of the formwork, but shall be so secured as to retain correct shape under pressure exerted by the wet concrete during placing, vibration, setting and hardening. If any wire ties passing through the concrete or bolts are used, measures shall be taken to prevent rust, stains on the finished work and any holes left by the removal of such ties shall be made good. Formwork shall be provided for top faces of sloping work and anchored to prevent floatation, but this shall apply only where the slope exceeds 15 degrees. The formwork for beams and slabs shall be erected so that the sides of the beams and soffits of the slabs can be removed without disturbing the beam bottoms. Props for an upper storey shall be placed directly over these in the storey immediately below and the lowest prop shall bear upon work sufficiently strong to carry this load.

If formwork of columns; walls and other deep sections is erected to the full heights, one side shall be left open and shall be built up in sections as placing of the concrete proceeds. Before concreting, bolts and fixings shall be in position. Cores and other devices used for the forming of openings, holes, pockets, chases, recesses and other cavities shall be fixed to the formwork and no subsequent holes shall be cut in any concrete without the Architect/Engineer's approval

2.18.3 Mixing of Concrete

All concrete shall be mixed in batch mixing machines Hand mixing shall not be permitted. All mixing machines shall be of the fixed drum types and not smaller in size than 0.40/0.28 CM drum mixers will not be permitted. The mixer shall be of the type equipped with an accurate measuring device designed so that no unauthorised person can tamper with the valve or vary the quantity of water delivered once this has been approved and set. The mixing procedure to be adopted by the Contractor shall be approved by the Architect/Engineer.

Mixing of each shall be approved by the Engineer. Mixing of each batch shall continue until the concrete is uniform in colour and, in any case, for not less than two minutes after all the materials and the water is used in the drum. The entire contents of the drum

shall be discharged before the materials for the succeeding batch are fed into the drum. Upon completion of the day's mixing, the drum shall be thoroughly cleaned free of adhering concrete.

2.18.4 Distribution of Concrete

The concrete shall be distributed from the mixer to the position required by approved means, which do not cause separations or otherwise impair the quality of the concrete. All equipment shall be cleaned before commencing mixing and distribution and be kept free from set concrete. All concrete must be in position and consolidated before the initial set is commenced and the contractor shall ascertain the initial setting time for the brand of cement being used and ensure that his means of distribution are such that it is impossible for concrete to have set prior to placing.

Distribution by means of mortar pane generally will be permitted, but for important large structures such as slabs, large beds and elsewhere instructed by the Engineer the minimum requirements shall be wheelbarrows, ramps and runaways over the reinforcement.

2.18.5 Placing of Concrete

Before placing of concrete commences, the formwork shall be examined and any accumulated water and rubbish lying therein shall be removed. The concrete shall be placed as near to its permanent position as is practicable and shall not be worked along the formwork to that position. It shall not be dropped from a height not handled in a manner likely to cause separation of the aggregate or loss of the cement matrix. In columns and other similar members the bottom shall be first filled to a depth of between 150mm and 200mm with a cement mortar consisting of sand, cement and water with the sand and cement in the same proportion as that specified for the general mix in that member. The mortar shall have a consistency such that it will

work up the formwork and fill in spaces, which may occur due to close spacing of reinforcement in the splice. This mortar must be placed immediately in advance of the concrete and shall not be allowed to attain its initial set before placing the main concrete for the member. Each layer of concrete, while being placed, shall be consolidated by the approved methods of ramming/ tamping or mechanical vibration so as to form a dense homogeneous material free from honeycombing water and air holes or other blemishes. Concrete shall be placed continuously until completion of the part of the work between the specified construction joints . Approved working joints shall be made whenever stopping of concrete placing occurs. In general, concrete shall be placed in a single operation to the full thickness and depth of slabs, beams and similar members and, in any case, shall be placed in horizontal layers not exceeding 750mm deep in walls, columns and other similar members:-

2.18.6 Vibration

Mechanical vibrators or hand tamping must be used in placing all reinforced concrete work unless the Engineer has approved specially designed mixes and preliminary work cube test results have been obtained without their use. Rates for all reinforced concrete work include for this. Where mechanical vibration is required the contractor shall allow for using two vibrators at any one time.

2.18.7 Working joints

Working joints shall be of an approved shape and placed at right angles to the axis of the member. The contractor shall submit his proposals for the design and position of all joints on a drawing to the Architect/Engineer for his approval well before construction is commenced. The position of day-to-day working joints may be determined so as to meet the requirements of the contractor's concreting programme.

Wherever new concrete is to be placed against concrete that has hardened, the face of the old concrete shall be cut back not less than 20mm and all-loose particles removed. The face shall then be wire brushed and thoroughly cleaned with water and then coated with a neat cement grout immediately before placing the concrete shall be well rammed and compacted against the prepared face before the neat cement grout sets.

2.18.8 Protection of Concrete

Newly placed concrete shall be protected by approved means from rains, sun and dry winds, and exposed faces shall be kept moist with polythene sheets or hessian coverings or other approved means for at least 7 days. Under no circumstances shall concrete be worked upon until it has reached a cube strength of 140kg per square centimetre. Immature concrete shall be protected from damage by falling debris excessive loading vibrations, running or standing water, abrasives or other influences likely to impair the quality or strength of the finished work

2.18.9 Concrete in Excavation.

The length and widths of the excavation shall be as necessary for the proper construction of work below ground and in accordance with the Preambles contained in the section 'Excavation and Earthwork'. Blinding concrete has been measured for the net width required for concrete structure and foundations below ground level. Blinding has not been measured to the extra width, if any required for working space.

The depths shall be decided by the Architect/Engineer where these are not given on the drawings. Any obstructions or unusual solids encountered during the excavation shall be reported to the Architect/Engineer and dealt with as then instructed.

2.18.10 Removal of formwork.

The period elapsing between placing the concrete and removing the formwork shall be sufficient to allow the concrete to mature to the extent of being able to maintain its own weight and any constructional and structural loads imposed without damage. The Architect/Engineer's approval for the removal of the formwork shall be as tabulated below:

Position of Formwork	Minimum striking Time
Vertical sides of wall, columns, beams, etc	2 days
Soffits of beams & slabs (props left)	7 days
Slab and props	14days
Bottom boards of piles (intermediate support left in)	12 days
Soffits of beams under 6m span	16 days
Additional: Period for each 0.6m span in excess of 6m span with a maximum of 28 days	1 day

The formwork shall be removed in all cases by gradual easing without jarring and the process shall be such that the sharp edges of the concrete are not chipped and spilled away. If the imposition of a load is anticipated, props shall be provided in an approved manner after removal of the formwork and before the imposition of the loads.

2.18.11 Surface finishes

Upon removal of the formwork any honeycombing or damaged surfaces or other imperfections shall be reported to the Architect/Engineer. No surfaces shall be repaired or otherwise treated until an inspection has been carried out by the Architect/Engineer and his instructions or approval to remedial work (if any) have been given or obtained.

Concrete surfaces, which are to be plastered or rendered, are to be hacked or roughened by an approved means to form a key.
Sawn formwork is measured for all surfaces requiring support and subsequently concealed or plastered.

2.19.Precast Concrete

Where precast concrete members are specified, these shall be constructed in moulds of approved design and samples from the moulds shall be approved before quality production of the member is commenced to requirement of BS 8110. Large precast

members shall be lifted only at points, which will not damage the member, and if necessary temporary bracing of timber shall be used to case the member until it is in position. Small lintels and other small members may be cast in-situ at no extra cost at the contractor's option. Allowance must in all cases be made for any extra reinforcement to counteract temporary stresses whilst handling, transporting and hoisting precast concrete members. Moulds for precast units described as finished fair on exposed surfaces shall be lined with plywood or hardboard to leave a fair finish on the exposed concrete face when the mould is removed.

The concrete shall be of the grade specified on the drawings but with maximum aggregate size 12mm and shall be thoroughly vibrated in the moulds and shall not be removed until seven days after placing the concrete.

Care must be taken that no concrete is allowed to become prematurely dry and the fresh concrete must be carefully protected from the rain, sun and wind by means of 'Sisal-kraft' paper, well-wetted sacking, wet sand or other approved means. This protective layer and the concrete itself must be kept continuously wet for at least seven days after the concrete has been placed.

Prices for precast concrete shall include for all moulds, reinforcement as specified, hoisting and fixing in the position required. bedding and pointing as described and temporary props and other necessary supports.

2.20Sub-contractors work Incorporated in the Structure

It shall be the contractor's responsibility to co-ordinate sub-contractor's and others for incorporating any electrical conduit, plumbing fixtures and pipes, bolt holes, etc., in the concrete members as required and shown on the drawings. The contractor shall submit details of cable and pipe runs to the Architect/Engineer before the work is put in hand and shall have the Architect/Engineer's approval of the layout. No holes or chases shall be cut on concrete without the approval of the Architect/Engineer.

2.21 General

No holes or chases are to be cut in any part of the reinforced concrete construction without first consulting the Architect/Engineer. No part of the reinforcement shall be used for conduiting electrical current. Notice must be taken of any appearing on the drawing and not mentioned in these preambles.

2.22Movements and Separation Joints

Movement joints shall comprise of Bitumen impregnated softboard or similar approved.
Joints topping are to be 'Plastic' or similar approved hot poured rubber bitumen compound. Pointing to vertical joints is to be 'Plastic joint' or similar approved bituminous putty applied with a gun. Joints are to be at least 12mm deep and the gap is to be formed either by raking cut (in the case of expanded polystyrene) or by temporary wooden battens of the required width and 12mm deep.

Rates for the expansion or separation joint shall include all necessary labour and the materials described above, temporary supports and cutting where required to line with concrete surfaces finished to falls. Formwork has been measured as a separate item to one side only of expansion joints.

2.23Mortise and Pockets

Mortise or pockets for holding down bolts or dowels shall be formed in concrete to the size and shapes shown on the drawings. Mortises shall be formed by the use of expanded polystyrene blocks of the required shapes and sizes carefully and accurately placed and maintained in position whilst the concrete is poured.

Rates for mortises shall include for all necessary templates and raking out and the complete removal of the polystyrene when the concrete has set. No deduction from

concrete quantities have been made for any mortise, pocket or any other void in the concrete of 0.05 cubic metre or less and the Contractor may take this into account when pricing. Grouting up has been measured separately.

3.0 WALLING 3.1 Water

Water shall be as previously specified in 'concrete work.'

3.2 Cement

Cement shall be as previously specified in 'concrete work'.

3.3. Fine Aggregate

Fine aggregate shall be as previously specified in 'concrete work.'

3.4 Coarse Aggregate

Coarse aggregate shall be as previously specified in 'concrete work' and shall comprise aggregate of 6, 10 and 20mm gradings in equal proportions.

3.5 Lime

Hydrate limes for cement/lime mortars shall comply with B.S.890 semi-hydraulic class 'B' calcium limes

3.6Bricks and Clay blocks

Clay bricks and blocks, solid and hollow, shall comply with B.S.3921: 1974. The Architect/Engineer shall approve the manufacturer and/or supplier of clay bricks and clay blocks

The vertical joints of one course should not be less than a quarter-brick from the vertical joints of the courses above and below.
Where strength is critical, bricks with one frog only should be laid with the frog upwards so that it is automatically flushed with mortar.

3.7 Joints

The joints of brickwork may be finished by one of the following methods.

i) With a flush joint as the work proceeds this joint being formed of the actual mortar used in bedding the bricks.

ii) Struck or recessed joint formed in the mortar as the work proceeds when it has gone some way towards setting. Recessed pointing must be even and not vary in depth where not recommended otherwise the recess shall be 6mm deep.

iii) Joints raked out while mortar is soft and cleaned down and pointed at completion. When the joints are raked out and pointed later the pointing mortar should be of a composition similar to that of the bedding mortar.

iv) Joints raked out and left as key for plaster or roughcast.

3.8 Concrete Blocks

Solid and hollow concrete blocks for walls comply with BS. 6033/2028 type 'A' except that the recommended mix shall be 1:3:6 cement; fine and coarse aggregate respectively by volume and are to have sharp arises. Blocks are to be manufactured on site in approved block making machines and shall be solid or two cavity hollow types as specified on the drawings. No damaged blocks shall be used in walling and half or other part blocks required to maintain bond shall be cut true and even.

The concrete is to be placed into the moulds in thin layers and shall be properly tamped or vibrated to secure complete consolidation without voids or flaws produce smooth surfaces and sharp straight corners.

Blocks shall be cast on loose pellets and after removal from the moulds shall be carefully stored under for at least 24 hours before the pellets are removed. The blocks shall thereafter be stored under cover for a further seven days protected from the sun and drying of the blocks may commence on the ninth day after manufacture and no blocks may be used within 14 days of their production.

The compressive strength of the type 'A' concrete blocks shall be not less than:

Average of 13 blocks 50 kg. per square centimetre (700 lbs. per square inch)

- Lowest individual blocks 40kg. per square centimetre (580 IBS per square inch)

Concrete louvre blocks shall be of an approved type and manufacture. They shall be with inclined faces and have overall size 450 x 150 x 150mm (excluding lip protruding outside he bedding face).

3.9 Fair face work

Walls described as finished with a fair face shall be constructed with blocks selected for their uniformity of size and with a smooth exposed face with no chips, blemished, pinholes or cracks. Walling shall be pointed with a neat flush joint as work proceeds and on completion shall be brushed down and left thoroughly clean.

3.10 Mortar

The mortar used for walling shall be composed of one part of cement to two parts of hydrated lime to nine parts of sand (1:1:6) measured in gauge boxes and thoroughly mixed dry and preferably with an approved mixing platform with water added afterwards until all parts are completely incorporated and brought to a proper consistency and used within the hour. No partially or wholly set mortar will be allowed to be re-used or re-mixed.

3.11Workmanship

All blocks and stone to be wetted before laying out the top of walling where left off, shall be well wetted before recommencing building, walls to be kept wet three days after building.

All walling to be built true, plumb and level with all perpends vertical and in line and work shall not rise more than 900mm above the adjoining work and all such risings are to be properly raked back.

3.12Damp proof course

Damp proof course between foundations walls and the oversite concrete slab shall be hessian based bitumen strip to BS. 743 type 5A the same width as the block walls. The damp proof course shall be bedded in cement mortar (1:4) with 150mm-end laps and full width at passings and angles. Damp proof courses are required on all external and internal foundation walls.

4.0 ASPHALT WORK 4.1 Generally

The asphalt work shall be executed complete by an approved specialist subcontractor.

4.2 Asphalt for tanking

Asphalt for tanking and damp proofing shall be mastic asphalt and shall comply in all respects with BS. 1097 and shall be applied in three coats with 150mm laps on horizontal work and 75mm laps on vertical with a two-coat asphalt fillet at all internal angles.

In laying asphalt in basements the contractor must take the following precautions and his prices must include for 1these:-

i) Immediately upon completion the horizontal asphalt must be protected by covering it with a fine concrete screed of not less than 50mm thickness, in order to avoid damage by dumping of steel reinforcement rods, spillage of oil etc.

ii) The vertical asphalt, the angle fillets and the offsets (if any) must be protected as quickly as possible by the erection of the skin walls or of main structural walls as the case may be.

iii) In particular piercing the asphalt membrane by driving nails, puncturing the asphalt membrane by reinforcement roads or other materials, using asphalt membrane as a base for strutting and dropping petrol, oil or other solvents particularly from the contractor's plants, upon the asphalt or upon the surrounding area, must be avoided. It is essential that pumping operations be maintained on wet site until protective loading coats and protective walls are complete and fully set.

4.3 Asphalt for paving

Asphalt for paving, roads and footways shall be mastic asphalt and shall comply in all respects with BS. 1446 (natural rock aggregate) and BS. 1447 (limestone aggregate) shall be applied in strict accordance with the Architect/Engineer's (or his representative) specifications and instructions.

4.4.Asphalt for roofing

Asphalt for roofing shall be mastic asphalt and shall comply in all respects with BS. 988 (mastic asphalt for roofing-limestone aggregate) or BS. 1162 (mastic asphalt for roofing-natural rock asphalt aggregate) and shall be applied in two coats, to a final thickness of 20mm. The composition of asphalt shall be in accordance with BS. 988 Table III columns. Where roofing is to be used by vehicular traffic for example, car park etc. the asphalt to be used will be as for paving. The laying of the roofing shall be in conformity in with C.P.144 (roof coverings part 2, mastic asphalt) and the covering shall be laid on an insulating membrane of black sheathing to BS. 747 type 4A.

The rates inserted in the bills of quantities for roofing must allow for the cost of the sheathing felt, as it is not measured separately.

4.5Preparation of surfaces

All surfaces to receive asphalt are to be dry and rough, groove or otherwise prepared and finished to the requirements and to the entire satisfaction of the asphalt sub-contractor and the Architect/Engineer.

4.6Melting asphalt on site

Asphalt blocks shall be broken into pieces of convenient size and carefully melted in cauldron or mechanically agitated mixers, on the site at a temperature not exceeding 215 C or the Molten material may be delivered to the site in mechanically agitated mixers.

4.7 Dusting of buckets

Buckets used for carrying molten asphalt shall be dusted with a fine inert dust. On no account shall ashes or oil be used for this purpose

4.8 Laying of asphalt

Asphalt shall be laid in bays generally not exceeding 2 metres wide and succeeding coats shall be laid breaking joint. Junctions between bays and fillets shall be properly married, the laid asphalt being heated by the application of the hot material, the whole being worked so that the joints are neatly made. Air pockets and stains on the asphalt will not be permitted and the finished asphalt work shall be not ring hollow over any parts of its surfaces.

Joints in all asphalt work shall be made and complete fusion obtained to make them watertight. Fillets shall be run at all internal angles and at least in two operation

5.0 ROOFING 5.1 Vermiculite lightweight screed

Vermiculite lightweight screed shall be mixed in the proportions of 6 parts by volume of vermiculite Grade 5 to 1 part of Ordinary Portland Cement with approximately 2 parts of clean potable water to give a density of 700 kg. per m3.

Vermiculite screed is to be finished to receive a topping coat of water proofed cement and sand (1:4).

5.2 Roof waterproofing

The waterproofing shall be carried out with cement and sand (1:4) waterproofed with 'Puddle' or other equal and approved waterproofing compound in strict accordance with the manufacturer's printed instructions.

5.3 Bitumen felt roofing

5.3.1 Generally

Bitumen felt roofing shall be executed by a specialist subcontractor to approved by the Architect/Engineer.

5.3.2 Materials

Bitumen felt roofing (or built up roofing) shall be in accordance with BS. 747 (roofing felts). The roofing shall be composed of three layers of single roofing felt of specified quality; weight and make.

5.3.3. Fixing

Bitumen felt roofing shall be carried in accordance with the requirements of CP 144 part 1:1968, (built up bitumen felt). The roof screed must be laid to falls of not less than 1 degree from horizontal and the screed must be thoroughly dried before laying of bituminous is commenced.

The first layer shall be partially bonded to the roof deck with bitumen to allow sufficient easing of vapour pressure. The second layer shall be fully bonded to the first layer with minimum 150mm laps at ends and edges in bitumen. The top layer shall be similarly bonded to the second layer.

5.4. Aluminium roofing

5.4.1 Materials

Aluminium roofing shall be resin coated aluminium roof sheeting manufactured by ALUCO, and shall conform to the requirements of BS 2855 or 3455. The gauge and the surface finish of the sheets shall be as recommended by the manufacturer, in writing, and approved by the Architect/Engineer. All accessories shall be of aluminium alloy.

