THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH.

CONTRACT DOCUMENT

FOR

PROJECT NAME: PROPOSED CONSTRUCTION OF EMERGENCY DEPARTMENT AND ITENSIVE CARE UNIT BUILDINGS.

CONTRACT: NUMBER: ME.007/KTV/RRH/2021/2022/W/01
(LABOUR BASED CONTRACT)

CLIENT'S NAME:
MEDICAL OFFICER IN CHARGE,
KATAVI REGIONAL REFERRAL HOSPITAL,
P.O.BOX 449.
MPANDA

CONTRACTOR'S NAME:
REGIONAL MANAGER,
TANZANIA BUILDINGS AGENCY (TBA)
P.O.BOX 152
MPANDA.

FORM OF AGREEMENT

This Agreement, made the 17th day of FEBRUARY, 2022 between **MEDICAL OFFICER INCHARGE, P.O.BOX 449 KATAVI** (here in after called "the Employer") on the one part and **M/S REGIONAL MANAGER TANZANIA BUILDING AGENCY, P.O.BOX 152 KATAVI** (Here in after called "the Contractor") on the other part.

Whereas the Employer is desirous that certain works should be carried out, VIZ: **Construction of Emergency Department and Intensive care unit at Regional Referral Hospital to be built at Rungwa in Mpanda Municipality.**

And has by letter of Acceptance accept a Tender by the Contractor for execution, and completion of such Works.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this agreement, words and expressions shall have the same meanings as are respectively assigned to in the conditions of contract herein after referred to, and they shall be deemed to form and be read and construed as part of agreement.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, VIZ:

i. Form of Agreement
ii. Letter of Acceptance
iii. Quotation Submission Form
iv. Special conditions of the contract
v. General Conditions of Contract
vi. Specifications
vii. Drawings
viii. Priced Bill of Quantities
ix. Security Declaration Form
x. Anti- bribery memorandum
xi. Power of Attorney

3. All the aforesaid document are hereinafter referred to as "the Contract" and shall be taken as complementary and mutually explanatory of one another but in case of ambiguities or discrepancies shall take precedence in the order set out above.

4. In consideration of the payments to be made by the employer to the contractor as hereinafter mentioned, the Contractor hereby agree with the Employer to execute and complete the works in conformity, in all respects, with the provisions of the Contract.

5. The Employer hereby agree to pay the Contractor in consideration of the execution and completion of works, the sum of Tanzanian Contract Price of Tshs **Two Hundred Forty Six Million, Nine Hundred Sixty Thousand Eight Hundred and Five Only (246,960,805.00)**

(Herein after referred to as the "Contract Price", at the times and in the manner prescribed by the Contract.

REMUNARATION AND INDEMNITY

a) In consideration of the Contractor performing the works, the Employer shall pay the Contractor total amount of Tanzania Shilling Tshs **Two Hundred Forty Six Million, Nine Hundred Sixty Thousand Eight Hundred and Five Only (246,960,805.00)**

b) The Advance payment will be limited to 15 percent of Contract price and will be paid to

The Contractor not later than 28 days upon submitting an insurance security Guarantee

6. SUPERVISION

The designated supervision Officer under the contract shall be **Regional Secretariat Engineer**

IN WITNESS where of, the parties hereto have set their hands and seals on the day and year here in above written.

SIGNED FOR AND ON BEHALF

OF THE EMPLOYER

In the presence of

.....

Signature

(Name).....

(Occupation).....

.....

Siginature

(Name).....BONIFACE F. LYIMO

(Occupation).....HS

ON BEHAF CONTRACTOR:

HENRICO KOMA?I

In the presence of

.....

Signature

(Name).....

(Occupation).....Ag. RM

(Address).....P.S. BOX 152 MPANDA

(Name).....ALEX J. MUNIA

(Occupation).....CIVIL ENGINEER

(Address).....P.O.BOX 151 MPANDA

TANZANIA BUILDING AGENCY
P. O. BOX 152
MPANDA-KATAVI REGION

SECTION III

QUOTATION SUBMISSION FORM

Form of Tender

Date 23/07/2021

To Regional Administrative Secretary
P.O Box 235
Mpanda

We offer to execute the Contract No. ME007/HQ/KRRH/2021/2022-W/01 for the Proposed Construction of ICU and EMD buildings at Rungwa in accordance with the Conditions of Contract accompanying this tender for the Contract Price of TShs Tshs 108, 061,370 (One Hundred and Eight Millions, Sixty One Thousands, Three Hundred Seventy Only) for ICU and Tshs 138,889,435 (One Hundred Thirty Eight Millions, Eight Hundred eighty Nine Thousands, Four Hundred Thirty Five Only) for EMD thus making a Total of Tshs 246,950,805, (Two Hundred Forty Six Millions, Nine Hundred Fifty Thousand Eight Hundred and Five only) (VAT Exclusive) at a contract period of 52 weeks

The Contract shall be paid in the following currencies

Currency	Percentage payable in currency	Rate of exchange: one foreign equals *[insert local]*	Inputs for which foreign currency is required
(a)	TSHs		

The advance payment required is:-

SN	Amount	Currency (Tshs)
1	ICU	108, 061, 370
2	EMD	138,889,435
3	Total	246,950,805

We accept the appointment of *[name proposed in Tender Data Sheet]* as the Adjudicator *or*

We do not accept the appointment of *[name proposed in Tender Data Sheet]* as the Adjudicator, and propose instead that *[name]* be appointed as Adjudicator, whose daily fees and biographical data are attached

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

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 any other official regulations.

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 the 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

Name of Tenderer

Address

SECTION III

LETTER OF ACCEPTANCE

(46)

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

KATAVI REGIONAL REFERRAL HOSPITAL

Tel No: 025 – 252957128
Fax No: 025 – 252957129
Email:

Regional Referral Hospital,
Health Department,
P.O.Box 449,
KATAVI

Ref. No.BA/190/224/01/E/45
Regional Manager
TBA,
P.o.Box 152,
MPANDA.

10th February, 2022

RE. PROPOSED CONSTRUCTION OF EMERGENCY DEPARTMENT (EMD) AND INTENSIVE CARE UNIT (ICU) BUILDINGS.