Whenever trough sheets and heavy trough sheets are used they shall comply with the requirements of BS 3428 type 'A' for trough sheets and type 'B' for heavy trough sheets.

5.4.2 Fixing

The sheets shall be fixed to steel angle or timber purlins with aluminium alloy bolts and nuts. The bolts shall be at least 50mm longer in the shank than the purlin to which they are fixed. All bolts shall have approved washers.

Fixing of the sheet must conform strictly to the printed instructions or otherwise to the requirements of CP 143 part 1 BS 2855.

5.5Galvanised sheet roofing

5.5.1 Materials

Galvanised sheet roofing shall be corrugated iron as manufactured by GALCO and shall comply with BS. 3083:1959: Hot dipped galvanised corrugated steel sheets for general purposes. In addition to the manufacturer's recommendation. The gauge and the surface finish of the sheets shall be specified and approved by the Architect/Engineer.

Accessories shall comply with BS. 1091: 1963 "Pressed steel gutters, rainwater pipes, fittings and accessories".

5.5.2 Fixing

The sheets shall be fixed to steel angle or timber purlins with roofing nails, bolts and nuts or any other accessory to be approved by the Architect/Engineer.
Fixing of the sheet must conform strictly to the printed instructions or otherwise to the requirements of CP 143 part 2 BS. 2855:1962.
NOTE:ASPHALT FOR ROOFING SEE UNDER TRADE "ASPHALT WORK"

6.0 CARPENTRY 6.1 Timber generally

The timber used for carpentry shall be sound, well conditioned, properly seasoned to suit the particular use and free from defects or combination of defects rendering it unsuitable for the purpose intended.

All timber used structurally shall comply with the relevant requirements of and graded in accordance with the Export of Timber Ordinance (cap. 288); The export and Grading of Timber Rules 1969.

All timber is to be ordered as soon as the Contract is signed and is to be delivered to the site for open stacking for as long as possible before use. All timber will be inspected by the Architect/Engineer upon arrival at the site and if not approved by him shall be removed from the site forthwith. Notwithstanding the
Architect/Engineer's approval, any timber incorporated in the Works found to be in any way defective before the expiry of the Defects liability Period shall be removed and replaced at the sole expense of the Contractor.

Timber shall be free from live borer beetle or other insect attack when brought to the site. The Contractor shall be responsible to the end of the Defects Liability Period for executing any work necessary to eradicate insect attack at his own expense including the replacement of timber attacked or suspected of being attacked not withstanding that the timber may have been inspected already and passed fit for use.

6.2 Moisture content

All timber shall be seasoned to a moisture content; if not otherwise specified of not more than 15% The Contractor must allow for the costs of any kiln drying which may be necessary to obtain this figure.

6.3Samples and testing

The Architect/Engineer/ engineer shall be entitled to select any samples he may reasonably require of materials or prototype of special construction elements for the purpose of testing (e.g. for moisture content; identification of species, strength etc)

6.4 Protection

All timber delivered to the site shall be stored under cover clear of the ground and protected from sun and dampness and shall be stored in a satisfactory manner to prevent attack of termite, insects or fungi.

6.5 Softwood

Timber for structural use, including rafters, purlins etc. shall be of Grade II strength and Grade 1 appearance. The softwood shall be a seasoned cypress, cedar pine or podo-carpus, which shall be pressure impregnated with the full cell process as described

below, but the contractor's attention is drawn to the Dayworks Schedule where the basic price of various timber requires pricing, in the event of one of these timbers being selected as an alternative then these basic rates will be used in calculating new rates for the item of carpentry concerned.

6.6.Pressure impregnation

The softwood described as pressure impregnated shall be treated with the "Celcure A" or "Tanolith C" full cell process. Timber must be seasoned to a moisture content not exceeding 25% before being treated. The treatment shall be to the minimum standard of:-

Solution concentration - 2 %
Absorption of preservative - 520 litres per cubic metre Net
dry salt retention -10.4 kg. per cubic metre
After treatment the timber shall be seasoned to the specified moisture content.
Cut ends and faces of timber sawn, drilled and cut after treatment are to be swabbed literally with approved preservative until saturated, allowed to dry and then treated with a second coat and rates for timber must include for this. Approved preservatives are:-

Atlas A. Brunophen Nr. 2, Cuprinol Clear or Water Repellent Clear EnscleWoodtreat 55.
Hardwood for structural and roof timbers shall be third grade scantlings, strength group E or other suitable and approved durable hardwood.

6.8Preservative treatment

On delivery to the site all structural hardwood is to be treated with two coats of an approved timber preservative. After fixing, the hardwood is to be touched up as required with approved timber preservative.

The timber preservative shall be coal tar creosote to BS. 144 or other equal and approved applied either by brush or by spraying in accordance with the manufacturer's instructions.

Cut ends and faces of timber sawn, drilled and cut after treatment are to be swabbed literally with approved preservatives until saturated, allowed to dry and then treated with a second coat and rates for timber must include for this.

6.9 Nails

Nails shall be galvanised and comply with B.S.1202 and screws with BS. 1210. Screws shall be brass unless otherwise described. Bolts , nuts and washers shall comply with BS. 916 and rag-bolts, coach screws and other accessories shall comply with BS. 1494. Washers shall be square minimum 3mm thick and 38mm sides.

6.10Workmanship

"Unwrot" or sawn timber shall be as left from the saw and shall be the full dimensions stated.

All carpentry shall be executed with workmanship of the best quality. Scantlings and boarding shall be accurately sawn and shall be of uniform width and thickness throughout. All carpentry work shall be left with sawn faces except where particularly specified to be wrot.

All carpentry shall be accurately set out in strict accordance with the drawings

All structural timbers shall be framed or jointed together with as is most appropriate in the circumstances in accordance with the rules of good practice. Joints must be executed in strict conformity with the drawings.

All joints shall be secured with a sufficient number of nails disposed as shown on the drawings and rates must include for the jointing of timbers. Surfaces must be in good contact over the whole area of the joint before securing. Holes for nails must be pre-drilled undersize, holes for bolts must be bored slightly oversize from both sides of the timber and washers must be used under the nut which must be tightened sufficiently to permanently secure the joint but not to crush the timber.

7.0 JOINERY 7.1 General

The provisions contained in the carpentry section shall apply also in the joinery section where applicable.

7.2 Hardwood

Joinery is to be executed in approved prime, select and locally available hardwood. Hardwood generally will be Mninga (Pterocarpus angolansis) but hardwood for fittings and built in furniture may be Mkangazi (African MahoganyKhayanyasica) unless specifically described otherwise.

7.3 Workmanship

All timber shall be wrot by machine dressing on exposed faces, with all machine marks sanded out, unless otherwise specified.

The dimensions and thickness given in these Bills of Quantities are finished (unless otherwise stated). In the event of nominal sizes being stated, an allowance of 3mm should be allowed for each wrought face.

The joinery shall be worked strictly in accordance with the details drawings and is to be framed up and put together as soon as possible, and is to be stored for as long as possible before being wedged up . All joints and angles are to be glued and where necessary cross-tongued with hardwood tongues, and surfaces finished clean and smooth with machine marks sand papered out before fixing.
Should any of the joinery work shrink, wind or fly unduly before the end of the maintenance period of the contract, the work is to be taken down, and new work fixed in its place, together with any other works, which may thereby be affected at the Contractor's sole expense.
Where joinery is described as screwed, this is deemed to include sinking the head of the screws and pelleting with similar timber and grain in with finished joinery. Screws unless otherwise specified, shall be brass.
In pricing the items, the contractor will allow for nails and screws and fixing, all labours, cuttings, notching, havling, mortising, tenoning and welding except where otherwise provided. Rates are also to include for one coat approved priming paint on all concealed surfaces.
Allow in the rates for easing and adjusting all doors, and leave in perfect working order.

7.4 Flush doors

Flush doors shall consist of hardwood core or framing covered with 6mm plywood both sides and complying where applicable with the requirements of BS. 459, Part 2 and 2A. Doors described as skeleton framed shall consist of framing
75mm wide to all stiles, top

and bottom rails, with suitable blocks to receive mortise locks on each long edge. Doors described as solid core shall comprise a solid core of vertical laminations. All flush doors shall be edged all round with 25mm thick hardwood lipping tongued and glued in. Doors described as external shall be covered both sides with 6mm'exterior' quality plywood as described below. All flush doors shall be perfectly plain on both faces and free from all waves, ripples or distortions of any kind. Any door, which, after the application of paint or polish shows any defects of this nature, shall be removed and replaced at the Contractor's expense. Samples of flush doors, which the contractor intends to use, must be first submitted to the Architect/Engineer for his approval.

7.5 Plywood

Plywood shall be of Tanzania manufacture , manufactured from tropical hardwoods of the first grade with BS 145, and unless otherwise stated shall be
'interior' quality. Where stated to be of ' exterior' quality, the plywood shall be W.B.P. bonded weatherproof grade. Where veneered plywood is specified, samples must be submitted to the Architect/Engineer for his prior approval.

7.6 Blockboard

Blockboard shall be of Tanzania manufacture and comply with BS. 3444 and shall be of moisture resistant quality.

7.7. Chipboard

Chipboard shall comply with BS. 2604 resin-bonded wood chipboard.

7.8 Plugging

All work described as plugged shall be fixed with brass screws to plugs formed by drilling concrete, wall, etc. with a screw of suitable "philplug", "Rawplastic", or other approved plugging compound in accordance with the manufacturer's instructions.

7.9 Protection

Any fixed joinery which, in the opinion of the Architect/Engineer is liable to become damaged in any way shall be cased and protected by the Contractor until the completion of the works and the contractor must allow for this in his rates as no separate item for protection has been measured.

7.10Ironmongery

All ironmongery will be fixed with matching screws to be supplied by the contractor/Client and the contractor must allow for adjusting locks and striking plates and handling over all keys on completion of the contract with identifying tags attached.
The contractor must also allow for oiling locks and hinges and leaving them in perfect working order

All ironmongery shall be manufactured by Union, Yale, Dryad or Newman-Tonks Ltd. or other equal and approved by the Architect/Engineer/Engineer. The following standard abbreviations have been used to describe the finish to ironmongery:-

S.C.P.	-	Satin Chrome Plate
C.P.	-	Chrome Plate (polished)
S.A.A.	-	Silver AnodisedAluminium

8.0 STRUCTURAL STEEL WORKS 8.1 Generally

Steel angles, tees, channels and plates are to be weldable mild steel grade 434 in accordance with B.S.4360.

8.2 Welding

Electrodes for welding are to be in accordance with current British Standard in application
All welds are to be fillet welds of 5mm by size unless otherwise indicated.

8.3 Bolts

Bolts are to be black bolts in accordance with BS 4190 and all nuts, bolts and washers are to be hot dip galvanised. Bolt holes shall have a diameter of the bolt.

8.4 Painting

All steelwork is to be thoroughly cleaned, wire brushed and painted with two coats of red lead primer at the workshop and one finishing coat for aluminium paint. After erection any damage to the paint is to be made good and a further finishing coat applied.

9.0 METALWORK 9.1 Mild steel

Mild steel shall comply with B.S.15, Grade 1, and the sizes of all small section shall be in accordance with B.S.4 and 4A.

9.2 Galvanised work

Iron and steel, where galvanised shall comply with B.S.729, Part 1, entirely coated with zinc after fabrication by complete immersion in a zinc bath in one operation and all excess carefully removed. The finished surface shall be clean and uniform.

9.3 Aluminium

Aluminium shall be of the alloys described in and shall comply with B.S.1470. Aluminium sheet for flashings shall be soft tamper, super purity S1 or S1A) and not less than 18 S.W.G(1.2mm) in thickness.

9.4Smithing, welding and cutting

All smithing, welding; cutting and bending shall be soundly and neatly executed, care being taken not to overheat. All flame cut edged and welds shall be neatly ground off on completion. All welds shall be 8mm fillet welds to comply with Code of Practice 1856 unless shown otherwise.

9.5 Bolts

Mild steel bolts, nuts and washers shall comply with B.S.916 for black bolts with hexagonal heads and nuts, High Tensile Steel Bolts and nuts shall be in accordance with B.S.3139.

9.6 Anchor bolts

Anchor bolts in concrete for steelwork, etc., are to be self drilling anchor bolts of one of the following types:-

Phillips redhead concrete anchors,
Rawplug super drill anchors,
Split self drilling anchors,

Rates are to include for fixing complete with washer.

9.7 Louvre windows

Louvre windows frames are to be aluminium with a clear anodised finish as manufactured by NACO and obtainable from Casements Africa Ltd., or other equal and approved by the Architect/Engineer.

9.8 Metal doors

Steel for metal doors shall conform to the requirements of BS. 1245:1975.

9.9 Burglar bars

Burglar bars shall be as specified by the Architect/Engineer. The bars shall be cleaned and painted as described on trade of painting on metalwork.

9.10Structural hollow sections

All hollow sections are to be connected by electric welding. For butt welds the fusion surfaces of each member must be aligned and prepared.

9.11Mild steel tubing

Mild steel tubing shall be in accordance with BS 1387:1975 with screwed sockets and joints.

9.12Shop inspection

The Architect/Engineer shall granted full facilities and any necessary assistance for inspection of materials and assembled parts in the contractor's (or his SubContractor) workshops. At least two weeks notice shall be given to the Architect/Engineer in writing prior to the dispatch of finished components to the site to enable the Architect/Engineer to inspect and approve the materials and workmanship at the workshops. Approval of work at the workshop does not relieve the Contractor of his obligations to carry out the work complete at the site to the Architect/Engineer's satisfaction in accordance with the contract.

9.13 Marking

All components delivered to the site are to be marked in paint with the Mark number in accordance with any shop and erection drawings.

9.14 Storage

All components are to be stored at site in proper racks provided for the purpose which provide full support to each member and to avoid any deflection and distortion. Steelwork is to be stored at least 250mm clear of the ground and temporary protection is to be provided for protection against water and damage from any other source.

9.15 Erection

Rates for all metalwork are to include for the complete erection including any temporary supports required and any necessary templates and wedges.

10.0 PLUMBING AND ENGINEERING INSTALLATION

10.1 PART ONE: GENERAL REQUIREMENT

10.1.1 SCOPE OF WORK

10.1.1.1 This specification contains general requirements for Plumbing services and associated equipment for water supply installations, sanitary installation, Gas installation and fire fighting installations and equipment.

10.1.1.2 The scope of work shall incorporate the supply, installation, testing and commissioning of the Plumbing services and associated equipment for water supply installation, sanitary installations, gas installations and fire fighting installations and equipment.

10.1.2.0 GENERAL CONDITIONS

10.1.2.1 The Contractor shall use a qualified approved plumber to perform the plumbing and engineering installation as a domestic subcontractor.

10.1.2.2 These specifications shall be read in conjunction with the specifications of the rest of the works. No claim will be entertained on the grounds of failure in this regard.

10.1.3.0 MATERIALS

10.1.3.1 Submission of Samples

The Contractor shall submit a list of suppliers from whom he proposes to purchase the materials necessary for the execution of the works. The Contractor shall be required to submit samples of the materials for approval. Samples shall be taken in accordance with the relevant British Standard where possible. No source of supply shall be changed without prior approval of the Engineer.

10.1.3.2 Rejected materials

All sub-standard materials or materials which become damaged or deteriorate so as not to comply with the specification shall be rejected and shall be removed from the site and replaced at the Contractor's expense.

10.1.4.0 SAFETY

Safety precautions throughout the execution of the Works shall comply to the Safety Acts as enacted and operating in the Republic of Tanzania.

10.2.0 PART TWO: GENERAL SPECIFICATION

10.2.1 EXECUTION OF THE WORK

10.2.1.1 The works shall be carried out by a specialist appropriately certified by the relevant Authorities and Boards for the type and/or value of the installations contained herein. Where no particular Specification is given for any material or item of work, the latest edition of relevant British Standard Specification shall apply. In the event of any disagreement between the information shown on the drawing and the specification, the drawing shall take precedence.

10.2.2
10.2.2.1 The works shall be carried out strictly in accordance with the following Standards and Specifications:

- "British Standard Specification for Design, Installation, Testing and Maintenance of Services Supplying Water for Domestic use within Buildings and their Cartilage" **BS 6700: 1987.**

- "British Standard Sanitary Installation: Part1: Code of Practice for Scale of Provision, Selection and Installation of Sanitary Appliances" **BS 6465: Part 1: 1994.**

- "British Standard Sanitary Installation: Part2: Code of Practice for Space Requirements for Sanitary Appliances" **BS 6465: Part 2: 1996.**

- "British Standard Drain and Sewer Systems Outside Buildings:

  Part 4: Hydraulic Design and Environmental Considerations" **BS EN 752-4: 1998.**

- "British Standard Code of Practice for Drainage of Roofs and Paved areas" **BS 6367: 1983.**

- "British Standard Code of Practice for Sanitary Pipe work" **BS 5572: 1978.**

- "British Standard Fire Extinguishing Installations and Equipment on Premises: Part 0: Guide for the selection of installed systems and other fire equipment" **BS 5306: Part 0: 1986.**

- "British Standard for Eaves, Gutters and Fittings" BS EN 607: 1996.

- "British Standard for Gutter Brackets" **BS EN 1462: 1997.**

- "British Standard Fire Extinguishing Installations and Equipment on Premises: Part 3: Code of practice for selection, installation and maintenance of portable fire extinguishers" **BS 5306: Part 3: 1985.**

- Gas Safety (Installation and Use). Regulations,1998.

Statutory Instrument 1998/2451. London: The Stationary Office, 1998.

ISBN 0 11 07 9655 1.

- By-laws of the Local Authority.

- The working drawings

10.2.2.0 EXTENT OF WORK

10.2.2.1 The work includes, unless otherwise specified, supply, installation, testing and commissioning and delivering up clean and in working order the installations shown in the drawings and specified in these General and Particular Specifications.

Water supply shall be from rainwater harvesting system from laboratory roof with plastic storage tank, cold water pipes and associated fittings, valves, sanitary appliances including all necessary taps, overflows and discharge fittings, fire fighting installations and equipment, and all labour, materials, tools and instruments necessary to execute the work in a first class manner,

even such labour or materials which are not specifically mentioned herein but necessary for completion of the work.

10.2.2.2 The Contractor shall be responsible for ensuring that runs for floors or wall chases, holes to cut or left will be marked out at the appropriate stage of the structural work. The Contractor shall undertake all modifications demanded by the Authorities in order to comply with current regulations, and produce all certificates, if any, from the Authorities without extra charge.

10.2.3.0EXTENT OF CONTRACTOR'S DUTIES

10.2.3.1.1.1.1 At commencement of the work, the Contractor shall investigate and report to the Architect/Engineer if all materials and equipment to be used in the work, and not specified as supplied by others are available locally. If not available, the Contractor shall at this stage place orders for the materials in question and copy the orders to the Architect/Engineer. Failure to do so shall in no way relieve the Contractor from supplying the specified materials and equipment in time.

10.2.3.2 Where the Contractor wishes to propose an alternative method of construction or material to that specified for any part of work, full details shall be submitted for approval. The acceptance or otherwise of any alternative shall be entirely at the discretion of the Architect/Engineer. Materials supplied by others for installation and/or connection by the
Contractor shall immediately be reported to the Architect/Engineer. The
Contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on the site.

10.2.3.3 As built drawings

At practical completion and before final payment certificate is issued, the Contractor shall provide a complete set of "As Built" record drawings of the entire installation. Drawings shall be in a scale and size approved by the Architect/Engineer and submitted in hard bound volumes for each service of water supply installation, sanitary installations, Gas installation and fire fighting systems. Shop drawings, spare parts list, operation and maintenance manual of equipment installed shall be submitted together with the "As Built Drawings".

10.2.4.0QUALITY OF MATERIALS AND WORKMANSHIP

10.2.4.1 Materials and workmanship

10.2.4.1.1 All materials, equipment and accessories are to be new and in accordance with the requirements of the current rules and regulations where such exist, or in their absence with the relevant British Standards. Uniformity of the type and manufacture of the equipment or accessories is to be preserved as far as practicable throughout the whole work.

10.2.4.1.2 The Contractor shall, if required by the Architect/Engineer, submit samples of materials to the Architect/Engineer for his approval before placing on order. If in this general specification, the practice is adopted of specifying a particular item as "similar" to that of a particular product, it is to be clearly understood that this is to indicate the type and quality of the equipment required. No attempt is being made to give preference to the equipment supplied by the firm whose name or product is quoted. Where particular manufacturers are specified herein, no alternative makes will be considered, and the Architect/Engineer shall be allowed to reject any other makes.

10.2.4.1.3 The Contractor will be entirely responsible for all materials, apparatus, equipment, etc. furnished by him in connection with his work and shall take all care to protect all parts of finished work from damage until handed over.

10.2.4.1.4 The work shall be carried out by competent workmen under skilled supervision. The Architect/Engineer shall have the Authority to have any of the work taken down or changed, which is executed in an unsatisfactory manner.

10.2.4.2 Pipes and Pipe Fittings

10.2.4.2.1 All pipes exposed on faces of walls, unless otherwise specified, shall be fixed at least 25 mm clear of adjacent surfaces with approved holder-bats built into walls, cut and pinned to walls in cement mortar, where fixed to woodwork, suitable clips shall be used.

10.2.4.2.2 All pipes specified as fixed to ceilings, roofs or roof structures shall be fixed with approved mild steel hangers cut and pinned to ceilings, roofs or roof structures. Where three or more tubes are fixed to ceilings, roofs or roof structure close to each other, they shall be fixed in position, which leaves the lower surfaces at the same horizontal level, unless otherwise specified.

10.2.4.2.3 Pipes shall be fixed to true lines, parallel to adjacent lines of the building unless otherwise specified. Where insulated, pipes shall be fixed with the insulation at least 25 mm clear of adjacent surfaces. The spacing for fixings for internally located piping shall be in accordance with BS 6700: 1987 Table 17.

10.2.4.2.4 Each support shall take its due proportion of the weight of the pipe and shall allow free movement for expansion and contraction. All pipes specified as chased into walls shall have the wall face neatly cut and chased, the tubing wedged and fixed and plastered over. Where pipes are laid in trenches care shall be taken to ensure that fittings are not strained.

10.2.4.2.5 All formed bends shall be made so as to retain the full diameter of the pipe. Sleeves shall be provided where pipes pass through walls and solid floors to allow movement of the pipes without damage to the structure. The overall length of the sleeves shall be that it projects at least 2 mm beyond the finished thickness of the wall or partition.

10.2.5.0 TAPS AND VALVES.

10.2.5.1 Taps and valves shall be in accordance with the following Standards:

- Draw-off taps and stop valves shall comply with BS 1010 Part 2: 1973.
- Copper alloy gate and check valves shall comply with BS 5154: 1991..
- Copper floats for ball valves shall comply with BS 1968: 1953 and plastic floats for the same shall comply with BS 2456: 1990.
- Sluice valves shall comply with BS 5163: 1991.
- Draining taps shall comply with BS 2879:1988.

10.2.5.2 All valves and cocks shall have the same flow areas, as the corresponding pipes and shall be accessible for operation and maintenance and suitably labelled by an approved method. Stop valves shall be fixed in positions shown on the drawings to form branch services for group control, or where else specified.

10.2.5.3 All valves, cocks and taps shall be of the correct pressure rating according to the recommendations of the relevant British Standards or the local authority. At commencement of the contract, the Contractor shall, if necessary, ask the Architect/Engineer for guidance on this point.

10.2.6.0SANITARY AND OTHER APPLIANCES

The appliances shall be fixed in the positions shown on the drawings or as directed by the Architect/Engineer. The Contractor shall include in his rates for providing all necessary screws, bolts, etc. together with all jointing material required and also for temporarily erecting and securing fittings and in the required position of service and discharge pipes, taking down, storing and fixing after completion of wall finishing, permanently fixing and connecting to service and discharge.

Care shall be taken at all times and particularly after fixing to protect appliances from damage. Upon completion of the work all appliances shall be cleaned for plaster, paint, etc. and carefully examined for defects.

10.2.7.0 FIRE FIGHTING EQUIPMENT

10.2.7.1 The specified fire fighting equipment shall be supplied and installed by the Contractor in the position shown on the drawings.

10.2.7.2 Supply, installation and maintenance of fire fighting equipment shall be in accordance with the following British Standards BS 5306: Fire extinguishing installations and equipment on premises:

- Part 0: 1986: Guide for the selection of installed systems and other fire equipment.
- Part 3: 1985: Code of practice for selection, installation and maintenance of portable fire extinguishers
- BS 5499: Fire safety signs, notices and graphic symbols Part 1:1995: Specification for fire safety signs

10.2.8.0GAS INSTALLATION SPECIFICATION

10.2.8.1 All male gas tap assemblies shall be supplied with 3/8" BSP (BS 2779 G3/8"B) male shank 60mm long. Shanks shall be supplied with flat ends suitable for connection with 3/8" BSP female threaded connectors.

10.2.8.2 The male gas tap assembly shall require a 17mm diameter hole drilling in the work surface. Care shall be taken to ensure that the outlet nozzles are in a suitabeposition so that the safety lever has sufficient clearance to function correctly and is clearly visible from a distance. Anti-rotation nuts shall be used for added security.

10.2.8.3 Gas supplies shall be within the range of 20 to 25 Mbars air pressure and supplied by means of copper tubing. As with all gas valves and appliances, assemblies shall be soundness tested on a regular basis to ensure safety.

10.2.84 Emergency Eye Wash with two streams with ABS bowl shall be provided to give an immediate deluge of water that should dilute and wash away injurious materials, such as caustic acids, fire, radioactive materials.

10.2.8.5 A manual shutoff valve at the pipe entry to each laboratory shall be provided.

10.2.8.6 Gas pipes shall be ventilated along their run by being exposed or/and by the enclosure being punctuated to provide adequate ventilation to avoid explosion due to a build up of gas in the case of leakage.

10.2.8.7.1.1.1 Gas pipes shall be well supported particularly where they are part of a flexible overhead servicing system or at a height accessible to pupils

10.2.9.0INSPECTION AND TESTING OF COMPLETED INSTALLATIONS

10,2.9.1 Testing equipment shall be supplied by the Contractor for the period of execution of works. The equipment shall be set up and maintained in accurate working order throughout the period of use.

10.2.9.2 The Contractor shall provide all necessary testing apparatus and facilities for testing the installations and any defective work shall be replaced immediately and shall be subject of re-testing until found satisfactory.

10.2.10.0INSPECTION AND TESTING OF WATER SUPPLY PIPE WORK

10.2.10.1 Testing for underground pipelines

10.2.10.1.1 The installation to be tested shall be inspected for compliance with the drawings and specifications. Significant variations shall be investigated and corrected, if required, before proceeding with the test.

10.2.10.1.2 After laying , jointing and anchoring, the pipeline shall be slowly and carefully filled with water so that all the air is expelled and tested under pressure. If water from supplier's mains is used for filling the pipeline under
test, the main shall be disconnected from the pipeline before the test is begun.

10.2.10.1.3 Testing shall be carried out in accordance with BS 6700: 1987 5886, appropriate to the material of the pipeline. Interim tests shall be applied to every pipeline. For buried pipelines these shall be carried out before back filling is placed over the joints. Long pipelines shall be tested in sections as work proceeds. Final tests shall be carried out only when all relevant work is complete. Completion for buried pipelines includes back filling, compaction and surface finish.

10.2.10.1.4 The test pressure shall be at least twice the working pressure of the pipeline. Precautions shall be taken to ensure that the required test pressure is not exceeded. Pressure gauges shall be checked and re-calibrated, where necessary, before the test. To avoid the risk of contamination, water used for testing shall be obtained from a potable supply.

10.2.10.1.5 Before accepting a pipeline, a check shall be made that valve and hydrant boxes are properly aligned, that suitable operating keys are provided which can be easily fitted to the valves and, in the case of deep valves, that adequate extension spindles are installed.

10.2.11.0INSPECTION AND TESTING OF SANITARY PIPE WORK

10.2.11.1 Inspections and tests should be made during the installation of the discharge System in accordance with BS 5572: 1978, as the work proceeds, to ensure that the pipe work is properly secured and clear of obstructing debris and superfluous matter and that all work which is to be concealed is free from defects before it is finally enclosed.

10.2.11.2 The completion of the discharge system should be meticulously inspected to ensure that the recommendations of the code have been observed and that no cement droppings, rubble or other objects are left in the pipes and that no jointing material

projects into the pipe bore. When this has been done, tests for soundness of the pipe work and for performance should be made.

10.2.12.0 INSPECTION AND TESTING OF FIRE EXTINGUISHING INSTALLATIONS

10.2.12.1 The date and programme of acceptance tests shall first be notified to all parties involved, and a joint inspection of the system shall then be made. Before testing
commences, an indemnity shall be obtained, signed by the client or the person responsible for the premises at the time.

10.2.12.2 The agreed test programme shall then be carried through and the following shall be recorded:

- The date and time of inspection/test
- The responsible person carrying out/witnessing tests
- The test programme
- The test results and conclusions
- Any external factors significantly affecting the test
- Subsequent action agreed to be required
- The work carried out as a result of external factors and the result test if any
- The final test report.

10.2.13.0INSPECTION AND TESTING OF GAS INSTALLATIONS

10.2.13.1 All drop gas tap assemblies shall be tested to 5psi before leaving the factory. All gas installations incorporating VultexLabline drop lever gas tap assemblies shall not exceed 75 Mbar test pressure to ensure that the sealing and lubricating media is not displaced.

10.2.13.2 Detailed inspection of fume cupboards, gas pipe work and controls shall be carried out at least once a year

10.3.0 PART THREE: PARTICULAR SPECIFICATION

10.3.1.0 PLUMBING

External plumbing for water supply shall be of polyethylene pipes, uPVC pipes for underground rainwater collection system and polypropylene pipes for internal plumbing while vulcathene chemical waste pipes shall be used for both internal and external drainage.

10.3.2.0 STORAGE TANKS

Overhead water storage tanks with capacity of 3000 litres, Simtank 1.70 metres diameter and 1.7 metres height on 1.5metres blockwork tower shall be provided.

10.3.3.0 FIRE FIGHTING

12 kg ABC dry powder portable fire extinguishers shall be provided.

10.3.4.0 WASTE WATER DISPOSAL

Soak-away pit shall be provided with manhole constructed of block work.

10.3.5.0 CHEMICAL WASTE DISPOSAL

Emergence eye wash sink with two streams with ABS bowl inclusive of fittings shall be provided.

10.3.6.0 SOLID WASTE DISPOSAL

10.3.6.1 Movable plastic bins of capacity of 20 litres shall be provided for temporary collection of solid waste.

10.3.6.2 Incinerator constructed in blockwork and lined with clay burnt bricks inside shall be used for burning solid waste that cannot be buried.

10.3.6.3 Ventilated Improved Pit Latrine (V.I.P.) shall be provided.

11.0 FLOOR, WALL AND CEILING FINISHINGS

11.1 Sand

Sand for backings, floor and wall finishes is to comply with B.S.1199, Table 1.

11.2 Aggregate

Coarse aggregate is to be as described for 'concrete work'.

11.3 Cement

Cement is to be as described for 'Concrete Work'.

11.4 Lime

Lime is to be non-hydraulic hydrated lime to B.S.890 Class 'A' obtained from an approved source and run into putty at least 24 hours before use.

11.5 Workmanship

All concrete beds or slabs shall be thoroughly brushed if necessary and well wetted and flushed over with a cement and sand (1:1) grout immediately before screeds or pavings are laid

Screeds and cement pavings shall be laid in accordance with the relevant BS. Code of practice. Working joints between bays of the floor finish should be placed in accordance with the Architect/Engineer's instructions and will be plain butt joints placed over joints in the concrete bed under. Pavings shall be damp cured with sand or sawdust and kept damp for at least 7 days after laying.

All surfaces to be plastered or rendered must be brushed clean and well wetted before plaster is applied. Joints of walling shall be raked out and concrete hacked to form a key. Care shall be taken to see that paving and plastering do not dry out prematurely

Adequate time intervals must be left between successive coats in two coat work in order that the drying shrinkage of the undercoat may be substantially complete. All internal and external angles shall be pencil rounded.

11.6 Insitupavings generally

Before laying in-situ floor finishes, the concrete beds are to be thoroughly hacked for key, cleaned off, thoroughly wetted with clean water and coated with a stiff cement slurry and rates for screed granolithic and terrazzo paving are to include for this. They are also to include for all necessary curing and protecting until the building is handed over to the Employer.

11.6.1 Cement and sand paving

The cement and sand paving shall be in the proportions of 1:3 by volume and incorporating or treated with an approved hardener. A mix referred to as 1:4 shall mean 1440kgs (1m3) of cement and 4m3 of sand. All other mixes shall be construed in a like manner.

11.6.2 Concrete paving

The concrete paving shall be in the proportions of 1:2:4 by volume, the coarse aggregate used shall not exceed 10mm nominal size. It shall be trowelled smooth with a steel float. If the contractor wishes to use a power float he is to seek the approval of the Architect/Engineer who may require him to complete a sample area before granting permission.

11.6.3 Terrazzo paving

The in-situ terrazzo shall consist of white or coloured cement and marble aggregate; the colours of the cement and aggregate shall be selected by the Architect/Engineer. The mix shall comprise three parts of 6mm nominal aggregate to one part coloured cement by volume. The aggregate shall be clean and granular and shall not contain flakey particles or duct. The underbed shall be cement and sand 1:4 by volume.
The terrazzo topping shall laid to a minimum of 12mm thickness in a plastic condition while the underbed is still green and this should be watered to minimise absorption from the topping. The terrazzo must be well taped into position and rolled with a suitable hand roller. The topping should be allowed to take an initial set and then any surface voids must be grouted up with neat cement of the same colour used in the mix. The sacking for at least 72 hours. When dry and hard, the surface shall be machine polished by grinding with carborundum or other stone discs of suitable grade and with rotary polishing pads.

11.6.4 Tyrolean rendering

Tyrolean rendering is to be applied in four coats to obtain a total thickness of 22mm and adequate time intervals must be allowed between successive coats in order that the drying shrinkage at each undercoat may be completed. The first coat shall consist of cement, lime putty and sand mixed at a minimum thickness of 10mm and finished with a wood float finish. The second, third and fourth coats shall consists of one part of natural cement to four parts of fine white chippings including colour pigment to approval applied with an approved " flicking machine" so that the first coat is completely covered and a thickness of 12mm is obtained.

11.6.5 Internal plaster

Internal plaster shall be applied in two coats and adequate time intervals must be allowed between successive coats in order that the drying shrinkage of the undercoat may be substantially complete. The first coat must be well scratched keyed and wetted to receive the finishing coat. The finishing coat shall be finished smooth with a steel float but care must be taken not to overwork the surface in order to minimise the incidence of shrinkage cracks. All internal and external angles shall be pencil rounded.

Internal plaster, unless otherwise described, shall be lime plaster of 15mm minimum overall finished thickness applied in two coats. the first coat consisting of cement, lime putty and sand mixed in the proportions of (1:2:9). The finishing coat shall be a skin coat comprising cement and lime putty in the proportion of (1:10).
Cement plaster is to be employed where specified on the drawings and is to be applied in two coats of approximately equal thickness to a total of 15mm minimum overall finished thickness. The composition of both coats shall be the same and shall comprise cement and sand (1:4) but a small percentage addition (not more than 10%) lime putty may be permitted if the Architect/Engineer considers that this will reduce the incidence of shrinkage cracks.
The contractor shall cut out and make good all cracks, blisters and other defects and leave the whole of the plastering and rendering perfect at completion. When making good defects the plaster shall be cut out to a rectangular shape with edges undercut to form dovetailed key, and all finished flush with the face of surrounding plaster.

11.6.6 "Sandtex" finish

'Sandtex' finish shall consist of one part white cement to four parts sand by volume applied in two coats in the manner as described for internal plastering to a total thickness of 15mm and the final coat wet brushed to expose the sand to a texture to be approved by the Architect/Engineer.

11.7. Wall tiling

Glazed wall tiles shall be from an approved manufacturer and shall confirm with the requirements of BS. 1281. Tiles shall be with slightly rounded or 'cushion' 'edges' and unless otherwise described shall be 150 x 150 x 6mm thick. Tiles shall be laid with continuous straight joints and internal angles shall be butt jointed.
Rounded on edge tiles shall be used on all external angles and edges of panels. Tiles shall be bedded in approved tile adhesive and pointed in white cement.
Backings to tiles are to be cement and sand in the proportion of 1:4 rendering in one coat to a minimum thickness of 12mm trowelled smooth.

11.8 Wood block flooring

Parquet tile flooring shall be as manufactured by Italwood Ltd. Dar Es Salaam Tanzania or other equal and approved by the Architect/Engineer. It shall be laid on a smooth screed and fixed with approved adhesive. It shall be finally sanded and finished with two coats of RonsealHardglaze.

11.9. PVC Flooring

PVC. tile flooring shall be used according to specified standards with an approved base. The selected colours to be used shall be approved by the Architect/Engineer.

12.0 GLAZING 12.1 General

Glass generally shall comply with the requirements of B.S.952 and shall be free from bubbles, specks waves, flows or any other defects.
Clear sheet glass shall be 24 or 32 oz. (4 or 5mm nominal thickness) flat drawn sheet of ordinary glazing quality.
Glass for louvre blades shall be clear sheet flat drawn or rough cast obscured rolled glass to the thickness shown on the drawings with all exposed edges ground and polished.

12.2 Putty

The putty shall be hard setting tropical putty to B.S.544

12.3 Workmanship

All glass is to be accurately cut to fit easily into rebates with a tolerance of 2mm all round. It is to be well puttied at the back and to the sprigged with non- ferrous pins. The putty is to be mostly trimmed and cleaned off and care must be taken that it does not show beyond the slight lines of the saches. All rebates must be treated with one coat of lacquer (as described under 'Painting' hereafter) prior to glazing.

12.4 Cleaning and protection

The contractor must allow in his rates for the protection of all work in this section and for replacing any cracked, scratched, broken or defective glass prior to handing over to the Employer. He must also allow for cleaning all the windows inside and out and other glass on completion with an approved window cleaner and wash leather and for removal of all paint splashes.