Sub: letter of acceptance to award – Tender No. ME.007/KTV /RRH/2021/2022/W/01

This is to notify you that your Tender dated 7th February,2022 for proposed **construction of emergency department (EMD) and intensive care unit (ICU) buildings for the contract sum of One thirty eight million, eight hundred eighty nine thousands four hundred thirty five only (Tsh. 138,889,435/=)**Tender **No.** ME.007/KTV /RRH/2021/2022/W/01 have been accepted.

You are hereby required acknowledge the receipt of our letter and report to our Office within seven days for the contract signing.

Yours sincerely,

Authorized Signature: .....

Name and Title of Signatory: **Yustina Tizeba**
Medical Officer In charge
Katavi Regional Referral hospital

Copy: Regional Commission (See it in file)

Managing Director
PPRA,
P.o.Box 2865
Dodoma

Chief Executive Officer
CAG
18 Jakaya kikwete Road
P.o.Box 2802

SECTION IV

THE SPECIAL CONDITIONS OF CONTRACT (SCC)

SECTION IV

THE SPECIAL CONDITIONS OF CONTRACT (SCC)

Special Conditions of Contract (SCC)

SCC Clause	GCC Clause	Description
1	1.1	The Employer is The Medical Officer In charge, P. O. Box 449, Mpanda.
		Contractor name and address The Contractor: ***Regional Manager,*** ***Tanzania Buildings Agency,*** ***P.O.BOX 152,*** *Mpanda.*
		The Adjudicator is **to be appointed by National Construction Council of Tanzania (NCC)**
		The Defects Liability Period is ***365 days***
		The name and identification number of the Contract is: ME.007/HQ/KRRH/2021/2022/W/01
		The Works consist of **Construction of Intensive care unit and Emergence department at Katavi Regional referral Hospital to be built at Rungwa in Mpanda Municipality.**
		The Start Date shall be 28TH-03-2022
		The Intended Completion Date for the whole of the Works shall be: **13 Weeks**
		The site of the works is at ***Rungwa in Mpanda Municipality***

2. 2.3 List other documents that form part of the contract if any:

I. Form of agreement

II. Letter of Acceptance

III. Quotation Submission Form

IV. Special conditions of the contract

V. General Conditions of Contract

VI. Specifications

VII. Drawings

VIII. Priced Bill of Quantities

IX. Security Declaration Form

X. Anti- bribery memorandum

XI. Power of Attorney

Any other document listed in the **Special Conditions of Contract** as forming part of the Contract.

4. 3.1 The language of the Contract documents is **English language.**

The law that applies to the Contract is the **Laws of Tanzania.**

5. 9.1 Include the Schedule of Other Contractors, if any.

Specialist Contractors

6. 10.1 Include the Schedule of Key Personnel:

Project Manager

Quantity Surveyor

Service Engineer

Architect

Site Engineer

2.	2.3	List other documents that form part of the contract if any: I. Form of agreement II. Letter of Acceptance III. Quotation Submission Form IV. Special conditions of the contract V. General Conditions of Contract VI. Specifications VII. Drawings VIII. Priced Bill of Quantities IX. Security Declaration Form X. Anti- bribery memorandum XI. Power of Attorney Any other document listed in the **Special Conditions of Contract** as forming part of the Contract.
4.	3.1	The language of the Contract documents is **English language.** The law that applies to the Contract is **the Laws of Tanzania.**
5.	9.1	Include the Schedule of Other Contractors, if any. **Specialist Contractors**
6.	10.1	Include the Schedule of Key Personnel: **Project Manager** **Quantity Surveyor** **Service Engineer** **Architect** **Site Engineer**

Technician

Foreman

7.	**14.1**	The minimum insurance covers shall be on:

(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

8.	**15.1**	Site Investigation Reports available to the Tenderer are:

a)..... **N/A** .....

9.	**22.4**	The other measures include:

a. Minimizing the number of migrant workers employed on the project and household in the site camp

b. Providing access to voluntary counseling 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.....

11.	28.2	Hourly rate of Fees payable to the Adjudicator is **To be advised**
		Types of reimbursable expenses to be paid to the Adjudicator include: a)..... **To be advised** ..... b)..... c).....
12.	28.3	Arbitration will take place **To be advised** in accordance with rules and regulations published by **National Construction Council of Tanzania**
13.	29.1	Appointing Authority for the Adjudicator: **National Construction Council of Tanzania**
		A. 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 28 days.
16.	30.3	The amount to be withheld by the Project Manager in the case the contractor does not submit an updated programme is **0.25% of Contract Sum**
		B. Quality Control
17.	38.1	The Defects Liability Period is 365 **days.**
		C. Cost Control
19.	45.7	Minimum Amount of Interim Payment Certificate will be **N/A**
20.	45.7(a)	The Site Possession Date shall be..... after signing of the Contract
21.	50	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%** of value of works of Interim Payment Certificate'. Maximum of retention shall not exceed 10% of the contract sum.

23.	52.1	The amount of liquidated damages is **0.1% of contract sum per day**
	52.1	The maximum amount of liquidated damages must be equivalent to the amount of the performance security **10%**
24.	53.1	The bonus for early completion is **N/A**.
25.	54.1	The amount of advance payment shall be 15% of the Contract price.
		Recovery of Advance Payment: **15% of Interim Payment Certificate to be recovered when Builders Work is Completed**
26.	55.1	The Performance Security required shall be **letter of comfort/commitment letter.**
		D. Finishing the Contract
27.	61.1	As built drawings shall be supplied by the contractor **Within 28 days after practical completion date.....**
		Operating manual shall be supplied by the contractor **N/A.**
28.	61.2	The amount to be withheld by the Project Manager in the case the contractor does not submit built drawings is **0.25% of the Contract Sum**
		The amount to be withheld by the Project Manager in the case the contractor does not submit operating manual is **N/A**
29.	62.2(g)	Number of days for which the maximum amount of liquidated damages can be paid is: 30 days

SECTION V

THE GENERAL CONDITIONS OF CONTRACT (GCC)

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 27 and 28 hereunder.

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

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.

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 Bid to carry out the Works has been accepted by the Employer.

The **Contractor's Tender** is the completed bidding 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.

Day works 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.

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 bidding 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.

A **Variation** is an instruction given by the Project Manager that varies the

Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the **Special Conditions of Contract**.

Force Majeure" means an event which is beyond the reasonable control of a Party and which makes a Party's performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.

2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager will provide instructions clarifying queries about these Conditions of Contract.

2.2 If sectional completion is specified in the **Special Conditions of Contract**, references in the Conditions of Contract to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).

2.3 The documents forming the Contract shall be interpreted in the following order of priority:

i. Form of Agreement

ii. Letter of Acceptance

iii. Quotation Submission Form

iv. Special conditions of the contract

v. General Conditions of Contract

vi. Specifications

vii. Drawings

viii. Priced Bill of Quantities

ix. Minutes of Negotiation

x. Security Declaration Form

xi. Anti- bribery memorandum

xii. Power of Attorney

xiii. Any other document listed in the **Special Conditions of Contract** as forming part of the Contract.

3. Language and Law

3.1 The language of the Contract and the law governing the Contract are stated in the **Special Conditions of Contract**.

4. Confidentiality

4.1 The Service Providers, their Subcontractors, and the Personnel of either of them shall not disclose any proprietary or confidential information relating to the Project, the Services, this Contract, or the Employer's business or operations without the prior written consent of the Employer.

5. Project Manager's Decisions

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

6. Delegation

6.1 The Project Manager may delegate any of his duties and 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.

(b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in 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 Bid, 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. Commencement 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

21.1 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, and 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 Service Provider 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]

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.**[2]

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 an 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.

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 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. Compensation 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 stated in the **Special Conditions of Contract.**

(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 bidders (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 bids 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 Bid.

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 unit rates and prices included in the Contract 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 amount payable to the Contractor as certified in Payment Certificates shall be determined 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;

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

where;

Pn is a price adjustment factor to be applied to the amount in each specific currency for the payment of the work carried out in the subject month, where such variations and day work are not otherwise subject to adjustment;

a is a constant, specified in the **Appendix to Bid**, 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 Bid**; 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 Bid**, 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 bid the tabulation of Weightings and Source of Indices in the **Appendix to Bid**, 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 bids. 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 Bid** 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.

56. Dayworks

56.1 If applicable, the Day works rates in the Contractor's Bid 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

61.1 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.**

61.2 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 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 any thing of value to influence the action of a public official in the procurement process or in contract execution and includes inter alia, bribery and extortion or coercion which involves threats of injury to person ,property or reputation, and.

"fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Employer, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Employer of the benefits of free and open competition.

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.

SECTION VI

TECHNICAL SPECIFICATIONS

SECTION A:

EXCAVATIONS AND EARTH WORKS

A. Nature of excavations

The Contractor must ascertain for himself the nature of the material to be excavated and price the work accordingly as no allowance will be made beyond the Contract Sum for any alleged ignorance in this respect.

B. Excavation Generally

Excavation have been measured from the drawings including the Architect's site plan showing existing contours. It is the responsibility of the contractor to check the commencing levels prior to commencing the work as no extra payment will be made in respect of any alleged excavation carried out due to the commencing levels being above that shown upon the drawings without the prior written agreement of the structural Engineer. Where such agreement is given it is the Contractor's responsibility to record the new commencing level or levels and to agree these levels jointly with the structural Engineer prior to commencement.

C. Site clearance

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

D. Over site Excavations

Over site excavations over the areas of building has been measured in this section down to a general level. Removal of vegetable soil has been measured separately and this material is to be spread around the site as directed by the Architect. 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.

E. Excavation for Foundations and Structures

Excavation for foundations and the rein forced 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 given in this Bills of Quantities in accordance with the rules of measurement laid down else wherein these bills, namely 100m from the face of any work which requires form work over 1m. deep below the starting level of excavation, and 0.30m from the face of any work which requires form work not exceeding 1m deep below starting level of excavation.

Generally form work has been not measured for plain concrete foundations or column and therefore, excavations for these has been measured net. Form work has been measured to reinforced concrete foundations and column bases and all faces of columns, walls and working space excavation has been measured and included accordingly. Adjustments to excavation 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.

A. 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 inspection, and upon approval, the Contractor shall proceed with the work to prevent any natural ground moisture from drying out and to prevent rain water or other surface water draining into the foundations. The excavations are to be left open until any variations in depth has been measured and agreed.

B. Excavations 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 level or lines with the concrete Class "E" at his own expense
(see " Concrete Works")

C. Filling

Filling to make up levels under floors shall be approved granular materials arising from excavations which has been carefully separated from other excavated materials for its suitability for the purpose . It shall be entirely free from organic matter; mud, rubbish or lumps exceeding a size, which will pass through a 100mm diameter, ring in any direction. Filling shall be placed in layers not exceeding 150mm thick and shall be rolled with pedestrian operated power roller of at least 700kg in weight. The rolling process shall be continued for every layer until no further noticeable consolidation takes places.

D. Return Fill and Ram.

Return, fill in and ram suitable filling materials 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.

E. Levelling.

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

B. Soil sterilisation

Ant-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 guarantee certifying the following :-

That the chemicals applied comply with the requirements specified herein for chemical concentration and rate of application.
That the treatment will remain effective against termite infestation for a period of five years .
The free treatment by the firm of any areas showing signs of infestations before the expiry of the five years period .

The chemical used shall be one of the following: -

Aldrin 0.5% applied in oil solution or water emulsion.
Benzene hexachloride; 0.8% of gamma isomer applied in oil solution or water emulsion.
Chlordane1.0% applied in solution or water emulsion.
Dielderin 0.5% applied in oil solution or water emulsion.
D.D.T. 8% applied in oil solution.
Linden; 0.8% applied in oil solution or water emulsion.
Pentachlorophenol; 5% applied in oil solution.
Trichlorobenzene; 1 part to 3-part oil.

Some of the chemicals listed above are toxic to animals 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 soils or 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 areas are to be covered as quickly as possible after treatment. The rate of application is to be 5 litres per square metre and areas measured include these under floor and round wall and column foundations.