13.0 PAINTING

13.1 Colour range

All painting shall be carried out in colours selected by the Architect/Engineer.

13.2 Materials

Paints generally shall be ready mixed and supplied by one of the manufacturers listed below and delivered to the site in sealed containers clearly labelled with the a manufacturer's name, type of paint and colour. Oil based priming paint shall comply with B.S.2521-2524 inclusive.

Leyland Paints (T) Ltd
Robbialac Paints (T) Ltd
Sadolins Paints (T) Ltd
Goldstar Paints Tanzania Ltd
Paints are to be used strictly in accordance with the manufacturer's instructions and no contamination by mixing with other brands or materials will be permitted. Thinning is only permitted in so far as it is in accordance with the manufacturer's printed instructions.

13.3 Preparation

All surfaces to receive treatment are to be clean and dry before paint application and surface irregularities are to be removed by filling or the use of suitable abrasives.

13.4 Plastered surfaces

Internal plastered wall surfaces generally are to be treated with plastic emulsion paint. Surfaces are to be allowed to dry out thoroughly prior to paint application. All crack and surfaces imperfection are to be cut back and filled with a patent filler in accordance with the manufacturer's instructions and rubbed down to a true and even surface.

Apply one primer coat thinned with water and two subsequent coats of Leyland'sLeymure Co-polymer' or other approved plastic emulsion paint in accordance with the manufacturer's instructions. Where specified internal plastered wall surfaces are to be painted gloss. In addition to the preparation described above, apply one coat of Leyland's P 20 or other approved alkali, resistant primer and flat down with 320 grade 'wet or dry' abrasive paper. Apply two coats Leyland's Leylac Polymeric gloss finish or other equal and approved gloss paint lightly rubbed down coats in accordance with the manufacturer's instructions.

13.5 Woodwork preparations

Large knots in woodwork are to be cut back and replaced with sound wood or scorched back and after priming the surface made good with stopping. All knots are to be treated with two thin coats and patent knotting free from resin.

After priming all nail holes and other imperfections shall be filled with stopping and the whole surface rubbed down to a smooth even finish. The stopping must be 'Scadofil' or other approved make.

13.6 Metalwork

All rust and loose scale on steel and ironwork must be removed by wire brushing and rubbing with emery paper. Where patches of ingrained rust cannot be removed they are to be thoroughly rubbed down and treated with one coat of 'Galvafroid' or other zinc paint in accordance with manufacturer's instructions. One coat of zinc chromate primer will then be applied followed by two undercoats and one finishing coat of gloss paint as described for woodwork above. The contractor is to note that where mild steel burglar bars are housed into wood frames the full length of the bar is to be treated before fixing.

Galvanised metalwork is to receive one coat of white spirit or mordant degreasing solution washed off prior to the application of calcium plumbate primer followed by two undercoats and one finishing coat of gloss as previously described.

Galvanised metalwork is to be painted only where instructions are given by the Architect/Engineer as in some cases galvanised metalwork is to be left untreated.

14.0 DRAINAGE

14.1 Generally

The preambles for the previous trade sections are applicable to this section together with the following preambles. The drainage is to be carried out in accordance with the

directions of the Architect/Engineer and the requirements of the Byelaws. No length of drain is to be covered until it has been tested and passed.

14.2 PVC drain pipes

PVC Drain pipes comply with ISO R161 (4kg/cm2) 'Pipes of plastic materials for the transport of fluids.
The drainpipes shall be spigot and socket glued joints.

14.3 Cast iron drain pipes

Shall be centrifugal cast (spun) iron drainpipes with spigot and socket to BS.437 thoroughly coated inside and outside, alternatively similar pipes but class 'B' in accordance with BS. 1211 may be used according to availability. Fittings shall be in accordance with BS.1130.
Pipes shall be jointed with asbestos yarn and caulked with molten lead or jointed with special jointing compound all to approval.

14.5 Concrete drain pipes

Precast concrete pipes shall be in general conformity with BS. 556. Concrete cylindrical pipes and fittings . The concrete mix used for the manufacture of ordinary pipes shall not be weaker than grade '30'.
For foul water drainage sulphate resisting concrete pipes shall always be used. The manufacturer of sulphate resisting pipes shall be in general conformity with BS. 556. The concrete mix not weaker than grade '30'. Pipes up to and including 45cm diameter shall be un-reinforced and shall incorporate spigot and socket type joints. Pipes above 45cm diameter shall be reinforced with not less than steel fabric required by British Standard BS 8110 or the equivalent in mild steel and shall have spigot and socket joints or if the Architect/Engineer so approved shall have open type joints. The main reinforcement to be in circumferential direction. Pipes reinforcement shall be placed midway between the inner and outer surfaces of the concrete. In socketed pipes the reinforcement shall be extended continuously from the pipe barrel into the socket, the longitudinal bars cranked as necessary.
No wall thickness of the pipe barrels is specified but the reinforcement (if any) and the wall thickness must be so balanced that the pipes are in conformity with B.S.556 and the test specified therein.

14.6Pitch impregnated fibre drainpipes

Pitch impregnated fibre pipes, couplings and fittings shall comply with BS. 2760 Part 1 and 2.

14.7 Manholes

Manholes shall be constructed on drain lines in the positions indicated or wherever ordered by the Architect/Engineer.
Manholes on pipe drains be constructed with an-in-situ base in concrete grade "20" which shall be raised to form the benching and invert of the manhole. The benching and channels shall be carefully formed to shape according to the number, diameter and positions of the incoming and outgoing pipes. The channels in the manholes base shall have circular inverts. The benchings shall be sloped towards the channels at a gradient of 1 in 6 or as otherwise detailed on the drawings.

Benching shall be carried out in concrete grade "20" and rendered with 15mm 1:3 cement mortar. Rendering to be carried out in sulphate resisting cement for foul water drainage . The ends of all entering the manholes are to be carefully cut to shape to suit the internal dimensions of the manholes and are to be as short as possible and are to be surrounded with 150mm concrete up to the first pipe joint.

The manhole shall be constructed in accordance with the drawings for typical and special manholes.

Manholes cast iron steps for manholes shall comply with BS. 1247. All steps be hot dip galvanised after manufacture.

Manhole covers and frames shall be in accordance with the requirements of BS. 497 and as specified on the drawings.

14.8 Concrete beds etc

Concrete beds shall be grade "15" laid to correct falls, 300mm wider than the external diameter of the pipe. Rates are to include for laying in two parts, the first part being laid on the trench bottom 75mm thick and allowed to set before pipe laying is commenced. Individual pipes shall be firmly supported on precast concrete blocks placed immediately behind the socket and in such a manner that each pipe is accurately position in both line and level and the underside of the barrel is at least 75mm above the top of the concrete.

After the joints have been made and the pipelines satisfactorily tested, the first layer of the concrete bed shall be thoroughly washed down and cleaned and the remainder of the bedding concrete (and the launching or surrounding concrete where required) shall be placed and consolidated under and around the pipe in such manner as not to cause any damage or disturbance to the pipe or joints.

The contractor is to ensure that his, method of placing this second layer of concrete is such that the full length of each pipe is fully supported. The overall depth of beds is to

be in accordance with the table given on the drawings. Where pipes are specified to be haunched, the bed shall be brought up with the second layer of concrete to a minimum overall depth of 150mm to the underside of the barrel of the pipes plus half the diameter of the pipe and then sloped up to the top of the barrel of the drain pipes. Where pipes are specified to be surrounded, the bed shall be brought up with the second layer of concrete to a minimum overall depth of 150mm to the underside of the barrel of the pipe and then completely surrounded with concrete with 150mm minimum cover all round. Rates for this item are to include for any formwork required.

14.9Trenches and manhole excavation and back filling

The bottom of drain trenches is to be trimmed and consolidated to correct levels and gradients. If any trenches are over- excavated the contractor to fill up to the proper depth at his own expense with concrete grade "10" where required. Rates for drain trenches are to include for grading bottoms, any necessary planking and strutting and keeping the excavations free from water, returning, filling in and ramming ground over and disposing of surplus material to spoil heaps on site. They shall also include for sieving and hand filling trenches where required for the first 300mm over the drainpipes.

Back filling shall be executed with selected material in 150mm layers (300mm layers if a mechanical rammer is used) each layer being well rammed and watered to obtain

the maximum compaction. Care be taken to ensure that no stone or other work is placed within 300mm of such work.
Rates for manhole excavation shall include for levelling the bottoms. All surface material including top soil which differs in any nature whatsoever from the substrata, shall in every case be carefully set aside and stored separately from other excavated materials. No claim for extras will be allowed for setting aside topsoil for later use.

14.10 Pipe laying and jointing generally

All laying and jointing of pipes shall conform generally with C.P. 301. Each cast iron, or concrete pipe shall be tested for soundness before laying by striking with a hammer and any pipe or joint which does not ring true or which shows in any other way any sign of being defective shall be regretted.
Each pipe shall be laid accurately to line and gradient so that the finished pipeline shall be in a straight line both in horizontal and vertical planes. The contractor shall fix properly painted and securely positioned sight rail, the levels and positioning of which shall be checked by the Architect/Engineer's representatives before the rails are used and as often thereafter as may be necessary. There shall be at no time less than three sight rails in position on each length of pipeline under construction to any one gradient and the sight rails shall be situated vertically above the line of pipes or immediately adjacent there

14.10.1 Jointing PVC Drain pipes

The type of joint used for drain PVC pipe is cemented spigot and socket. The jointing procedure is as follows:-

i) The spigot end shall be chamfered

ii) Clean spigot and socket with wet cloth and let dry iii) Un-

grease spigot and socket with acetone iv) Mark length of joint

and spigot

v) Apply first a relatively thick layer of cement onto spigot and then a thin layer into socket

vi) Flush home the joint to the mark quickly and give at once a 90 twist. vii)

Remove pressed out cement

viii) Do not disturb the joint for five minutes whilst cement is hardening
The cement used shall be supplied by the factory, which is supplying the pipe.

14.10.2: Jointing precast concrete pipes

The contractor shall adopt such measures as may be approved by the Architect/Engineer to ensure that every laid down pipe is concentric with previously laid pipes with which it joints. Unless otherwise approved pipes shall be laid in an up-gradient direction and the spigot shall be laid in the direction of the flow. Before commencing the laying operation, the contractor shall ensure that the portions of pipe, which come into contact with jointing materials, are perfectly clean.
Cement mortar joints for concrete pipes with spigot and socket joints shall be made as follows:-

i) Before commencing the jointing operation the socket of the previously placed pipe and the spigot of the new pipe shall be cleaned and thoroughly soaked with water.

ii) The spigot shall be wrapped one complete lap with tarred hemp spun yarn and the new pipe shall be carefully drawn towards the previously laid pipe so that the spigot enters the full depth into the socket of the previously laid pipe . The new pipe shall then be adjusted and fixed in its correct position in line, level and gradient and the yarn shall be caulked tightly home into the socket. On completion of this operation the yarn shall not fill more than one quarter of the total depth of the socket.

iii) The remainder of the socket shall be completely filled with cement mortar consisting of one part of cement (sulphate resisting cement for foul water drainage) to three parts of sand. The mortar filling shall terminate flush with the socket and shall be neatly trowelled to a smooth finish completely around the pipe.

iv) To assist the curing of the mortar the contractor shall cover the joints immediately after they are made with a layer of hessian which shall be kept continuously wet during daylight hours and he shall further adopt such other measures as the Architect/Engineer may direct all at the Contractor's expense.

14.11 Position of floor gullies etc.

The contractor shall before positioning floor gullies duck-foot bends for ventilating stacks etc. consult the Architect/Engineer in order to ensure the correct position of these. Failure to do so, shall in no way relieve the contractor from positioning floor gullies, duck-foot bends for ventilating stacks etc. in positions, the Architect/Engineer later may direct.

14.12 Testing

After the drains are laid and jointed and before the trenches are filled in, they are to be tested in the presence of the Architect/Engineer's representatives. The drains shall be tested in lengths between manholes or such shorter lengths as the representative or the Architect/Engineer may approve.

Water shall be passed into the length under test until such time as all the air has been expelled and the line is full of water and subjected to a head of 1500mm at the upstream end. The test shall be considered to be satisfactory if there is no visible leakage, see page or weeping from any of the pipes of joints and if the head of water in a 76mm diameter upstand tube fitted at the upstream does not fall at a rate faster than 12mm per minute per 30 metres length. The contractor shall make such time allowance as may be necessary for the pipe to absorb water being subjected to test.

Manholes are to be tested for water- tightness in the same way as for drains by filling with water but not exceeding 1500mm head.

The contractor is to supply all testing apparatus and materials necessary for these tests and provide all labour and assistance required. Any failure whatsoever in the drainage system to withstand the specified tests and any defects appearing are to be made good and the drains re-tested to the satisfaction of the Architect/Engineer.

15.0 EXTERNAL WORKS - ROADS AND PARKINGS:

15.1.0 Earthworks 15.1.1 Dimensions;

All earthworks shall be executed to the plan, dimensions lines, slopes, widths and levels shown on the Drawings or supplied by the Engineer. Typical cross-sections and details shall be subject to variation to accord with the contours, levels and falls shown on the Drawings or supplied.

15.1.2 Protection of earthworks

Earthworks shall be properly protected at all times against the risk of damage from natural causes. The Contractor shall take every precaution against damage from sudden storms by phasing the works and by covering, pumping, shoring and forming temporary drains and sumps. Earthworks shall be excavated at all times to levels and falls, which effect drainage. No work shall be carried out which allows the possibility of water to stand in any construction area.

Any earthworks, whether under construction or complete, which suffer damage shall be removed and the work made good with materials and methods required by the Engineer at the Contractor's expense.

15.1.3 Drainage of earthworks

Earthworks shall be executed at all times to levels and slopes, which effect drainage. Water shall not be permitted to stand in construction area at any time. It may be necessary to keep the excavation clear of water by pumping, in which case the contractor shall allow for this. The Contractor shall provide, maintain and operate the pumping equipment, and shall construct such drains and sumps as may be necessary to remove the water from the excavations.
Water shall be dealt with in such a manner as will prevent the surfaces on or against which structures will be constructed from any deterioration of their natural conditions, or from such condition as improved by work executed under the Contract.

15.1.4 Spoil

Spoiling of surplus or unsuitable excavated material within the site may not be permitted and the Contractor's rates for excavation should therefore include for running to an external spoil tip approved by the appropriate authority.
No borrow pits shall be opened on the site.

15.1.5 Formation

The formation is defined as the surface obtained after completion of earthworks, i.e. the top surface of the sub-grade and the underside of the initial layer of construction

15.1.6 Topsoil

Surface spoil shall be removed from all construction areas to the depth stated or required by the Engineer. Sufficient soil shall be stockpiled on site to enable a minimum thickness of 150mm to be returned to those areas, which are designated for grassing or landscaping, and the remainder shall be run to spoil. The Contractor is to

exercise care to ensure that topsoil, is not contaminated with subsoil or construction materials. Should this occur he shall supply replacement topsoil in quality approved by the Engineer at his own expense.

15.1.7 Placing of fill material

Material selected for use as fill shall be approved by the Engineer and shall generally be selected from that obtained during excavation work. Fill shall be placed in layers with upper surfaces parallel to the finished surface of the works and with compacted thicknesses not exceeding those shown on the Drawings unless otherwise agreed by the Engineer.

Layers shall be of uniform thickness after placing any lower make-up layers. The layers shall be of a length suited to the progress of the plant employed in placing and compacting in order to avoid exposure.

All roots, other organic matter, unsuitable material or deleterious substances shall be removed from fill before compaction commences.

Fill layers shall be compacted to 90% BS. Compaction throughout their depth except for the final layer under the formation, which shall be, compacted to 95% BS. Compaction for a minimum depth of 150mm.

The completed surface of the formation and of other fill areas shall be within the following tolerances of the levels and gradients shown on the Drawings or directed by the Engineer.

Formation	+	0mm	- 50mm
Other fill areas	+	50mm	- 50 mm

15.1.8 Excavation

Excavation shall be carried out in a manner ensuring that the excavation plant and vehicles used do not cause rutting or damage to the sub-grade. Excavation shall be to the levels shown on the Drawings or instructed by the Engineer. Should excavation reveal sub-grade material, which is unsuitable in the opinion of the Engineer such material shall be removed and replaced by, approved fill material compacted in layers as specified.

Where instructed by the Engineer, the Contractor shall scarify the sub-grade to a depth of 150mm and the material shall be re-compacted to 95% BS. Compaction. Alternatively where so instructed he shall compact the undisturbed subgrade to 95% BS. Compaction.

The completed surface of the formation and of other cut areas shall be within the following tolerances of the levels and gradients shown on the Drawings or directed by the Engineer:

Formation	+	0mm -	50mm
Other cut areas	+	50mm-	50mm

15.1.9 Construction control testing;

All earthworks shall be subject to construction control testing. For each excavated surface and each layer of fill, the Contractor shall carry out compaction tests at the rate directed by the Engineer.

When the test results demonstrate the area of formation or fill complies in all respects with the requirements of this Specification, he shall apply to the Engineer for approval. Such application shall identify the boundaries of the area submitted and shall be accompanied by a copy of the test results. Upon receipt of an application for approval the Engineer will generally approve the area or layer submitted, but reserves

the right to order without unreasonable delay such further tests as he considers to be necessary. This procedure will be relaxed at the discretion of the Engineer as soon as the Contractor consistently achieves by his methods and plant the standards required.

15.1.10 Excavation for structures and services

Excavation shall be carried out to the line and depths shown on the drawings or to such other lines and depths as the Engineer may direct. Excavation shall be of sufficient size to enable the Works to be properly constructed. The faces and beds of all excavations shall be properly trimmed and cleaned of all loose stone, dirt or other debris. The bottom 150mm of material shall not be removed until just before placing of the blinding concrete, mass concrete foundations or bedding as the case may be.

The Contractor shall report to the Engineer when a secure bottom to the excavations has been obtained and is ready for the construction of the new work, and when approval has been obtained the new work shall be constructed without delay. Any work constructed in excavations before they have been inspected and approved shall, if so directed, be removed and new work substituted after approval, all at the Contractor's expense.

15.1.11 Supports for excavations

The sides of pits, trenches and other excavations shall , where necessary, be adequately supported to the satisfaction of the Engineer by timber or by other approved means. Should slips of material occur in trenches or pits the work of re-excavating and making good shall be carried out by the Contractor at his own cost to the Engineer's approval.

15.1.12 Back-filling excavations for structures and services

Excavations shall be back-filled with approved selected excavated material or imported approved material only after the work has been measured and approved by the Engineer.

All filling shall be deposited in layers with a compacted thickness not exceeding 150mm. The material shall be compacted to 90% BS compaction for its full depth. Timber and framing shall be withdrawn ahead of the layer to be compacted, care being taken to keep the sides of the excavation solid and to fill completely all spaces left by withdrawn timber.

15.1.13 Over excavation

Over-excavation in depth and width for pavement works shall be rectified at the Contractor's expense by returning approved selected fill material and compacting to Specification.

Over excavation in depth for structures and services works shall be rectified by refilling with mass concrete but over excavation in width can be made good by returning approved selected fill material and compacting to Specification, all at the Contractor's expense.

15.1.14 Use of explosives;

Except in exceptional circumstances the use of explosives will not be permitted. However, should blasting be permitted, it may only take place at times agreed with the Engineer and the Contractor will be responsible for observing all conditions set forth in Government and Local Authorities Regulations.