C. Disposal of Surplus Excavated Material

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

A. 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 away 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 Day works Schedule.

B. Planking and Strutting

Sides of all excavations must be supported in order to prevent falls from or collapse of the earth face. The term "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 material 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.

C. Hardcore

Hardcore shall be hard crushed stone to pass a 1200 mm 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 aggregate minimum size 12 mm 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.

SECTION B:

CONCRETE WORK.

A. Material and workmanship generally.

The recommendations of the latest British Standards Code of Practice for the structural use of Reinforced Concrete in Building shall be deemed to be incorporated in these PREAMBLES Clauses unless otherwise stated.

B. Material 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 sample. 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.

C. 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 the 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 B.S. 12 and the Contractor is to obtain current certificates of tests 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 or Engineer, provided that all conditions applying to its use are strictly observed. The Contractor shall do any additional expenses in connection with the use of such cement.

D. Aggregate Generally

All aggregate shall be from approved, reputable sources and shall be strong, hard, durable, of 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 B.S 882. 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.

A. Fine Aggregates

The Contractor shall ensure that the grading of fine aggregates 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 B.S No. 100. Between these limits the grading shall conform with the grading for either zone 1 , 2, or 3 (B.S. 882).

B. Coarse Aggregate

Coarse aggregate shall be clean, well graded natural gravel or crushed stone from an approved quarry and washed if required by the Structural Engineer. The pieces shall be angular of rounded in shape and shall have granular or crystalline or smooth (but not glassy) non-powdery surface. Flaky 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 (1 ½); 20mm (3/4); 10mm (3/8)' 6mm (1/4); and the grading when analysed as described in B.S 812 shall be within the limits given in B.S.882.

C. Water

Water used for mixing of concrete, washing out of shuttering and similar purposes shall be clean, fresh and free from organic impurities in amounts likely to impair the quality of the concrete.

D. Steel Reinforcement

Steel for reinforced concrete shall comply with the following specifications:

Mild steel rod reinforcement shall comply with B.S 4449.

High tensile steel reinforcement shall be either cold worked deformed steel bars of circular octagonal section complying with B.S. 4461 or hot rolled deformed high tensile bars having a guarantee minimum yield stress of 4200 kg/sq, cm. And other physical qualities in accordance with B.S 4449.

Welded steel fabric reinforcement shall comply with B.S 4483

Code of Practice C.P 100, the structural use of reinforced concrete in buildings.

An approved manufacturer shall supply all steel reinforcement, and the contractor may be required to obtain a manufacturer's test certificate in respect of steel reinforcement supplies. In absence of such a certificate, the contractor may be required to submit samples to be tested at the contractor's expense in such manner as the Architect may determine. 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 Architect 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 Architect that reinforcement will be ready for inspection.

E. Bending and Fixing of Reinforcement

All bending, cutting and fixing to be in compliance with the British Standard Code of Practice, C.P. 110. Bending Schedules are incorporated in the Contract Drawings.

ii) The number, size, form and position of all reinforcements shall, unless otherwise directed or permitted by the Architect, 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 Architect.

(iii) 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 tolerances in the top 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.

(iv) Laps in the bars of random length shall be staggered in such away that no more than bars having same number are to be lapped in the same section.

(v) 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.

(vi) 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.

(vii) 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.

(viii) 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 will destroy its bond with the concrete.

A. Wrought Formwork

Formwork described as wrought shall be constructed of, or lined with, 100mm wide sawn boards well cramped together; boards running horizontally on fascia, down drains, etc. as shown on drawings. Boards on columns to run vertically. An exposed vertical arris to be formed with 20mm x 20mm triangular bead set in corner of formwork.

B. Concrete Grades

Concrete must comply with the requirements set out in the following table according to the grade;-

GRADE NOMINAL MIX	CUBIC METRE OF AGGREGATE PER 1500 KG OF CEMENT		MINIMUM RESISTANCE TO CRUSHING WITHIN 28 DAYS AFTER MIXING (WORKS TEST) Kg/sq/cm	ALTERNATIVE MINIMUM RESISTANCE TO CRUSHING WITHIN 7 DAYS AFTER MIXING (WORKS TEST) Kg/sq/cm	SIZE OF COARSE AGGREGATE mm	MAXIMUM WATER RATIO BY WEIGHT
	Fine	**Coarse**	**Test**	**Test**		
A 1:1:2	1	2	315	210	6	0.50
B 1:1½ :3	1½	3	262	175	20	0.55
C 1:2:4	2	4	210	140	20	0.60
D 1:3:6	3	6	140	84	40	0.60
E 1:4:8	4	8	-	-	40	0.60

F	1:3:6	3	6	140	84	10	0.60

A. Preliminary Cube Tests

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

The approval of any mix by the Architect 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 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 work-ability to enable it to be well consolidated, to be worked into the corners of the shuttering and around 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 works 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 slump test nor should the compaction factor be more than 0.87 as determined by the standard compaction factor test as described in B.S. 1881.

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

B. Work Cube Test

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 the slump of the concrete, particulars of the cement and aggregates used, a statement of whether or not the cubes were vibrated and other information relating to the subsequent history of the cubes.

The cubes while be made, cured and tested in accordance with the requirements of B.S 1881 when directed by the Architect and in his presence or that of the Approved Testing Authority. A sample of concrete shall be taken at random on 8 separate occasions during each of the first 5 days of using the mix.

Measuring equipment for water shall be maintained in a clean serviceable condition.

C. Workmanship

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 Architect. 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 architect 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 blocks to maintain the required spacing and cover.

All bars to be bent in accordance with B.S. 4466: 1969

Cover of concrete to the reinforcement shall be, unless shown otherwise: -

Columns	-	25mm. minimum to main bars
Base	-	50mm. minimum
Beams	-	25mm. minimum
Slab	-	15mm. minimum
Wall	-	15mm. minimum

Splices to future work shall be covered in a manner approved by the Architect to prevent rusting and deterioration. Before any concreting is carried out, the approval of the Architect 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.

A. Formwork Generally

All formwork and moulds shall be rigidly constructed to accurate shape and dimensions as described on the drawings. 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 contract with the reinforcement.