Adequate warning must be given to road users and any persons in the neighbourhood when blasting is about to take place.
The Contractor shall indemnify the Employer against any claims for damages to persons or property on or near the site from any cause whatsoever arising out of the use of explosives.
The Contractor will be held solely responsible for and must immediately make good to the approval of the Engineer any damage that may occur through the use of explosives. No claim for extras whatsoever will be considered as a result of prohibition by the Public Authorities from the use of explosives.

15.1.15 Grass

Where instructed by the Engineer the Contractor will provide suitable grass and plant, water, weed, cut, maintain and deliver up the same in good condition at the end of the maintenance period. Planting should take place immediately before a rainy season and should be carried out in accordance with good horticultural practice. Areas, which do not cover or die before they are properly established should be replaced, so that all areas to be grassed are delivered up in a wholly satisfactory condition.

15.2.0 Pavement construction

15.2.1 Preparation:

Prior to the construction of each pavement layer, the previously prepared formation or layer shall be thoroughly cleaned of all foreign substances. Any ruts or soft spots which occur or any deviation from the specified tolerances or degree of compaction shall be corrected by scarifying, removing and/or adding approved material, relaying and re-compacting the unsatisfactory areas to the required density and to the required lines and levels. Should any damage occur to the formation or a pavement layer prior to the construction of the next layer, it shall be rectified to the satisfaction of the Engineer at the expense of the Contractor.

15.2.2.Alignment and level control

Stakes, boards and boning rods of substantial construction shall be furnished, set and maintained by the Contractor, in order that the works will conform to the lines and levels shown on the Drawings. The stakes shall be set at intervals not exceeding 25 metres in lines parallel with the centre line and not parallel with the centre line and not more than 25 metres apart.
Stakes, boards and boning rods shall be painted in such a manner as to indicate clearly the lines and levels to be worked to for each layer of pavement.

15.2.3 Thickness and surface tolerances:

The thickness of each pavement layer shall be such that the depths from the required finished surface levels of the pavement to the surface of each pavement layer shall nowhere be less than the depths shown on the Drawing. The surfaces of each layer other than the final layer be lower than the required surface within the tolerances stated below, provided that any such deficiency shall be made good at the Contractor's expense by increasing the thickness of the course above the surface in question.

Each layer of pavement shall be finished to a surface profile parallel to the finished surface of the pavement shown on the drawings with the level of tolerances shown below:

Variation permitted (mm)

Sub base	+	0-40	Road
base +	0-25		
Surfacing		+	6- 6

The finished surface of all pavements shall be such that when tested with a straight edge 3 metres long placed in any position and direction, there shall not be any gap greater than 5mm between the bottom of the straight edge and the surface of the pavement. In addition to this requirement, there shall not be any deflection exceeding 10mm from a straight line between any two longitudinal point's 30 metres apart. Neither of these requirements shall apply across crowns.
These smoothness tolerances apply to straight profiles and equivalent smoothness tolerances shall be applied to vertical curves

15.2.4 Gravel sub-base

The material used shall be good quality naturally occurring gravel. It shall be subject to suitable testing at the direction of the Engineer to show that it has a 4 days soaked CBR of not less than 30% at 100% BS. Compaction. The grading of the material shall show a smooth grading curve parallel to and within the limits stated below. The material shall have a Plasticity Index not exceeding 20%
The sub-base material shall be spread to the full width of the cross-section and to loose thicknesses so that after compaction the finished thicknesses will be those specified. Oversize pieces shall be removed or separately broken down. The method of compaction shall be approved by the Engineer and shall be such as to compact the material to 100% BS. compaction through its full depth. Control testing shall be carried out if directed by the Engineer.

BS. Sieve size	'ercentage assing		
37.5mm	100		
20mm	80-100	100	
10mm	55-80	80-100	100
5mm	40-60	50-75	80-100
2.36mm	30-50	35-60	50-80
1.18mm			40-65
600 microns	15-30	15-35	
300 microns			20-40

75 microns	5-15	5-15	10-25

15.2.5 *Gravel road base*

The material used shall be best quality naturally occurring laterite or gravel from a source approved by the Engineer. It shall be subject to suitable testing at the direction of the Engineer to show that it has a 4 day soaked CBR of not less than 60% at 100% BS. Compaction. The grading of the material shall show a smooth grading curve parallel to and within the limits stated below. The material shall have a Plasticity Index not exceeding 12%

Immediately before applying the road base, the surface of the sub-base shall in all respects comply with the specification and be thoroughly clear of all loose of foreign matter. The road base material shall be placed on the prepared sub-base by an approved method to a thickness, which on compaction will result in the thickness required. If necessary, the moisture content of the material shall be adjusted to ensure optimum compaction.

Immediately following the placing, the layer shall be compacted by approximately 16 passes of an 8 tonne pneumatic- tyred roller or equivalent passes of a vibrating or smooth-wheeled roller, to 100% BS. Compaction. Rolling shall progress from the sides to the centre of the areas under construction. Areas inaccessible to the roller shall be compacted by mechanical plate compactors. Control testing shall be carried out if directed by the Engineer.

15.2.6 *Crushed stone road base;*

The aggregates for crushed stone road base shall be obtained from approved sources and consist of hard, tough, heavy, compact, approved rock. After crushing it shall be roughly cubical in shape, free from flat, flakey, elongated, soft or decomposed pieces, excess dust and any dirty, acods or other deleterious substances. The rock from which the stone is to be produced shall have an Aggregate Crushing Value not exceeding 25% a Los Angeles Abrasion Value not exceeding 35% and a Flakiness Index not exceeding 30%.

The grading limits of the material shall be within and approximately parallel to curves defined by the following limits:

BS Sieve	% passing
50	100
37.5	95 – 100
20	65 – 80
10	40 – 60
5	30 – 50
1	20 – 38
0.425	12 – 24
0.075	5 – 13

Before commencing spreading and compaction the Contractor shall determine the maximum dry density and optimum moisture content of the material for each layer in accordance with BS. 1377.

Mixing , handling, transporting ,pacing, spreading and compacting of the crushed stone shall take place whilst it is in a moist condition and in such a manner as to avoid segregation. The Contractor shall as necessary and further water so that compaction is carried out within the range of - 2% to + 0.5% of the optimum moisture content.
The material shall be spread by means of a mechanical paver, which shall be to the approval of the Engineer and be capable of spreading the crushed stone material in an even manner without segregation to a thickness which will give the required finished thickness.
No material shall be delivered to the paver over previously compacted material. Spreading shall commence at the high point of a pavement cross-section and finish at the
low point or points. Where, in the opinion of the Engineer, segregation has occurred the material in the affected area shall be cut out and replaced.

The material shall be compacted initially with a self-propelled pneumatic tyred roller and followed by a heavy vibrating roller until all visible movement under the wheels ceases.

Any voids appearing in the surface shall be filled with crusher fines, watered and re-compacted until a hard dense layer is obtained. Compaction shall proceed from the sides to the centre of the lane under construction or from one side towards previously compacted material. The crushed stone layer shall be compacted to 100% BS. Compaction. Areas inaccessible to the roller shall be compacted by mechanical plate compactors. Control testing shall be carried out if directed by the Engineer.

15.2.7 Protection of pavement layers:

No construction traffic shall run over the exposed formation or over sub-base layers. Sub-base, or road base material where no sub-base is specified, shall be laid on the formation as soon as the last 150mm of material protecting it has been removed, in a continuous operation, and no formation shall be opened which cannot quickly be covered with sub-base or road base respectively.
The placing of the road base shall be followed as soon as practicable by the placing of the surfacing.

15.2.8 Prime coat

A prime coat shall be applied to the road base before the premix or asphalt surfacing; or surface dressing. The surface shall be thoroughly swept by brooms, all laitance, loose and foreign material removed and the clean surface of the base and hard particles in the layer exposed as a mosaic.
All loose material shall be wept well clear of the area to be primed. The surface shall be checked for line, cross-fall and level and made good as necessary and approved by the Engineer before any bitumen prime is applied. Where required by the Engineer, immediately prior to the application of prime, the surface shall be lightly sprayed with water but not saturated.
The prime coat shall be sprayed immediately after the preparation of the stone layer is completed and approved. The type of prime coat shall be medium curing cutback bitumen MC 30 grade. The rate of spray will be as directed by the Engineer between 0.5 lit/m2 - 1.0 lit/m2. The quantity used must give complete coverage with a slight trace of run off in places. Should the Contractor find that at the rate of spray directed

the coverage is inadequate, or there is too much run off, he shall immediately inform the Engineer and amend the spray as directed.
The prime should penetrate about 3 to 6mm and dry to a matt surface in 24 hours, leaving no pools of bitumen on the surface.
During spraying all kerbs, headwalls, drains and the like which are liable to be disfigured by splashing of bitumen shall be protected, and any such feature which is accidentally marred by bitumen, shall be cleaned with a suitable solvent or if this is not possible removed and made good at the Contractor's expense.

15.2.9 Chippings

Chippings used for surface dressing should be single sized, cubical in shape, clean and free from dust, strong, durable and not susceptible to polishing under the action of traffic. These should be selected in accordance to British Standard BS 63," Single sized road-stone and chippings".
Samples of chippings should be tested for grading. flakiness index, aggregate crushing value and when so instructed by the Engineer, the polished stone value and aggregate abrasion value, before the start of surface dressing operation or when new supplies are delivered.

- Maximum aggregate crushing value (ACV) for surface dressing chippings should be between 20 to 35%
- Aggregate abrasion value (AAV) will be 14 for side and estate roads and 12 for highways (traffic up to 1000 vehicles /lane/day)
- Nominal size will be 6,10,14 and 70mm. "Flaky" chippings are those with thickness (smallest dimension) which is less than 0.6 of their nominal size.

15.2.9.1 The previously primed surface shall be swept clean with brooms and the debris deposited well clear of the surface to be surfaced, Any defects of the surface shall be made good as directed by the Engineer and no binder shall be applied until the surface has been approved by the Engineer.
The binder for surface dressing shall be straight run hot bitumen of grade 80/100 pen applied by a bitumen distributor complying with BS 1707 at a temperature between 145 degrees and 205oC.

15.2.9.2 Dressing

During spraying all kerbs, head walls, drains and the like which are liable to be disfigured by splashing of bitumen shall be protected, and any such feature which is accidentally marred by bitumen, shall be cleaned with a suitable solvent, or if this is not possible, removed and made good at the Contractor's expense
Immediately after the binder has been applied, clean dry stone chippings shall be spread at the rate directed by the Engineer. Directly the stone chippings have been spread they shall be rolled initially so that the whole area receives at least one pass within ten minutes of the bitumen being sprayed. Immediately after the initial rolling, any area, which is deficient in chippings, shall be made good by hand spreading. Brooming of the material to effect redistribution of chippings will not be permitted. The number of passes of the roller shall be laid down by the Engineer, but shall be at least two. A certain amount of crushing under the roller is permissible , but should

any general shattering occur, the Engineer may direct that rolling shall cease, regardless of the number of passes completed.
Pneumatic tyred rollers are preferred for rolling of all bitumen seal work though finishing with smooth steel-wheeled rollers may be permitted with the approval of the Engineer. No rollers or construction equipment shall be permitted to park on the completed work.
The road shall not be opened to traffic until the bitumen has attained sufficient viscosity to prevent stones being removed, and not earlier than 24 hours in the case of the first application of chippings.
Unless allowed otherwise by the Engineer, the area shall not be opened to works traffic before the application of the full number of specified coats.

After traffic has been permitted to run on surface dressing for a period of at least a fortnight, all loose material shall be swept to the side, collected up and disposed of. No windrow of loose chippings shall be allowed to accumulate at the sides.

15.2.10 Asphaltic concrete surfacing

Asphaltic concrete surfacing courses shall comprise a mixture of well-graded aggregate, filler and penetration grade bitumen.
The coarse aggregate shall consist of clean crushed rock, as free as practicable from flat, elongated, soft and weathered pieces and dust, dirt and deleterious matter. It shall have an Aggregate Crushing Value not exceeding 25% and Flakiness Index less than 30% The fine aggregate may consist of stone screenings or natural sand free from clay and organic matter. The filler may consist of cement, hydrated lime or stone dust. The bitumen shall be straight run of grade 80/100 penetration. The combined grading of aggregates and filler shall show a smooth grading curve parallel to and within the limit is set out below:

BS. Sieve size	Percentage passing	
	Wearing course	Base course
14mm	80-100	75-95
5mm	54-72	52-70
2.36mm	42-58	40-56
1.18mm	34-48	32-46
600 microns	26-38	24-36
300 microns	18-28	16-26
150 microns	12-20	10-18
75 microns	6-12	6-12

Bitumen content

In addition to the above requirements both wearing course and base course material shall when compacted exhibit the following Marshall test values:

Minimum stability 250kg

flow value, between 2 - 5 mm

Control testing to ensure compliance with these requirements shall be carried out as directed by the Engineer.

The surfacing material shall be mixed in a purpose- made mixing plant of the weigh batch

or continuous mixing type in good order and approved by the Engineer, shall be transported to the works in clean covered vehicles and laid by a self-propelled mechanical

spreader/finisher without delay. The mix temperature when placed in the spreader shall not be less than 135°C. and the mix shall be rolled immediately after laying and before the

temperature falls below 120°C.

Compaction shall be by an 8 - 10 tonne smooth- wheeled roller of roll width greater than 450mm or by pneumatic- tyred roller of equivalent mass. The material shall be rolled from side to centre in a longitudinal direction. Cold joints shall be formed on a new cut vertical face and painted with hot bitumen. Rolling shall continue until all roll marks are eliminated and 98% of the laboratory density is obtained. Rollers shall not stand on newly laid surfacing.

15.2.11 Kerbs, edgings and quadrants

Kerbs, edgings and quadrants may be supplied in precast concrete to BS. 340 or dressed hard stone to the approval of the Engineer. In the latter case, kerbs will be accepted without batter and in random lengths. They shall be bedded and haunched in concrete and the joints are to be pointed in 1:3 cement mortar. The price is to include for excavating; supplying; laying (to radius of required), jointing and back-filling and all materials necessary for completion.

15.2.12 White line markings:

White line markings where specified shall be painted in long life chlorinated rubber road marking paint.

16.0 ELECTRICAL INSTALLATION

16.1TECHNICAL SPECIFICATIONS I

16.1.1 General Conditions

The Contractor shall use a qualified approved electrician to perform the Electrical works i.e. the Main Contractor is allowed to sublet electrical installation part to approved Electrical Contractor as domestic Sub-contractor.

This specification is to be read in conjunction with "General Conditions of the contract" and any general or particular specification and drawings listed in section six of this bidding documents.

Minor details not shown or specified herein but necessary for proper installation and operation shall be included in the Contractor's estimates.

Any apparatus, appliances, material or work not shown on drawings but mentioned in the specification or vice versa, or any incidental accessories necessary to make work complete and perfect in all respects and ready for operation, even if not particularly specified, shall be furnished delivered, and installed by the Contractor without any additional expense to the employer.

With submission of bid, the contractor shall give written notice to the Engineer of any materials or apparatus believed inadequate or unsuitable, in violation of laws, regulations, and any necessary item(s) or work omitted. In the absence of such notice, it is mutually agreed that the Contractor has included the cost of all required items in his proposal, and that he will be responsible for the approved satisfactory functioning of the entire system without extra compensation.

16.1.2 Contractor's Conditions

The Contractor's conditions of sale or contract shall not stand against nor invalidate this specification.

16.1.3 Statutory Regulations.

All work shall be carried out in accordance with the requirements of the current edition of the 'Regulations' for the Electrical Equipment of Buildings issued by the Institution of Electrical Engineers. In the specification references to the I.E.E. Regulations are to the 17th Edition.

16.1.4 Symbols

Symbols used on the drawings shall have the meanings assigned to them according to the accompanying legend or the legend of a drawing with reference as directed by the Notes.

16.1.5 Materials & Equipment

Materials and Equipment shall be of first quality and approved and shall comply with the specification of the British Standards Institution where relevant at the date of contract. The Contractor shall, if so required, submit samples of all materials and equipment for approval if those material are those not specified in the Bills of Quantities.

Where the material and / or equipment is specified in the Bills of Quantities followed by approval equal, it is so named or described for the purpose of establishing standard of materials and workmanship to which the Contractor shall adhere. Should the Contractor install the material or method in question before receiving approval from the proper authorities the Engineer shall at his discretion direct the Contractor to remove the materials in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.
All equipment shall be fully tropicalized.

16.1.6 Builder's works

The Contractor shall be responsible for the supply and correct positioning of all fittings and supports and shall be required to mark out all holes and chases, but the cutting away, grouting-in and making good shall be the responsibility of the Contractor to ensure that all the builders work is carried out to the requirements of the various parties concerned, e.g. TANESCO, etc.

16.1.7 Cooperation with other trades

The Contractor shall give full cooperation to other trades and shall furnish any information necessary to permit the work of other trades to be installed satisfactorily and with least interference or delay.

Where the Electrical work will be installed too close to work of other trades, or in manner evidently to interfere with the work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If the Contractor installs his work before coordinating with other trades or so as to cause any interference with work of other trades, he shall make necessary changes in his work to correct the condition without extra charge.

The variation between equipment manufacturers requires complete coordination of all trades. Therefore the Contractor, who offers, for consideration, substitute or equal products of reliable manufacturer, has to be responsible for all changes that affect his installation and the installation of equipment of other trades.

16.1.8 Setting out and final position of electrical gear

The Contractor shall be responsible for all site measurements with respect to the setting out his own works such Builder's works as may be necessary for others to execute.

All drawings shall be read in conjunction with the latest Architect/Engineerural, Structural, and Services drawings available on site prior to commencing work at all stages of the work. Special attention shall be paid to areas where the electrical gear must be placed in relation to benches, working tables, wall units, cabinets, wall tiling, patterned walls or ceiling, kitchen areas, etc.

Where wiring and conduit runs are indicated diagrammatically the exact position shall be agreed upon with Engineers on site.

The Contractor shall include for a position variations of 0.5 metre from that of any items shown. Where symmetry is the determining factor for the positions the reference points or lines shall be measured as accurately as possible.

The Electrical Contractor shall maintain accurate records of all deviations in work as actually installed from work indicated on the drawings, on completion of the project, or when requested by the Engineers the Contractors shall deliver two (2) complete sets of prints to the Engineers.

16.1.9 Access to plant rooms

It shall be the responsibility of the Contractor to ensure that all equipment ordered in respect of contract is to be contracted in such a manner that it may, if necessary be dismantled to enable it to pass down through the building to street level. He shall also ensure that the systematic installation of plant room equipment is planned so that the largest items of equipment can be installed.

16.1.10 Distribution boards and switch gear

Where applicable the switchboards shall be of the type and size specified in this specification or Bills of Quantities but care should be taken if the manufacturer offers the latest version of the type specified that the differences do not affect the Design. If such change occurs, the Contractor shall provide all the drawings and specifications as supplied by the Manufacturer, for the new version to the Engineers for approval before ordering/installing the equipment.

The location of Distribution Boards (DB) shall be as specified herein or in the drawings. Where two or more DB's is shown on the drawings the Contractor shall prepare drawings indicating his proposed arrangement details prior to proceeding with the instillation.

The Neutral bar of each S.P.N. and T.P.N. fuse or Miniature circuit Breakers (MCB) irrespective of the outgoing circuit shown shall have same sequence as the phase cables are connected to the M.C.B's. This shall apply to earth bars when installed.

The following refers to M.C.B. Distribution Boards:

- The spare ways not showing current ratings will be fitted with removable blanking plates and accessories for future breakers.
- If spare ways shows current ratings then breakers must be fitted.

16.1.11 Cables

All cables used in Contract shall be manufactured in accordance with the current appropriate BS Specifications, which are as follows:

Rubber Insulated cables and flexible cords B.S.S. 6500
P.V.C. Insulated cables and flexible cords B.S.S. 6004
P.V.C. Insulated Armoured cable B.S.S. 6346
Butyl Rubber Insulated cables B.S.SD. 6101V
The Contractor will, at the Engineer's discretion, be required to submit samples of cables for the Engineer's approval: The Engineer reserves the right to call for cables of an alternative manufacturer without any extra cost being incurred.
No cable of C.S.A. less than 1.5 mm^2 shall be used unless otherwise specified.

16.1.12 Armoured P.V.C. Insulated and sheathed cables

Shall be 600/1000- volt grade with standard copper conductors. The wire amour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire amour shall not be more than twice that of the largest current carrying conductor of the cable.

Where cables enter Switchgear and other apparatus, they shall be made off with proper glands for this type of cable, with the whole gland enclosed in a P.V.C. shroud.

When lugs are soldered to cable ends any exposed conductor shall be taped with a P.V.C. Tapes to thickness of the original insulation, the taping being taken partly over barrel of the cable lug. The colour of the tape shall be the same as the original insulation.

Where cables rise from floor level to Switchgear, etc. they shall be protected by P.V.C. conduit to a height of 600mm from the finished floor level, whether the cable is to run on the surface or recessed into the wall.

All P.V.C. S.W.A. cables run inside the building shall be fixed in rising ducts or on ceiling by means of diecast cable hooks or clamps, of appropriate size to suit cables, fixed by studs and back nuts to their channel sections, Type C.S.I. Alternatively by B.I.C.C. claw type cleating system with diecast cleats and galvanized mild steel back straps or similar approved equal method for one or two cables runs together, the cleats shall be fixed to special channel section supports or back straps described above, which shall in turn be secured to walls or ceilings of ducts by rowbolts.

Where armoured cables are run outside the buildings they shall be laid underground with protecting concrete interlocking cover tiles laid over, which shall be provided and laid under this Contract. All the excavations and reinstatements of ground will be carried out by the Main Contractor also the Contractor shall be responsible for sanding of the trenches on top of which he shall lay the cables.

Depth of laying low voltage cable shall be 450mm minimum but 600mm to the top of cable tiles where planting is indicated on the drawing.
Any damage to the serving or sheathing of cables shall be brought to the Engineers notice in writing and their instructions that it should be repaired or replaced is to be carried out.

16.1.13 P.V.C insulated cables

These cables shall be of the non braided type as C.M.A reference 6491x600/1000 volt grade cables, or equal approval cables for all service shall be in accordance with the schedules and the Electrical Regulations.

16.1.14 Heat resisting cable

Final connection to all lighting fittings (and other equipment where a temperature in excess of 65 °C is likely to be experienced) shall be made using silicone rubber insulated cable or equal approved.

16.1.15 Conduit installation

Conduit shall be Heavy gauge P.V.C. or steel as specified in the Bills of Quantities, of 20mm minimum diameter and made to applicable B.S.I. standards. Steel Conduit and fittings shall black enamel finish, unless otherwise specified for indoor use and outdoors-galvanised finish shall be used.

Cable capacity of conduit shall be in accordance with the appropriate tables of I.E.E. Regulations and sufficiently large to allow easy draw in or withdrawal of any one or all cables. A conduit run shall neither have more than two (2) right angle bends or equivalent nor more the 10m without the provision of a draw in box.

Conduit shall be installed in such a way that there is segregation of lighting, general-purpose power installations telephone, alarm systems etc. as outlined in the Regulations.

In poured, reinforced concrete columns and slabs the fitting and boxes shall be laid and fixed in position to prevent displacement during mechanical vibration, and shall be sealed to prevent the ingress of cement.

Conduits installed on surface shall be unobtrusive and runs shall be symmetrical and in keeping with the building design. The routes of all surface conduits shall be approved by the Engineer and/or Architect/Engineer on site before installation.

The crossing of expansion joints and feeders to work benches from floors shall be made with flexible conduit connecting each end of the P.V.C. conduit, care shall be taken to ensure that the flexible conduit/conduit connector are correctly installed and will not become disconnected when the expansion and contraction takes place.

Where permanent wiring is not installed a draw wire shall be left in all such conduits.

16.1.16 Labelling

All main switches, circuits breakers, isolators and distribution boards shall be labelled showing the area and service fed them, and where not otherwise immediately obvious, their source of supply.

The circuits fed from the DB shall be marked on a card fixed to the inside of the lid or as shall be agreed with the Engineers. The card must indicate without ambiguity the location of all the outlets fed from each distribution way and the size of the fuse or circuit breaker rating.

All control switches, isolators, starters, etc, shall be labelled to indicate the item or apparatus controlled, the supply voltage and phase.

Where socket outlets and/or single phase isolators in any one room area are connected to more than one phase, all such outlets and isolators shall be labelled to indicate the phase to which they are connected and where required by the Engineers, a warning label shall be provided and fixed as directed to indicate the presence of 415 volts between outlets on different phases.

16.1.17 Final sub-circuits

The wiring of each final sub-circuit shall be electrically separated from that of every other final sub-circuit. For all lighting and socket outlets wiring shall be carried our in the "Looping in" system, and there shall be no joints whatsoever.

The wiring sizes for lighting circuits and socket outlets are shown on the drawing. If not shown then the sizes specified in I.E.E. Regulations shall be assumed.

16.1.18 lighting fittings

The Contractor shall supply and fix all lighting fittings and lamps of number, and size indicated on the drawings manufactured and designed to comply with BS 4533/EN 60598. Fittings shall be assembled and cleaned and if necessary any suspension tubes cut and screwed to provide the right mounting height.

All fittings and pendants shall be fixed to conduit boxes with brass R/H screws.
The whole of the metal work in each lighting fittings shall be effectively bonded to earth. In case of ball and/or knuckled joints, short lengths of flexible cable shall be provided bonded to the metal work on either side of the joints.
Where lamp holders are supported by flexible cable, the holders shall have "cord grip" arrangement, and in case of metal shades earthing screws be provided on each of the holders.

In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to central conduit bot fittings.

16.1.19 Electric lamps

All lamps shall conform with the specifications of the appropriate B.S.I. suitable for normal stated supply voltage.

Prior to installation, the Contractor shall enquire of and conform to the direction of the Engineers as to the colour of fluorescent lamps to be installed.

16.1.20 Switches

Switches shall be of the type(s) given in the Schedule of Materials/Bills of Quantities of this specification,and shall conform to BS 3676. Steel flush mounting boxes for switches shallconform to BS 4662.

Where multi-gang switch assemblies are used the switches shall be connected so that their layout relative to each other on the switch-plate conforms, as far as practical, to the layout of the groups of appliances controlled.

Generally switches shall be mounted at a height of 1400mm above finished floor level, and 150mm from the doorframe.

16.1.21 Socket outlets

Socket outlets for general A.C supplies shall be 13 Ampere complying with BS 1363 and of the type specified in the Schedule of materials/Bills of Quantities. Flush and surface mountingboxes for sockets outlets shall be designed and manufactured to comply with BS4662 and BS 5733 respectively.

Unless otherwise specified, socket outlets shall be mounted 300mm above finished floor level except those on top workbenches, which shall be, installed as detailed drawings.

Where two or more points are shown adjacent to each other on the drawing, e.g. socket outlet and telephone outlet, they shall be lined up vertically or horizontally on the centre lines of the units concerned.

Normally the units shall be lined up on vertical centre lines, but where it is necessary to mount units at low level they shall be lined up horizontally.

16.1.22 Telephone outlets

Telephone outlets shall be installed in preparation rooms as shown in the drawings.

Final wiring for the telephone system shall be carried out by others, however the Contractor shall lay conduits and draw wires as outlined in the drawings.

16.1.23 Fume Cabinets

Fume cabinets and similar apparatus shall be controlled either by local switch of suitable rating fitted with a neon indicator connected in a radial circuit.

Final connections to the cabinets shall be by butyl rubber silicone rubber or other approved heat resisting cables run in flexible conduit, which shall commence at flush circular conduit box situated beside the equipment.

16.1.24 Earthing

The Contractor shall be responsible for providing and installing all necessary electrodes, earthing conductors; clamps; connectors and to ensure that the entire installation is installed in accordance with the I.E.E. Regulations. Earth plates shall not be permitted.

The Earth resistance shall be tested in the manner described in the latest edition of the I.E.E. Regulations by the Contractor in the presence of Engineer, and the Contractor shall be responsible for the supply of all test equipment.

An Earthing Terminal must be provided at each box or other enclosure to which accessories are to be attached. The earth leads to each distribution board shall not be less than half the cross sectional area of the feeder.

16.1.25 Testing and inspection

On completion of the entire installation or as may be deemed necessary by engineer, the Contractor shall test all wiring and connections for:

- Earth continuity
- Neutral Earth loop impedance
- Insulation Resistance
- Earth Resistance

All tests shall be in accordance with the Electrical Regulations

In case power is not connected at the time of handover the Contractor shall ensure that a suitable generator set is availed for the purpose of completing the tests. All related costs shall be borne by the Contractor.

The Contractor shall provide the Test Certificates which must be set out as indicated in the Electrical Regulations with additions where necessary to include functional tests and other tests, and shall be signed by the Engineer who shall be present at all site tests.

All the apparatus, attendance and assistance necessary, together with all skilled labour, shall be provided by the Contractor.

The Contractor shall advice the Engineers of a suitable date for the final inspection, which shall be prior to the date of handover of the Main contract. This shall be after:

- All boards Switchgear, outlets etc., have been cleared and damaged paint work made good.
- All lamps are in-situ and working
- All tests described above have been carried out and certificates produced.

- All labelling has been completed
- All conduit lids are secured
- All unused blanking holes have been blanked off
- All builder's work has been made good round outlets etc. to the Engineers satisfaction and all surplus paint cleaned off on items of electrical equipment.

Any faults defects, or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparent by such inspections or tests, shall be rectified by the Contractor at his own expense.

16.2.0 TECHNICAL SPECIFICATIONS II

16.2.2 Main switch

Location of main distribution board as shown in drawings is for tendering purposes only. The Engineer shall decide actual position on site after determining the exact mains entry point.

16.2.3 Distribution boards

Distribution boards shall be installed at positions and height shown on drawings.

All breakers and other apparatus shall only be accessible through the door, only incorporated isolators shall be accessible from outside.

Typewritten or stenciled labels showing each circuit shall be fixed on the inside of the door.

The circuits of the DB's shall have phase arrangement in accordance with that shown on the diagrams. However it shall be the responsibility of the Contractor to tong test the load to the satisfaction of the Engineer.

16.2.4 Wiring system

All internal wiring shall be carried our in PVC insulated single core cables run in non-metallic conduits either concealed in chases cut in solid partition walls, or cast in-situ in concrete structure or fixed on the surface of walls or ceiling member shall be fixed by spacer bar saddles fixed not more than 1 meter apart.

The Contractors shall install PVC pipes to accommodate the supply cables into and out of the building as proposed on drawings.

16.2.5 Fittings and accessories

Type and makes of fittings and accessories have been specified in the bills of quantities. The specifications are meant to ensure a good standard of quality of materials. Any other fittings must first be inspected and approved before being used.

16.2.6 Installation of boxes for accessories

All boxes shall be of metallic type.

The installation of boxes shall be made with great care and they shall be set plumb and true. Care shall be exercised to ensure that outlet boxes are set flush with wall finish so that cover plates will neither protrude beyond the surface of the wall nor be sprung out of shape by the outlet box being set too deep in the wall.

16.2.7 Builders work

The Contractor shall take special care in the location of conduits so that same will not clash with required locations for and proper grading of water, drain pipes etc, and he shall take special pains to refer to the drawings covering such requirement so as to ensure his equipment is installed in proper relation to other apparatus.

16.2.8 Earthing

Earthing shall be done as recommended in IEE Regulations for Electrical Installation of Buildings. Each unit shall have its own earthing points consisting of an earthing inspection chamber and copper electrodes.

16.2.9 Final testing and inspection

On Completion of the entire installation and before handover, inspection shall be carried out as given in part I of these specifications.

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2. Form of Tender

03 January, 2022

To:

District Executive Director,
Mpwapwa District Council,
P.O.Box 12 , Dodoma.
Tanzania.

1. We, *AZHAR CONSTRUCTION COMPANY LTD of P.O.BOX 35918 Dar es salaam,* offer to execute ***Construction of Three in One Staff House at Mpwawa health Center at Mpwapwa District Hospital, Tender no. LGA/023/2021-22/HQ/W/117.*** in accordance with the Conditions of Contract accompanying.

This Tender for the Contract Price of 89,860,858.60 **TZS** /=VAT Inclusive **(Tanzania shillings)**

The Contract shall be paid in the following currencies: **(ONLY IN TZS)**

Currency	Percentage payable in currency	Rate of exchange: one foreign equals [*insert local]*	Inputs for which foreign currency is required
(a)	100%	N/A	N/A
(b)		N/A	N/A

The advance payment required is:-

Amount	Currency
(a)	TZS
(b)	TZS

We declare that our tendering price did not involve agreements with other tenderers for the purpose of tender suppression.

We hereby confirm National Construction Council, to be the Appointing Authority, to appoint the adjudicator in case of any arisen disputes in accordance with ITT 43.1 [Adjudicator]

AZHAR CONSTRUCTION COMPANY LIMITED
P. O. Box 35918
Tel: 0787 021 444
DAR ES SALAAM

We are not participating, as tenderers, in more than one Tender in this tendering process other than alternative tenders in accordance with the tendering documents.

We declare that, as tenderer(s) we do not have conflict of interest with reference to ITT 3.7 [Eligibility of Tenderers]

With reference to ITT 3.11 [Eligibility of Tenderers], it is our intention to subcontract approximately [*insert the percent*] percentage of the Tender /Contract Price, details of which are provided herein.

Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the contract has not been declared ineligible by the Government of the United Republic of Tanzania under Tanzania's laws or official regulations or by an act of compliance with a decision of the United Nations Security Council.

The following commissions or gratuities of fees have been paid or are to be paid by us to agents relating to this tender, and to contract execution if we are awarded the contract:-

Name and address of agent or recipient	Amount and currency	Purpose of commission or gratuity
NONE	NONE	NONE

(if none has been paid or is to be paid, state "none")

This tender and your written acceptance of it shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Tender you receive.

We hereby confirm that this tender complies with the tender validity and Tender Security required by the tendering documents and specified in the Tender Data Sheet.

Authorized Signature: _____

Name and Title of Signatory: SALUM SALEHE RUTBAJIRA

Name of Tenderer: AZHAR CONSTRUCTION CO.

Address: PO Box 35918 Dar

AZHAR CONSTRUCTION COMPANY LIMITED
P. O. Box 35918
Tel: 0787 021 444
DAR ES SALAAM

1. Tender Securing Declaration

Date: *03/01/2022*

Tender No.: ***LGA/023/2021-22/HQ/W/116***
Alternative No.: *NONE*

To: **District Executive Director,**
Mpwapwa District Council,
P.O.Box 12 , Dodoma
Tanzania.

We, the undersigned, declare that:

We understand that, according to your conditions, tenders must be supported by a *Tender Securing Declaration whichever was requested by Procuring Entity.*

We accept that we will automatically be suspended from being eligible for tendering in any contract with the Procuring Entity for the period of time determined by the Authority, if we are in breach of our obligation(s) under the tender conditions, because we:

(a) have withdrawn or modified our Tender during the period of tender validity specified in the Form of Tender;

(b) disagreement to arithmetical correction made to the tender price; or

(c) having been notified of the acceptance of our Tender by the Procuring Entity during the period of tender validity, (i) failure to sign the contract if required by Procuring Entity to do so or (ii) fail or refuse to furnish the Performance Security or to comply with any other condition precedent to signing the contract specified in the tendering documents.

We understand this *Tender Securing Declaration whichever was requested by Procuring Entity]* shall expire if we are not the successful Tenderer, upon the earlier of (i) our receipt of your notification to us of the name of the successful Tenderer; or (ii) twenty-eight days after the expiration of our Tender.

Signed:

In the capacity of *COMPANY SECRETARY*

Name: *SALUM RWEGASIRA*

Duly authorized to sign the tender for and on behalf of: *MAZHAR CONSTRUCTION COMPANY LIMITED,*

Dated on ___03_____ day of ____JANUARY_____, _2022_____
Corporate Seal (where appropriate

MAZHAR CONSTRUCTION COMPANY LIMITED
P.O. Box 35918
Tel: 0787 021 444

AZHAR
CONSTRUCTION COMPANY LTD
BUILDING CONTRACTORS & CIVIL WORKS

Building Contractors and all types of high quality furniture and house interior Decoration Aluminium, windors & Doors Suspended Ceilings, Counter displays Cabinet and Office partitions.

BOARD OF DIRECTORS MEETING NO. 84 HELD AT HEAD OFFICE TEMEKE DAR ES SALAAM ON TH 03/01/2021

PRESENT:

1.Eng. Shabani Kapinga - Chairman
2. Eng. Salum Rwegasira - Member
3. Hamida Mohammedi - Secretary

AGENDA:

1. Opening of the meeting
2. Power of attorney ***Construction of Three in One Staff House at Mpwawa health Center at Mpwapwa District Hospital, Tender no. LGA/023/2021-22/HQ/W/117.***
3. Closing of the meeting.

AGENDA NO. 1

The chairman opened the meeting at 8.00 a .m by mentioning the agenda of the meeting and allowing members to deliberate on the agenda.

AGENDA NO. 2

The Chairman informed the member of the board regarding the company's representatives for administration of the above-mentioned project.
After brief discussions it was then deliberated that **Eng. Salum Rwegasira** be granted the power of attorney for administer Tenders and subsequent contract for above project name.

AGENDA NO. 3

The Board meeting was officially closed by the Chairman at 11.00 a.m.

Signed by: Chairman

Eng Shabani Kapinga

AZHAR CONSTRUCTION COMPANY LIMITED
P.O.Box 35918
Tel:0787 021 444
DAR ES SALAAM

Secretary

Hamida Mohammedi

P.o.Box 35918 Mwenge area, Sam Nujoma Road Dar es salaam
Tel: +255 22 2775121, Fax: +255 22 2775121
Cell:-+255 716 021444/+255 772 021444/+255 767 021444
Email:shakapinga68@yahoo.com, kapinga68@gmail.com
All Correspondence should be addressed to the Managing Director

5.0 POWER OF ATTORNEY

We, the undersigned
..AZIAH CONSTRUCTION CO.LTD OF P.O BOX 35918 DSM.
..... (*Name of Company*)
A company duly incorporated in Tanzania whose office is at ....MWITEE AREA..... by virtue of company's resolution dated .....
Attached hereto, hereby appoint ...SALUM SAMEHE RWEGASIRA... (*Name by donee*) with identity/~~Passport No.~~ ANF 19720228 14118 00004-24 Whose signature appears below.
Signature .....