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

Dimensions less than 3m.	-	+	3mm.
Dimensions between 3m and 15m.	-	+	6mm.
Dimensions over 15m.		- +	10mm.

Joints in the moulds of formwork 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 be effectively 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's, 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 those in the storey immediately below and the lowest prop shall bear upon work sufficiently strong to carry this load.

If formwork for columns, walls and other deep sections is erected to the full height, 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 forming of openings, holes, chases, recesses and other cavities shall be fixed to the formwork and no subsequent holes shall be cut in any concrete without the Architect's approval.

A. 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 type and not smaller in size than 4C/ 28 Cu.m. Except with the approval of the Architect in writing.

Tilting drum mixer will not be permitted. The mixer shall be of the type equipped with accurate measuring devices, designed so that no unauthorised person can tamper with 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. 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 water is used in the drum. The entire contents of the drum shall be discharged before the materials for succeeding batch are fed into the drum. Upon completion of the days mixing, the drum shall be thoroughly cleaned free of adhering concrete.

B. Distribution of Concrete

The concrete shall be distributed from the mixer to the position required by approved means which do not cause separation 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 the large structures such as slabs, large beds and elsewhere where instructed by the Architect the minimum requirements shall be wheelbarrows, ramps and runaways over the reinforcement.

C. 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 permeant position as is practicable and shall not be worked along the formwork to that position. It shall not be dropped from a height nor handled in a manner likely to cause separation of the aggregate or loss of 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 proportions 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 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 placed in horizontal layers not exceeding 75mm. deep in walls. Columns and other similar members

A. Vibration

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

B. Working Joints

Working joints shall be of an approved shape and placed at right angles to the exits of the member. All day work joints and construction joints to follow the line of boards on shutter. In fair faced work walls to be poured where possible in one lift to a minimum of 3.60m. Walls higher than this to be constructed in two equal pours. Kickers at bottom of walls to be cast against a straight edge set in shutter and to be 50mm. above structural level of floor. The Contractor shall submit his proposals for the design and positioning of all joints on drawing to the Architect 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 concretes 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 concrete. The new concrete shall be well rammed and compacted against the prepared face before the neat cement grout sets.

C. 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 cube strength of 140kg. Per square centimetre. Immature concrete shall be protected from damage by falling debris, excessive loading, and vibrations, running or standing water, abrasive or other influences likely to impair the quality or strength of the finishes

A. Concrete in Excavations

The length and widths of the excavation shall be 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 structures and foundations below ground level. Blinding has not been measured to the extra width, if any, required for working space. The Architect shall decide the depths where these are not given on the drawings. Any obstructions or unusual solids encountered during the excavations shall be reported to the Architect and dealt with as then instructed.

B. Removal of Formwork

The period elapsing between placing of 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's approval for the removal of the formwork shall be as tabulated below:-

POSITIONS OF FORMWORK	MINIMUM STRIKING TIME
Sides of walls and columns`	3 Days
Beam soffits and props	21 Days

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 spalled away. If the imposition of a load exceeding the design load is anticipated, props shall be provided in an approved manner after removal of the formwork and before the imposition of the loads.

C. **Surface Finishes**

Upon removal of the formwork any honeycombing or damaged surfaces or other imperfections shall be reported to the Architect. No surface shall be repaired or otherwise treated until the Architect and his instructions have carried out an inspection or approval to the 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.

A. **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. Large precast members shall be lifted only at points, which will not damage the members, 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 Contractors option. Allowance must in all case 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 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 carefully protected from the rain, sun and wind by means of "sisal raft" 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.

B. Sub-Contractors Work Incorporated in the Structure

It shall be the Contractors responsibility to co-ordinate Sub-Contractors 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's approval for the layout. No holes or chases shall be cut on concrete without the approval of the Architect.

C. General

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

A. Expansion and Separation Joints

Expansion joints shall comprise: -

Bitumen impregnated soft board or similar approved.

Joint topping is 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 by ranking out (in the case of expanded polystyrene) or by temporary wooden battens of the required width and 12mm. deep.

Rates for the expansion or separation joints 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.

B. Mortises and Pockets

Mortices or pockets for holding down bolts or dowels shall be formed in concrete to the size and shapes shown on the drawings. Mortices 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 ranking out and the complete removal of the polystyrene when the concrete has set. No deduction from concrete quantities has been made for any mortices, pocket or any other void in the concrete of 0.05 cubic metres or less and the Contractor may take this into account when pricing. Grouting up has been measured separately.

SECTION 'C'

BLOCKWORK

A. Water

Water shall be as previously specified in "Concrete Work".

B. Cement

Cement shall be as previously specified in "Concrete Work"

C. Fine Aggregate

Fine aggregate shall be as previously specified in "Concrete Work".

D. Coarse Aggregate

Coarse aggregate shall be as previously specified in "Concrete Work" and shall comprise aggregate of 6,10 and 20mm. grading in equal proportions.

E. Lime

Hydrated limes for cement/lime mortars shall comply with B.S. 890 semi-hydraulic Class "B" calcium lime.

F. Concrete Blocks

Solid and hollow concrete blocks for walls shall comply with B.S. 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 and to produce smooth surfaces and sharp straight corners.

Blocks shall be cast on loose pallets and after removal from the moulds shall be carefully stored under for at least 24 hours before the pallets 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 comprehensive strength of the type "A" concrete blocks shall not be less than:-

Average of 13 blocks	-	50kg per square centimetre (700 lbs per square inch)
Lowest individual block	-	40kg. Per square centimetre (580 lbs per square inch)

B. Concrete Louvers

Concrete Louver blocks shall be of approved type and manufacture. The blocks shall be with inclined faces and of overall size 460 x 150 x 160mm. (excluding lip protruding outside the bedding face).

A. **Fair Face Work**

Walls described as finished with fair face shall be constructed with blocks selected for their uniformity of size and with a smooth exposed face with no chips, blemishes, 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.

B. **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 (1:2:9) measured in gauge boxes and thoroughly mixed dry and preferably with an approved approved mechanical mixer or on a clean and 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 remixed.

C. **Workmanship**

All blocks and stone to be wetted before laying out the top of walling where left of, 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.