With full powers to act for us in our name and for out use to do the following act related to following project CONSTRUCTION OF THREE IN ONE HOUSE AT ...MPWAPWA HEITH CENTER AT MPWAPWA DISTRICT TENDERED LGA/033/2021-22/HQ/W/117 (*Name of project*)

(i) To negotiate contract of works/services ✓
(ii) To sign, execute, endorse all document ✓
(iii) To open and close accounts: and ✓
(iv) To commence any action or actions, suit of suits or defend us in any action ✓
(Tick whichever is/are applicable).

AND GENERALLY to execute and do things which he/she shall deem necessary or appropriate with the same effect as if we had done, executed or performed it ourselves in relation to the above named project.

In witness hereof we are entitled to sign for and on behalf of
.....AZIAH CONSTRUCTION COMPANY LTD.....
..... (*Name of company*) as we have signed this power of attorney of this .3rd....Day of .June. 20.22...

This power of Attorney is valid until 3/6/2022 (Date)

Authorized Officer of the Company
Name SHABANI KAPINGA
Designation: DIRECTOR
Signature .....

Authorized Officer of the Company
Name HAMIDA MOHAMMED I
Designation SECRETARY
Signature H.Mohamedi

This is to certify that SHABANI KAPINGA ..... and HAMIDA MOHAMMED I (*Name of donors*) have this 03 day of JANUARY 20.22 in my presence signed this power of attorney on behalf of the company above named.

BEFORE ME
.....
Commissioner for Oaths

EMANUELI TIMOTHY MLAKI Advocate, Notary Public & Commissioner For Oaths P.O. Box 04, MOSHI

Official stamp

EMANUELI TIMOTHY MLAKI Advocate, Notary Public & Commissioner For Oaths P.O. Box 04, MOSHI

AZIAH CONSTRUCTION COMPANY LIMITED P.O. Box 35918 Tel:0787 021 444 DAR ES SALAAM

EC IX 3

SN/22/3174

TFN. 226
(Rev. 2/96)

ID: 51466

JAMHURI YA MUUNGANO WA TANZANIA

LESENI YA BIASHARA

B 3853174

(Imetolewa chini ya Sheria ya Leseni za Biashara Na. 25 ya Mwaka 1972 marekebisho ya mwaka 1980 na masharti yaliyo nyuma)

*Futa isiyotakiwa.

1. Ofisi iliyotolewa MANISPAA YA UBUNGO
2. Nambari ya Ushuru wa mapato 109 - 702 - 935
3. Leseni imetolewa kwa AZHAR CONSTRACTION COMPANY LIMITED kuendesha biashara ya BUILDING CONTRACTOR CLASS ONE katika Wilaya/Kanda* ya UBUNGO Mtaa SINZA C
4. Ni ya Shina/Tawi*
   Ada Sh. 1,000,000/= Nambari ya Stakabadhi 165698 ya tarehe 31/08/2021
5. Mpya/maendelezo* muda wa Leseni Na. MPYA
   ya tarehe ....
   (a) Muda wa leseni hii unaishia ~~30 Juni 20~~ 31/08/2022

Certified True Copy of the Original
Date 23/12/2
Sign EMANUELI TIMOTHY MLAKI
Advocate Notary Public & Commissioner for Oaths

Tarehe 01/09/2021
07 87 - 021421

Sahihi na Muhuri ya Mtoaji Leseni
Mingame Muuya

Cheo

PRESIDENT'S OFFICE

REGIONAL ADMNISTRATION AND LOCAL GOVERNMENT

BILL OF QUANTITIES FOR THE PROPOSED CONSTRUCTION OF THREE IN ONE SEMI DETACHED STAFF HOUSE URBAN TYPE

November, 2021

DISTRICT ENGINEER WORKS
MPWAPWA

Mr. MADEMLA
Ag DE
21/12/2021

AZIMAR CONSTRUCTION COMPANY LIMITED
P.O. Box 35918
Tel:0787 021 444
DAR ES SALAAM

GENERAL SUMMARY

GENERAL DESCRIPTIONS	AMOUNT
BILL No 01 - PRELIMINARIES	300,000 ✓
BILL No 02 - SPECIFICATIONS	~~118,259,770/=~~ ~~116,663,770/=~~
BILL No 03 - MEASURED WORKS (STAFF HOUSE -URBAN YPE) ...	7,5,153,270 X ~~84,509,770~~
BILL No 04 - PRIME COSTS AND PROVISIONAL SUMS	100,000 ✓
SUB-TOTAL	75,953,270 X ~~117,063,770/=~~ ~~118,359,770/=~~ ~~27,909,770~~
INSURANCE CLAUSES:	
. Clause 13 - Contractor to maintain in joint names of the Employer and Contractor, Insurance Against Loss and Damages to the works by fire, earthquakes, etc.	100,000
. Clause 54 - Performance Security	100,000 ~~89,909,770~~
SUB-TOTAL ---------- (1)	76,153,270 X ~~117,263,770/=~~ ~~118,559,770/=~~
ADD: 18% Value Added Tax (VAT) ----------	13,707,588 ~~21,107,478.60~~ 21,394,758.60
SUB-TOTAL ---------- (2)	89,860,858.6 X ~~140,254,528.60~~ ~~138,971,246.60~~
AMOUNT CARRIED TO FORM OF TENDER TShs.	89,860,858 X 100,429,528.60

Signed by ..... For and on behalf of ... AZHAR CONSTRUCTION CO.LTD

In the capacity of ..... made this ..... day of 2021

AZHAR CONSTRUCTION COMPANY LIMITED P.O. Box 35918 Tel:0787 021 444 DAR ES SALAAM

ITEM	DESCRIPTIONS OF WORKS	TSHS.
	DESCRIPTION OF SITE:	
A.	The site is located District/Councils WITHIN TANZANIA COUNTRY	
B.	The Contractor shall provide and maintain any necessary temporary roads; sleeper tracks; and temporary cross over during the execution of the works; clear away the same at completion and reinstate and make good any work disturbed to the satisfaction of the Local Authority and the Employer.	Committed
C.	The Contractor shall be deemed to have visited the site and satisfied himself as to:-	
	i) The nature of the site	
	ii) The amount of bush; rubbish or debris to be cleared away before commencement.	
	iii) The nature of proximity and size of adjoining building and property.	
	iv) The nature of existing communications by roads or otherwise.	Committed
	v) The means of access to the site.	
	vi) The availability of land for the erection and positioning of all temporary structures; plant and materials necessary for the execution of the works.	
	vii) The source of adequate supplies of labour, plant and materials for the completion of the works.	
D.	If the Contractor wishes to execute trial holes before submitting his tender; he may do so in positions to be agreed with the Employer and at his sole expenses; including the reinstatement of the ground if so required by the Employer.	
E.	The whole of the site will be available to the Contractor immediately upon the issue of the order to commence.	Committed
F.	Any sand; aggregate to or other building materials shall be the property of the Employer and shall not be used in the construction of the works without the written consent of the Employer.	
G.	The Contractor is to satisfy himself as to any difficulties that the site may present and to make all necessary enquiries to any point which in his opinion requires further elucidation as no claim for lack of information on any of the above will be entertained.	
	TO COLLECTION TSHS.	

DISTRICT ENGINEER WORKS
MPWAPWA

AZHAR CONSTRUCTION COMPANY LIMITED P.O. Box 35918 Tel: 0787 021 444 DAR ES SALAAM

06/01/2022

21/12/2021

2

ITEM	DESCRIPTIONS OF WORKS	TSHS.
A.	**DESCRIPTION OF WORKS:** The work within this contract comprises of: ***Substructure, Frames ,Walls,ramp,Stairs, Roof, Doors, Windows, Service Engineering, Finishings, Decorations and External Works on Construction of Two Bedroom Staff house three in one urban type***	
B.	**SINGULAR AND PLURAL** Word importing the singular only also includes the plural.	
C.	**LAW GOVERNING CONTRACT** The contract shall be in all respect to be constructed and operated in accordance with the law of Tanzania.	
	METHOD OF MEASUREMENT:	
D	These Bills of Quantities have been prepared in accordance with the standard method of measurement of Building Works for East Africa first edition (metric) published by the architectural association of Kenya chapter of Quantity Surveyor Act; 1970; and applied equally to the measurement of proposed works and of variations by Quantity Surveyors.	
E	Variation of 'Builder's Work' will be subject to the same amended rates of percentage of adjustment.	
	DEFINITIONS OF ABBREVIATIONS:	
F	The Contractor should take due notice of the under mentioned abbreviations:- mm - millimetres cm - centimetres M^3 - cubic meters M^2 - square metres M - linear metres No - Number Kg - Kilograms P.C - Prime cost	
G	The Contractor shall allow for keeping all records appertaining to the work and shall keep on the site a daily diary recording weather conditions; temperature; visitors to the site, etc.	
H	The Contractor is to supply to the Employer such information as he may be required in connection with the work; including statement showing the number of men employed in all trades daily; and delivery notes (stating the name of the project) for all materials delivered to the site.	
	TO COLLECTION TSHS.	

ITEM	DESCRIPTIONS OF WORKS	TSHS.
	EMPLOYER'S INSPECTION:	
A.	No work shall be covered up until it is inspected and approved by the Employer.	
B.	The Employer may at any time before the end of defects liability period or during any extended time where any defect are being made good, instruct the Contractor to open up; pull down; test or expose any part of the works in order to satisfy himself as to the quality of materials or workmanship used. If in the opinion of the Employer such parts are not in strict accordance with the contract documents he may order the Contractor to remove all defective work, replace with approved materials and reinstate any such part of the works and any other disturbed at his own expenses and to the entire satisfaction of the Employer. If any such parts of the works are found to be in accordance with the contract documents the Contractor will be reimbursed with the General conditions of contract.	
	DISTURBANCE OR NUISANCE:	
C.	The Contractor shall allow for taking all necessary precautions in the order and execution of the work so as to avoid causing disturbance or nuisance to the occupants of existing buildings and those adjacent to the works and for complying with the Employer's instructions in this respect. The Contractor shall be in tort for such nuisance and shednets.	
	TRESPASS, DAMAGE AND CARE OF WORKS:	
D.	The Contractor shall prevent any trespass on the opinion adjoining property and he shall take all reasonable precautions during the progress of the contract to prevent any damage to the adjoining property or plant or private roadways and to prevent material; plant; rubbish and debris; etc. collecting on the adjoining property or roadways.	
E.	Should the Contractor wish to erect scaffolding or to make use of adjoining property; he shall obtain prior permission from the Employer and clear away at a completion of his work or when directed and make good any damage to his satisfaction. Except as provided for in the General conditions of contract; the Contractor; shall be held responsible for the care of works generally until their completion; including all works executed and materials deposited on the site by himself or his Sub-Contractors or supplier together with all risks arising from weather; carelessness of operatives; damages and he shall make good all such damage or loss at his own expense	
F.	The Contractor shall be responsible for the protection of any adjacent building; boundary walls; fences; services either overhead or underground and for the making good of or paying for all damage thereto; should such be caused in the course of building operations.	
G.	The Contractor shall allow for making good all damage to the road; kerbs; surface water channels; etc. occasioned by heavy traffic; delivery of materials and building operations generally to the entire satisfaction of the Employer and shall be responsible for observing any by law of Local Authority regarding keeping the road free from mud; filth dirt; etc, out of the execution of the works.	
	COLLECTION TSHS.	

AZHAR CONSTRUCTION COMPANY LIMITED P. O. Box 35918 Tel: 0787 021 444 DAR ES SALAAM

Edgar G. Mademla
Ag DISTRICT ENGINEER WORKS MPWAPWA
21/12/2021

Scanned with CamScanner

ITEM	DESCRIPTIONS OF WORKS	TSHS.
	PROTECTION FROM THE WEATHER:	
A.	The Contractor shall allow for covering up and protecting all new work from injury by weather or any other cause. Any damage; loss or expense caused by non-compliance with the clause shall be at sole risk of the contract.	
	TOOLS, PLANT AND SCAFFOLDING:	
B.	Provide all necessary cranes, hoists, concrete mixer and other plant including ladder, staging, access gangways tackle, tarpaulins, tools, moulds templates and other requisites necessary for proper executing, adapting from time to time as may be necessary and maintain all plant and equipment during the course of the contract.	
C.	The Contractor shall allow for providing adapting from time to time as may be necessary and maintaining all scaffolding scaffold boards and temporary staging, etc, necessary for the execution of the works.	
D.	The Contractor is to provide everything necessary for the proper execution of the works according to the true intent and meaning of the drawings; etc. whether the same may or may not be particularly shown on the drawings; specifications provided that the same is reasonably to be inferred there from.	
	SITE ACCOMODATION:	
E.	The Contractor shall provide and maintain any necessary temporary office accommodation required by himself and his Sub-Contractors suitably equipped with desks; chairs; drawing boards; and electric lighting and telephone.	300,000
F.	The Contractor shall provide and maintain for his workers latrine facilities washing and drinking water, first aid equipment's and shelters equipped with tables; benches and checking facilities all to the reasonable satisfaction of the workers and approved by the Employer and Health Authorities.	
G	The Contractor shall provide and maintain any temporary storage, shed or buildings which in his opinion are necessary for himself and his Sub-Contractors for the execution of the works.	
	WATER FOR THE WORKS	
H	The Contractor shall allow for all necessary clean fresh water for the works, including that required by Sub-Contractors and for any temporary plumbing metres and storage facilities and pay all charges in connection therewith and clear away on completion and make good works disturbed.	
J	The Contractor shall allow for providing and maintaining a temporary electricity supply for the works including that required by Sub-Contractor and for any meters and fittings to give artificial lighting and power necessary for the execution of the works and pay all charges, in connection and make good all works disturbed.	
	TO COLLECTION TSHS.	

ITEM	DESCRIPTIONS OF WORKS	TSHS.
A.	**WATCHING AND LIGHTING:** The Contractor shall allow for providing and maintaining any barriésrs; hoalding; watching; lighting which must comply with the By-laws of requirements of the Local Authority and polycy regulations and the Contractor must give all requiste policies to those authorities and provide everything necessary to protect the general public workmen; plant; materials and the whole of the works	
B.	No advertisement will be permitted without the written authority of the Employer.	
C.	**SIGN BOARD:** The Contractor shall provide and erect a large sized sign board on the site showing the title of the contract, the name and address of the Employer; consultant, nominated suppliers and Sub-Contractor and such information as may be required by the Employer who shall provide the sign layout and colours of the Board. The board shall be repainted when necessary and removed when no longer required.	
D.	**PROTECTION:** The Contractor is required to protect works section until completion.	
E.	**TESTING:** Allow for testing all materials as will be identified by Project Manager like concrete cube test,reinforcements etc, submit sample and allow for installations required to be tested and provide everything necessary for this purpose and leave the whole in perfect working order to the satisfaction of the Employer and Local Authority.	
F.	**REMOVING RUBBISH AND CLEANING:** The Contractor shall make good all defects and injuries to the works, clean down external faces wash off stains to face work, clean off marks mortar and cement, clean windows inside and out, scrub floors, flush drains run and leave all parts of the works clean, free from rubbish and waste materials and perfect on completion.	
G.	The Contractor shall clean and cart away all rubbish as it accumulate and keep the works in orderly condition to the satisfaction of the Employer	
	TO COLLECTION	
	COLLECTION	
	Page No. 8/1/1	
	Page No. 8/1/2	
	Page No. 8/1/3	
	Page No. 8/1/4	
	Page No. 8/1/5	200,000
	BILL No. 01- PRELIMINARIES CARRIED TO GENERAL SUMMARY	300,000

AZHAR CONSTRUCTION COMPANY LIMITED P. O. Box 35918 Tel: 0787 021 444 DAR ES SALAAM

Edgar G. Madehla

DISTRICT ENGINEER WORKS MPWAPWA

DSDE 21/12/2021

Joseph Njiku

4

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NR. 1 : SUBSTRUCTURE				
	EXCAVATION AND EARTHWORK				
A	Site clearance of small trees, shrubs and the like including grubbing up roots	184	m²	500	92,000
	Excavating				
B	Surfaces to reduce levels average 150mm deep vegetable soil and remove from site	184	m²	500	92,000
	Trenches in natural ground; to receive foundations; starting from reduced level				
C	Not exceeding 1.50 meters deep	71	m³	5000	355,000
	Pits; to receive foundations; starting from stripped level				
D.	Not exceeding 1.50 meters deep	1	m³	5000	5000
E.	Extra over all kinds of excavations irrespective of depth for breaking up rock	1	m³	10,000	10,000
F.	Backfilling; depositing and compacting in layers maximum 150mm thick impoted material around foundations	33	m³	10,000	330,000
G.	Remove away from the site surplus excavated materials.	39	m³	8000	312,000
	Disposal of water				
H.	Keeping all excavation free from all water by pumping, bailing or other means including spring or running water		Item		200,000
	Plunking and Strutting				
J.	Allow for provision and subsequent removal for planking and strutting to uphold and maintain all faces of excavations		Item		200,000
	To Collection				1,596,000

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Filling				
A	Sand filling in making up levels; average 150 mm thick	35	m³	15,000	525,000
	Hardcore and the like				
B.	150mm thick stone hardcore bed; leveled compacted and sand blinded to receive damp proof ;membrane; measured separately.	150	m²	1,000 10,000	150,000 150,000 1,500,000
	Soil Sterilization				
C	Chemical anti termite treatment around the building plinth	66	m	2000	132,000
D	Aldrin' solution applied at a rate of 7 litres per square metre	150	m²	2000	300,000
	Concrete works				
	Plain in-situ concrete; grade 15N/sq.mm nominal mix (1:3:6)				
E	100mm Bed	150	m²	2000 20,000	300,000 3,000,000
F	Ditto to ramp	1	m²	20,000	20,000
G	Foundation footing	17	m³	200,000	340,000 3,400,000
	Vibrated Reinforced in-situ concrete; grade 25 nominal mix (1:11/2:3)				
H	Plinth beam	8	m³	270,000 250,000	2,160,000 2,000,000
	Reinforcement; bars; BS 4449:1969 hot rolled round high yield steel straight or bent				
J	12mm Diameter bars	472	kg	2000	944,000
K	8mm Diameter bars	196	kg	2000	392,000
	To Collection				7,963,000

EDGAR G. MADEMLA
ASDE
21/12/2021
12,373,000
06/09/2022
5

COMPANY LIMITED P.O. Box 35918 Tel.0787 021 444 DAR ES SALAAM

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Sawn Formwork to:			1800	143 [illegible]
A	Sawn to vertical sides of beams	78	m²	18,000	1,404,000
B	Edges of slab over 75mm not exceeding 150mm	66	m	4000	265,000 ✓ 264,000
	Walling				
	Concrete block B.S 2028 type A; 5N per square millimetre; solid in cement sand mortar (1:4)				
C	230mm Thick wall	80	m²	29,000	2,320,000 ✓
	Damp-proof Courses (DPC)				
D	230mm Wide	130	m	2500	325,000 ✓
	Damp-proof Membrane (DPM)			3712,500	
E.	500Gauge polythene sheet laying on blinded hardcore with 150mm sides and end laps	150	m²	250,00 250	375,000 ✓
	Sundries				
F.	12mm Cement and sand (1:3) external rendering to concrete block wall	33	m²	4000	132,000 ✓
G.	Prepare and apply two coats of black bituminous paint on rendered or concrete surfaces, externally	33	m²	4000	132,000 ✓
	To Collection				
	COLLECTION				4,952,000 ✓
	Page 2/1/1				1,516,000 ✓
	Page 2/1/2			12,373,000	2,963,000 ✓
	Page 2/1/3			8,327,000	4,952,000 ✓
	ELEMENT NO. 1 - SUBSTRUCTURE CARRIED TO SUMMARY				14,511,000 ✓

56,046,000 ✓

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 2 - FRAME				
	Concrete work				
	Vibrated Reinforced in-situ concrete; grade 25 nominal mix (1:11/2:3)			170,000	1,190,000
A	Beams; horizontal or sloping not exceeding 15 degrees from horizontal	7	m³	270,000	1,890,000 ✓
	Reinforcement; bars; BS 4449:1969 hot rolled round high yield steel straight or bent				
B	12mm Diameter bars	561	kg	2500	1,122,000 ✓
C	8mm Diameter bars	180	kg	2000	360,000 ✓
	Sawn formwork to.			2000	160,000 ✓
D	Horizontal sides and soffites of beams	80	m²		
	ELEMENT NO. 2 - FRAME CARRIED TO SUMMARY				3,532,000 ✓

NATIONAL CONSTRUCTION COMPANY LIMITED P. O. Box 35918 Tel:0787 021 444 DAR ES SALAAM

EDGAR G. MADEMLA
Ag DE
21/12/2021
DISTRICT ENGINEER WORKS
MPWAPWA

06/01/2022 06/01/2022

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO4: WALLS				
	Block Work				
	Internal wall				426749
	Solid Concrete block B.S 2028 type A; 5MPa bedded and jointed in cement/sand mortar (1:4)			21,553	
A	150mm Wall	198	m²	25,000	4,950,000 ✓
	External wall				
	Solid Concrete block B.S 2028 type A; 5MPa bedded and jointed in cement/sand mortar (1:4)				
B	150mm Wall	158	m²	25,000	3,950,000 ✓
	Vibrated reinforced concrete grade 25 nominal mix (1:11/2:3)				
C	230x150mm Coping with wire mesh 2.5mm and all formwork	35	m	22,000	770,000 ✓
	ELEMENT NO4: WALLS CARRIED TO SUMMARY				9,670,000 ✓

06/01/2022 06/01/2022

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO 5: DOORS				
	Hardwood Mninga or equal and approved				
A	50x150mm Frame with one labour	130	m	20,000	3,600,000
B	50x150mm Transome or Mulion	17	m	20,000	340,000
C	25 x 25mm Glazing beads	66	m	10,000	660,000
	Hardwood Mninga or equal and approved				
D	45mm thick panelled door hardwood size 1180 x2100mm double door; comprising of 45x100mm rebated stiles; all panel filled in with and including 25mm thick hardwood boards; (DI)	3	Nr.	557,550	1,672,650
E	Ditto Size 900 x 2100m single door {D2}	13	Nr.	42,500	552,500
F	Size 800 x 2100m single door {D3}	5	Nr.	380,000	1,900,000
	Ironmongery; supply and fix the following as manufactured by Union ltd."or other equal and approved to hardwood with matching screws"				
G	150mm Brass butt hinges.	36	Pairs	15,000	540,000
H	3 Lever Mortice lock	15	Nr.	55,000	825,000
J	Two Lever Mortice lock	6	Nr.	50,000	300,000
	Clear glass				
	6mm thick clear glass sheet; glazed with hardwood beads;				
K	Glass panes over 0.1m² not exceeding 0.5m²	8	m²	35,000	280,000
	ELEMENT NO 5: DOORS CARRIED TO SUMMARY				9,670,150

CONSTRUCTION COMPANY LIMITED * P. O. Box 35918 Tel:0787 021 444 * DAR ES SALAAM *

3/5/12

EDGAR G. MADEMLA
AGDE
21/12/2021
DISTRICT ENGINEER WORKS
M P W A P W A

PO BOX

06/01/22

06/01/2022

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO 6: WINDOWS				
	Aluminium glazing approved by the Architect; single glazed combination frame and windows, 45 x 50mm Aluminium section framing, all mullions and transomes; epoxy power coat RAL 9006 finish, 6.14mm laminated glass pre assembled with stainless steel plates and screws window ironmongery, glazed beads, fiber mosquito net, rubber gaskets and backer rods and fixing to mansory or concrete grounds, sealing all around with non-hardening EPDM silicone sealant; screws bolts and fasterners				
A	Size 1500 x 1500mm high	16	Nos	270,000	4,320,000 ✓
B	Ditto, Size 900 x 600mm high	6	Nos	64,800	388,800 ✓
	Composite items				
	Mild steel; welded together with welding fillets; protected from rust by applying three coats of zinc chromate primer and two full coat of gloss painting; including fixing in position.				
C	Supply and fix in position "WINDOW GRILLES"; comprising of 25x25x3mm SHS pipes framing; filled in with 40x6mm flat; bars cut and bent to patterns spaced at not more than 150mm centres complete to the aproval of Architect for window Size 1500 x 1500mm high	16	Nos	157,500	2,520,000 ✓
D	Ditto, for window size 900 x 600mm high	6	Nos	37,800	226,800 ✓
E	Ditto for door vent size 1180 x 400mm high	3	Nr.	33,040	99,120 ✓
F	Ditto for door vent size 900 x 400m high	13	Nr.	25,200	327,600 ✓
	ELEMENT NO6: WINDOWS CARRIED TO SUMMARY				7,882,320 ✓

06/01/2022 06/01/2022

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO.7: ROOFING				
	Sawn soft wood; Impregnated with Preservatives				
A	50X150mm Beam	156	m	5000	780,000 ✓
B	50X150mm Rafters	188	m	5000	94,000 ✗ 940,000
C	50X100mm Struts	230	m	4500	1,035,000 ✓
D	50X100mm Wall Plate	66	m	4500	297,000 ✓
E	50X50mm Purlins	210	m	3000	620,000 ✓
	Selected Hardwood				
F	Fascial/Barge board; 25 x 250mm; with semi-circular decorative mouldings along the bottom edges	68	m	15,000	1,020,000 ✓
	Roofing; 28gauge Resin Colour Coated IT5 aluminium sheets; single length; supplied by Aluminium Africa Ltd. or equal and approved; fixed to timber purlins with 150mm end laps fixed with roofing nails				
G	Roof covering;sloping not exceeding 45 degrees from horizontal	210	m²	3200	672,000 ✓
H	Ridge capping	33	m	15,000	495,000 ✓
J	Valley capping	19	m	15,000	285,000 ✓
	Metal Works and Plates				
K	16mm Diameter Anchor Bolts, 850mm long, one end fish-tailed and cast into concrete	32	No	10,000	320,000 ✓
L	10mm thick steel plate	16	No	25,000	400,000 ✓
	ELEMENT NO. 07 - ROOFING CARRIED TO SUMMARY				6,874,000 6,028,000 ✗

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EDGAR G. MADEMLA
DISTRICT ENGINEER
MPWAPWA
AIDE
21/12/2021

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ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 08: FINISHINGS				
	Insitu finishings				
	Plaster; 12mm first coat cement and sand (1:6); 3mm second coat of cement and lime (1:5) steel trowelled to smooth surfaces; internally:				
A	15mm To walls	364	m²	600	218,400 ✓
B	15mm to sides of beams	80	m²	6000	480,000 ✓
	External cement sand (1:4); rendering with approved plasticizer trowelled smooth:				
C	22mm To walls	158	m²	6000	948,000 ✓
	TILES, SLAB OR BLOCK FINISHINGS				
	Glazed ceramic wall tiles with cushion edges to BS 1281 fixed to backings with cement sand mortar and pointing with white cement				
D	400 x 250 x 6mm Tiling to walls	110	m²	30,000	3,300,000 ✓
	Graniti GN 572 Mid Grey porcelain tiles "high quality" bedding in premixed thin set cement mortar and grouting with coloured sandless tile grout				
E	600x600x8mm; 4mm diagonally joints ways; to floors to level; to cement and sand base	130	m²	4000	520,000 ✓
F	400 x400 x 8mm; 4mm diagonally joints ways to floor level of toilets, cement and sand base	26	m²	35,000	910,000 ✓
G	150mm Thick skirting	220	m	4500	990,000 ✓
	Floor edge strips				
H	GENESIS ESA 10(10mm high) or similar and approved, aluminium straight edge trim; junctions of flooring finishes	50	m	4000	200,000 ✓
	To Collection				7,566,400 ✓

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	Weather Bars				
A	6 x 25mm Brass weather bar strip at external door thresholds; in prepared groove	6	m	100,000	600,000 ✓
	Beds and Backings				
	Cement and sand (1:4) wood floated surface finish				780,000 ✓
B	32mm Bed to receive floor tiles	156	m²	5000	550,000 ✓
C	12mm Backing to receive wall tiles	110	m²	5000	
	Gypsum plasterboard BS 1230 Pt. 2 1970 tapered wallboard self tapping galvanized drive screws				
D	9mm Thick ceiling; horizontal; internal	156	m2	1400	218,400 ✓
E	Cornice	180	m	5000	900,000 ✓
F	Extra; moulding gypsum	38	m	5000	190,000 ✓
G	Extra ceiling access panel	3	Nr.	40,000	120,000 ✓
H	Supply and fix PVC ceiling complete including PVC and corner joints, shoe nail and all accessories	53	M²	10,000	530,000 ✓
	Sawn softwood pressure impregnated with preservatives				
J	50x50mm brandering fixed at 600mm centre to centre	533	m	2000	1,066,000 ✓
	WORKTOP AT KITCHEN				
K	Supply and fix Worktop at kitchen and cabinet as per Architectural drawings and details including associated finishing with mable and any other to the aproval of Architect	10	m2	50,000	500,000 ✓
					5454,400 ✓
	To Collection				
	COLLECTION				7,566,1,400
	Page 2/8/1				51454,400
	Page 2/8/2				13,020,800 ✓
	ELEMENT NO 08: FINISHINGS CARRIED TO SUMMARY				

3/8/16

NOVEMBER 2021

EDGAR G. MADEMLA
PO-RALG

DISTRICT ENGINEER
MPWAPWA

AIDE
21/12/2021

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 09: PAINTING AND DECORATIONS				
	Internal works				
	Prepare and apply one thinned coat and two full coats of wash 'n' ware paint				2,664,000 ✓
A	Plastered walls	444	m²	6000	936,000 ✓
B	Gyspum ceiling	156	m²	6000	
	External works				
	Prepare and apply one thinned coat and two full coats of weather guard paint to				
C	Rendered surfaces	158	m²	6000	948,000 ✓
	Varnishing; internal work; prepare and apply three coats of clear polyurethane clear varnish; wood surfaces.				
D	General surfaces	81	m²	4000	324,000 ✓
E	Frames, linings and associated mouldings 200-300mm girth	130	m	2000	260,000
					513,200 x
					5,132,000 ✓
	ELEMENT NO. 09 : PAINTING AND DECORATIONS CARRIED TO SUMMARY				5,571,000 x

06/07/2022 06/07/2022

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	ELEMENT NO. 10: SANITARY WARE INSTALLATIONS				
	KITCHEN SINK				
	Stainless steel kitchen single with single drainer complete with tap hole provided on the sink the waste unit as manufactured by castleware: sink Model No. D10050A including all fixing fixtures				
A	Overall size L1000 X W500mm x D180mm bowel size L380 x W330mm	3	Nr.	40,000	120,000 ✓
	WASH HAND BASIN				
B	White vitreous wash hand basin (HWB), size 450x440x200mm complete with self closing; semi pedestal and chain stay hole; fairline ½in pillar taps with clear acrylic handles; 1¼in bead chain waste and plug; 80cm slotted tail bolt stay; isovalve servicing valves. rubber plug with slotted tail; 32mm plastic bottle trap with 75mm seal, flexible pipes, angle valves and other accesories as manufactured by castleware or equal and approved	6	No	28,000	168,000 ✓
	SOAP DISH				
C	Ceramic soap dish Model A:101 as manufactured by castleware or equal aproved including fixing fixtures, fixed to the wall as per manufacturer recommendations	6	Nr.	20,000	120,000 ✓
	WC				
D.	Western type low level W.C suite vitrious china to B.S 3402 s/p-trap, 9litres flushing tank with single push button complete with all necessary accessories. "Casterware "	6	No	20,000	120,000 ✓
E.	80mm Diameter high quality plastic floor drain (ALBETONY) trap built in concrete bed.	6	No	20,000	120,000 ✓
	TOILET PAPER ROLL HOLDER				
F	Wall mounted stainless Toilet paper holder Model BC 70 complete with fixing accessories as manufactured by castleware or equal and approved	6	Nr.	15,000	90,000 ✓
	To Collection				738,000 ✓

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3/10/18

EDGAR W. MADEMA
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21/12/2021

10

20/01/2022

18/1/2022

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	SHATTAF				
A	Wall mounted 'trigger spray' shattaf Oasis chrome finish complete with fixingaccessories as manufactured by castleware or equal and approved	6	Nr.	20,000	120,000 ✓
	MIRROR				
B	600 X 800 X4mm Thick mirror with JX -S501 as per castleware or other approved, fixed on lacquer with double sided self adhesive pads finished with bevelled edges.	6	Nr.	150,000 Bm	90 x 90,000
	COLD WATER INSTALLATION:				
	IPS pipes, Class D painted with special paint; including joints in running length.Fixing in accordance with maufacture's instructions.				
	Distribution pipes IPS pipes including screwed and socketted joints in running length: complete with all accessories like elbows, Unon, Tee etc				
C	25mm Diameter Polypipe, class D	18	M	3500	63,000 ✓
D	19mm Diameter Polypipe, class D	30	M	3500	105,000
E	19 mm Diameter supply IPS pipes; in blockwork chase.	27	M	3500	94,500 ✓
F	Angle valve	15	No	15,000	225,000 75,000
G	Bib tape pex 1/2	3	No	20,000	60,000 ✓
H	Pillar tape pex 1/2	6	No	25,000	150,000 ✓
J	Stop cock pex 3/4	3	No	20,000	60,000 ✓
	UPVC pipes;Class 'E'; including fittings in running length complete with all accessories, elbows, plug etc				
K	38mm Diameter pipe; in chase in block work.	30	M	10,000	300,000
L	50mm pipe	27	M	10,000	270,000 ✓
	TO COLLECTION				1,387,50

NOVEMBER 2021 3/10/19 1537,500/= PO-RALG

BILL NO: 04 - PRIME COST AND PROVISIONAL SUMS

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	BILL NR.4: PRIME COST AND PROVISIONAL SUM				
	Prime Cost (PC) Sums for works to be carried out by Nominated subcontractors or Nominated suppliers				
A	Electrical Connection and meter		Sum		50,000
B	Manholes 10Nr., Septic tank (1Nr.) & soakaway pit (1Nr.)		Sum		50,000
	BILL NR.4- PC AND PROVISIONAL SUMS WORK CARRIED TO GENERAL SUMMARY				100,000

EDGAR G. MADEMLA
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21/12/2021
DISTRICT ENGINEER WORKS
M P W A P W A

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P.O. Box 35918
Tel:0787 021 444
DAR ES SALAAM

01/01/2022

ITEM	DESCRIPTIONS OF WORKS	QTY	UNIT	RATE	AMOUNT
	SOIL AND PIPES:				
	UPVC pipes and fittings; Class 'B'; in running lengths; BS 4660 for underground pipes and B.S 3506 for pipes above ground complete with all accessories				
A	100mm. Diameter pipes; fixed to walls.	40	M	10,000	400,000
B	Ditto; laid in trenches.	30	M	10,000	300,000
	Ancillaries:				
	Draw off taps; stop valves; copper alloy to BS 5154 or BS 1010:				
C	25mm Diameter stop valve	3	No	25,000	75,000
D	19mm Diameter stop valve	3	No	20,000	60,000
E	13mm Diameter bib taps	3	No	30,000	90,000
	GULLY TRAPS				
F	Construct a standard gully trap 300x300x300mm deep;in thick concrete block walls complete with benching and all fittings and gully trap cover	9	No	100,000	900,000
	TESTING				
G	Allow for testing and commisioning the whole plumbing and drainage isntallation as per service Engineer approval	-	Item		100,000
H	Builders work in connection to plumbing	-	Item		100,000
	SUNDRIES:				
J	Allow for preparation and production of four (4) copies of 'AS BUILT DRAWINGS' of plumbing and engineering installations to Engineer's satisfaction.	-	Item		100,000
	COLLECTION				2,125,000
	COLLECTIONS				
	Page 3/10/1			1,537,500	1,387,500 X
	Page 3/10/2				2,125,000
	Page 3/10/3				
	ELEMENT NO. 10 SANITARY WARE AND INSTALLATIONS CARRIED TO SUMMARY				3,512,000 X

EDGAR G. MADEMLA 3,662,500/.

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DISTRICT ENGINEER WORKS MPWAPWA

AJDE 21/12/2021

[signatures] 2/01/2022

11

S/No	DESCRIPTION OF MATERIALS	UNIT	QTY	RATE	AMOUNTS
	ELEMENT NR. 11: ELECTRICAL INSTALLATIONS				
	DISTRIBUTION SYSTEM				
A	4Ways TPN distribution board (DB 3) with 100A/300mmA RCCB incomer and outgoing MCBs as shown in Schematic diagram as ABB or approved equal.	No	3	120,000	360,000
	POWER POINTS				
B	2 x 13A Double switch socket as ABB or HAGER or LEGRAND make	No	12	25,000	300,000
C	20A DP control switch with neon indicator c/w steel box for Air Conditioners, Security lights and Hand driers as ABB or HAGER or LEGRAND make	No	0		
D	45A DP Cooker Control Unit with neon indicator c/w steel box as ABB or HAGER or LEGRAND make	No	3	35,000	105,000
E	2.4KW Hand dryer c/w sensing unit automatically controlled as GET Ex UK	No	0		
	LIGHT FITTINGS, FANS AND SWITCHES				
F	Single fluorescent fitting complete LED philips or other equal approved	No	6	36,000	216,000
G	LED: Fluorescent fitting 60mm cassette type	No	0		
H	Ceiling light complete with energy saver 18W	No	15	35,000	525,000
J	80W 56" Sweep ceiling fan c/w regulator, ceiling rose and hooks as Panasonic or National or KDK of Japan.	No	0		
K	52W 16" Sweep ceiling fan c/w regulator, ceiling rose and hooks as Panasonic or National or KDK of Japan.	No	0		
L	10A 1 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	5	15,000	75,000
M	10A 2 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	10	15,000	150,000
N	10A 1 gang 2 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
P	10A 2 gang 2 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
Q	10A 3 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
R	Twin switch socket ABB or other equal approved	No	3	17,000	51,000
S	10A 3 gang 2 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
T	10A 4 gang 1 way flush light switch c/w steel box as ABB or HAGER or LEGRAND make	No	0		
	LIGHTNING PROTECTION SYSTEM				
V	Soil treatment and interconnection to general earthing of building to meet the requirement of IEE regulations.	Item	1	250,000	250,000
	To collection				1,857,000

06/01/2022

1,857,000 X

282,000/=

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