D. **Hollow walls**

Hollow walls shall be built with cavities of the width shown on the drawings. The two thickness of clockwork shall be bonded together with wall ties, as described spaced 900mm. apart horizontally, 300mm. vertically and staggered and with extra ties at reveals and openings; the ties are to be carefully laid so that they do not fall towards the inner thickness of the walls. The cavity is to be kept clear by lifting screeds or other suitable means. Openings shall be left at the base to enable the cavity to be cleaned out at completion and the openings shall subsequently be blocked up uniformly with the surrounding work.

When polystyrene insulation is to be fixed in the cavities it shall be inserted as the block work proceeds and cut and fixed to wall ties.

The polystyrene shall be completely immersed in bituminous paint before fixing. Before the polystyrene is fixed in the cavity the inner face of the outer blockwork leaf shall have two coats of bituminous paint applied as the work progresses.

E. **Damp Proof Course**

Damp proof courses between foundation walls and the over site concrete slab shall be Hessian based bitumen strip to B.S. 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 passing and angles.
Damp proof courses are required on all external and internal foundation walls.

SECTION 'D'

ROOFING

A. Cement and Sand Roof Finish

The cement and sand roof finish is to be mixed in the proportions as described and shall incorporate an approved waterproof additive and an approved hardener.

B. Bituminous "Built - Up" Felt Roofing

The roof covering shall be composed of three layers of single ply roofing felt of specified quality weight and make.

Each layer laid shall be lapped not less than 76mm. at all edges and layers shall be bonded together and to the sub-surface with an approved bituminous compound or hot bitumen.
At abutments the felt shall be carried over 76mm. prepared angle fillets up walls or beams etc., or a specified distance and tucked into grooved chases or under parapets as required.

C. Tropicalised Mastic Asphalt Roofing

Tropicalised mastic asphalt roofing shall be carried out in accordance with C.P. 144 Roofing Covering Part 2:1966 Mastic Asphalt and Part 4: 1970 Mastic Asphalt M. The material used shall be in accordance with B.S. 988: 1966 Table 3 Col. 1 and 2 Mastic Asphalt for Building (limestone Aggregate) or B.S. 1162: 1966 Mastic Asphalt for Building (Natural Rock Asphalt Aggregate).

The 20mm. two-layer asphalt shall be laid upon sheeting felt complying with B.S. 747:1961 Type 4A (i)
The asphalt shall be covered with light coloured mineral chipping or gravel (10-15mm. nominal diameter) as specified on the drawings.

The asphalt roofing is to be executed by a specialist roofing Sub-Contractor to be approved by the Architect.

D. Fulbora Roof Outlets

The fulbora outlets shall be as manufactured by Fulbora Ltd., Hatfield, Herts, England and Fixed in accordance with the manufacturer's instructions.

E. Corrugated Asbestos - Cement Sheeting

Corrugated asbestos - cement sheets shall conform in all respects to the requirements of B.S. 690.
The sheets shall be mitred at the corners for proper fixing, laid with a minimum end lap of 300mm. for pitches over 25 degrees and 450mm. for pitches less than 25 degrees, a minimum side lap of 12mm. to 30mm. corrugations dependent on the height of the corrugations in addition, for roof pitches less than 25 degrees the sheets shall be bedded in mastic for the full width of the lap.

Sheets shall be secured to steel with approved galvanised hook bolts and to timber with galvanised drive screws of suitable length, both types of fixing to comply with B.S. 1494. Hook bolts and drive screws shall be 8mm. diameter and fitted with an approved cupped metal washer, asbestos felt under - washer and a nut.

All fixing holes shall be drilled and not punched. The holes shall be drilled in the ridges of the corrugations, and not in the valley. The corrugated sheets shall be laid in a s should line through in a truly horizontal plane.

Each sheet shall be supported on at least three purlins throughout its length, and secured at the corners; also at least one in its breadth and to each purlin along its length.

All cutting shall be properly and neatly executed with a saw. Ridge and hip capping shall be closely mitred and pointed with mastic. At eaves the hip capping shall be trimmed off in line with the eaves and supported by approved type hip irons screwed to hip rafters.

Aluminium Sheet Roofing

Aluminium trough sheet roofing shall conform in all respects to the requirements of B.S. 3428 and shall be obtained from Aluminium Africa Ltd., Dar es Salaam, Tanzania, or other manufacturer equal and approved by the architect.

The sheets shall be mitred at the corners for proper fixing, laid with a minimum end lap of 300mm. for pitches over 25 degrees and 450mm. for pitches less than 25 degrees, a minimum side lap of 12mm. to 30mm. corrugations dependent on the height of the corrugations dependent on the height of the corrugations in addition; for roof pitches less than 25 degrees the sheets shall be bedded in mastic for full width of the lap.

Sheets shall be secured to steel with approved galvanised hook bolts and to timber with galvanised drive screws of suitable length, both type of fixing to comply with B.S. 1494. Hook bolts and drive screws shall be 8mm. diameter and fitted with an approved cupped metal washer, asbestos felt under washer and a nut.

All fixing holes shall be drilled and not punched. The hole shall be drilled in the ridges of troughs, and not in the valleys. The toughed sheets shall be laid to a true, flat surface and the bottom edges of the sheets should line trough in a truly horizontal plane.

Each sheet shall be supported on at least three purlins throughout its length, and secured at the corners; also at least one in its breadth and to reach purlin along its length.

All cuttings shall be properly and neatly executed with a saw. Ridge and hip capping shall be in aluminium to approved pattern and bedded and pointed in mastic. Intersections of ridge and hip capping shall be closely mitred and pointed with mastic.
At eaves filler piece shall be used.

Roofing Tiles.

Mangalore clay roof coverings as per manufacturers specification or equal and approved by the architect shall be used.

SECTION 'E'

CARPENTRY

A. **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 other 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 timbers is to be ordered as soon as 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 upon arrival at the site and if not approved by him shall be removed from the site forthwith. Notwithstanding the Architect's approval, any timber incorporated in the works found to be in any way defective before the expiry date 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 Defects Liability Period for executing any work necessary to eradicate insect attack at or suspected of being attacked notwithstanding that the timber may have been inspected already and passed fit for use.

B. **Moisture Content**

All timber shall be seasoned to 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.

C. **Samples and Testing**

The Architect 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).

D. **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 termites, insects and fungi.

E. **Softwood**

Timber for structural use, including rafters, purlins, etc. shall be of grade 1 appearance. The softwood shall be season cypress, cedar pine or podocarpus which shall be pressure impregnated with the full cell process as described below, but the Contractor's attention is drawn to the Day works Schedule where the basic price 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.

A. **Pressure Impregnation**

The softwood described, as pressure impregnated shall be treated with the "Celcure A" or "Tenolith C" full cell process. Timber must be seasoned to 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 cu.m.
Net dry salt retention	-	10.4kg. Per Cu.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 liberally with approved preservative until saturated, allowed to dry and then treated with a second coat and rates for timber shall include for this. Approved preservatives are:-

Atlas A Brunophen No. 2
Cuprinol Clear or Water Repellent Clear
Ensele Wood treat 55

B. **Hardwood**

Hardwood for structural and roof timber shall be third grade scantling, strength group ' E' or other suitable and approved durable hardwood.

C. **Preservative 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 B.S. 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 liberally with approved preservative until saturated, allowed to dry and then treated with a second coat and rates for timber must include for this.

D. **Nails**

Nails shall be galvanised and comply with B.S. 1202 and screws with B.S. 1201. Screws shall be brass unless otherwise described. Bolts, nuts and washers shall comply with B.S. 1494. Washers shall be square minimum 3mm. thick and 33mm. sides.

A. **Workmanship**

'Unwrought' or swan timber shall be as left from the saw and shall be to the full dimensions stated. All carpentry shall be executed with workmanship of the best quality. Scruntlings and boarding shall be accurately sawn and shall be uniform width and thickness throughout. All carpentry work shall be left with sawn faces except where particularly specified to the wroth. All carpentry shall be accurately set out in strid accordance with the drawings.

All structural timber shall be framed or jointed together as is most appropriate in the circumstance 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 a 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.

SECTION 'F'

JOINERY

A. Generally

The provisions contained in the Carpentry Section shall apply also in the Joinery Section where applicable.

B. Hardware

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

C. Workmanship

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

The joinery shall be worked strictly in accordance with the detailed 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 wedged up. All joints and angles are to be glued and where necessary cross - tongued with hardwood tongues, and the surface 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 work, 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 screw and pelting with similar timber and to grain in with finished joinery Screws unless specified, shall be brass.

In pricing the items, the Contactor will allow for nails and screws and fixing, all labours, cutting, notching, halving, mortising, tenoning and welding except where otherwise provided.

Allow in the rates for easing and adjusting all doors, and leave in perfect working order.

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

A. 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 B.S. 459, Parts 2 and 2A. Doors described, as Skeleton frames shall consist of framing 75mm. wide to all stiles, top and bottom rails, with suitable blocks to receive mortice 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 lapping 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 form all waves, ripples or distortions of any kind.

Any door which, after the application of paint or polish shows any defect 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 for his approval.

B. Plywood

Plywood shall be of Tanzanian manufacture, manufactured form tropical hardwoods of the first grade with B.S. 1455, and unless otherwise stated, shall be interior quality. Where stated to be "exterior" quality, plywood shall be W.B.P. bonded weatherproof grade. Where veneered plywood is specified, samples must be submitted to the Architect for his prior approval.

C. Block board

Block board shall be of Tanzania manufacture and comply with B.S. 3444 and shall be of moisture resistant quality.

D. Chipboard

Chipboard shall comply with B.S. 2604 resin-bonded wood chipboard.

E. Plugging

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

F. Protection

Any fixed joinery which, in the opinion of the Architect 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.

G. Iron mongery

All iron mongery will be fixed with matching screws to be supplied by the Contractor and the Contractor must allow for adjusting locks and striking plates and handing 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 Iron mongery shall be manufactured by Josiah Parkers and Sons Ltd. or other equal and approved by the Architect. The following standard abbreviations have been used to describe the finish to iron mongery:-

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

SECTION 'G'

METAL WORK

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

Structural Steel work

Steel angles and plates are to be weldable mild steel Grade 43A in accordance with B.S. 4360.
Electrodes for welding are to be in accordance with B.S. 639.

All welds are to be fillet welds of 5mm. by size unless otherwise indicated.
Bolts are to be in accordance with B.S. 4190, and all nuts, bolts and washers are to be hot dip galvanised. Bolts holes are to have a diameter of not more than 2mm. greater than the diameter of the bolt.

All steel work is to be thoroughly cleaned, wire brushed and painted with two coats of zinc chromate primer and one finishing coat of gloss paint at the workshop. After erection any damage to the paint is to be made good and a further finishing coat applied.

B. **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.

C. **Aluminium**

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

D. **Smithing and cutting**

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

E. **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, part 1.

F. **Mild Steel Tubing**

Mild steel tubing shall be in accordance with B.S. 1387, 1957 with screwed sockets and joints.

A. **Anchor Bolts**

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

Phillips redhead concrete
Raw plug super drill anchor
Spit self drilling anchors

Rates are to include for fixing complete with washer.

B. Shop Inspection

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

C. 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.

D. Storage

All components are to be stored at the site in proper racks provided for the purpose, which provide full support to each member, and to obviate any deflection and distortion. Steel work is to be stored at least 25cm. clear of the ground and temporary protection is to be provided for protection against water and damage from any other source.

E. Erection

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

F. Painting

All steel is to be thoroughly de-rusted and de-greased prior to despatch to the site and is to be given two coats of red lead primer at the works. Further painting treatment will be carried out at the site. The finishing coat of paint is measured separately and the cost thereof is not to be included in the rates for metal works.

SECTION 'H'

PLUMBING AND ENGINEERING INSTALLATIONS

A. Execution of the Work

The work shall be carried out strictly in accordance with:-

a) "British Standard Code of Practice" C.P. 310:1965: Water Supply.
b) "British Standard Code Practice" C.P. 304:1968 Sanitary Pipe work above ground.
c) All other relevant British Standard Specifications and Codes of Practice.
d) By-Laws of the Local Authority
e) The working drawings

A specialist shall carry out the plumbing work and, if the Contractor is not a firm approved by the Architect for the type and / or value of plumbing Installations contained in this contract, he must sub-let this work to a specialist Sub-Contractor who is approved.

B. Extent of work

The work includes, unless otherwise specified, supply, installation, testing and commissioning and delivering up clean and in working order the installation shown on the drawings and specified in these preambles including all details such as:-

Cold water pipes, discharge (the term discharge pipe is in this specification used as a comprehensive all embracing description in place of the traditional soil and waste terms), drain and ventilating pipes, water metres, valves, sanitary appliances including all necessary taps and discharge fittings, fire fighting installations and equipment, and all labour, materials, tools, instruments and scaffolding necessary to execute the work in a first class manner, even such labour or materials which are not specifically mentioned in the project but are necessary for a satisfactory completion of the work.

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.

C. Extent of Contractor's Duties

At commencement of the work, the contractor shall investigate and report to the Architect 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. Failure to do so shall in no way relieve the Contractor from supplying the specified materials and equipment in time.
Materials supplied by others for installation and / or connection by the Contractor shall be carefully examined before installation and connection. All defects noted shall immediately be reported to the Architect.
The Contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on the site.
After the completion of the work the Contractor shall, on a set of drawings, indicate all alterations and / or modifications carried out during the construction period.

Quality of materials and workmanship

A. Material and workmanship Generally

All materials, equipment and accessories are to be new and regulations where such exist, or in their absence with the relevant B.S.

Uniformity of type of manufacture of equipment or accessories is to be preserved as far as practicable throughout the whole work.

The Contractor shall, if required by the Architect, submit samples of materials to the Architect for his approval before placing an order.

If in these preambles the practice is adopted of specifying particular items as "similar" to that of a particular firm's 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 products is quoted.
Where particular manufacturers are specified herein, no alternative makes will be considered, and the Architect shall be allowed reject any other makes.

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

Competent workmen under skilled supervision shall carry out the work. The Architect shall have the authority to have any of the work taken down or changed, which is executed in an unsatisfactory manner.

B. Tubing Generally

All tubing exposed of faces of walls, unless otherwise specified, be fixed at least 25mm. 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.

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

Tubes shall be fixed to true lines, parallel to adjacent lines of the building unless otherwise specified.

Where insulated, tubing shall be fixed with the insulation at least 25mm. clear of adjacent surfaces.

Tube fixings and supports shall, if nothing else be specified be arranged at intervals not greater than those given in the following tables:-

Mild steel Tubing

Diameter of pipe in mm.	Maximum spacing of fixing in mm	
	Horizontal runs.	Vertical runs.
12	1 800	2 400
19	2 400	3 000
25	2 400	3 000
32	2 700	3 000
38	3 000	3 600
50	3 000	3 600
63	3 600	4 600
76	3 600	4 600
100	3 600	4 600

Cast Iron Pipes:

Diameter of pipe in mm.	Maximum spacing of fixing in mm	
	Horizontal runs	Vertical runs
All sizes	1 800	3 000

Each support shall take its due proportions of the weight of the tube or pipe and shall allow free movement for expansion and contraction.

All tubing specified as chased into walls shall have the wall face neatly cut and chased, the tubing wedged and fixed and plastered over.

Where tubing is laid in trenches care shall be taken to ensure that fittings are not strained.

All frames bends shall be made so as to retain the full diameter of the pipe.

Sleeves shall be provided where tubes pass through walls and solid floors to allow movement of the tubes without damage to the structure. The overall length of the sleeves shall be such that it projects at least 2mm. beyond the finished thickness of the wall or partition.

Tubing shall be cut by hacksaw or other method, which does not reduce the diameter of the tube or form a bead or feather, which might restrict the flow.

Soil and Ventilation Pipes

All soil pipes from laboratory sinks shall be of vulcathene and fittings with polyfusion joints to manufacturers specification.

A. Galvanised Mild Steel Rainwater Pipes

Galvanised mild steel rainwater pipes shall be in accordance with B.S. 3868 with spigot and socket joints.

Joints shall be made with best quality tarred yarn, firmly caulked to not more than one third the depth of the socket and the joint finished with molten lead properly caulked.

B. **Galvanised Mild Steel Tubing**

Galvanised mild steel tubing shall be in accordance with B.S. 1387:1957 with screwed and socket joints.

Fittings for the same shall be galvanised malleable iron to B.S. 1356:1952 with threads to B.S. 21:1957

Joints shall be made with find hemp and approved jointing compound or tape. Compound containing red lead must not be used.

Long screws connectors and flat-faces unions shall not be used. Unless otherwise specified.

Where laid underground, galvanised mild steel tubing shall be protected with two coats "Flintkote" or two coats of approved bitumen. Minimum earth cover to underground tubing shall be 600mm.

The fixing of galvanised mild steel tubing shall be done by using:-
Malleable iron "School board" pattern brackets for building in or for screwing to structure or

Malleable iron pipe rings; with either back plate, plugs or girder clips, or

Purpose made straps to the Engineer's approval, or

Other approved purpose made holder bats.

C. **Cast Iron Pipes**

Cast iron pipes and fittings for discharge and ventilating pipes shall be sand cast and spun iron spigot and socket pipes to B.S. 416:1957, medium grade, and thoroughly coated inside and outside. Pipes and fittings shall be obtained from a licensed manufacturer and be embossed with the certification mark of approved Standard Institution.

Joints shall be made with best quality tarred yarn, firmly caulked to no more than one-third and depth of socket and the joint finished with molten lead properly caulked.

Joints of cast iron discharge or ventilating pipes to stoneware drain pipes shall be made with tarred yarn and cement and sand mortar 1.3, joints to cast iron drain pipes shall be made with tarred yarn and molten lead properly caulked and joints to pitch fibre pipes shall be made with approved adopters.

The fixing of cast iron pipes and fittings shall be done by using:-

A. **Vertical Runs**

Ears on the pipes socket plugged and screwed or nailed to the wall by means of approved screws or nails or Cast iron malleable iron or steel hinges holder bats for building in or nailing or screwing to the wall.

B. **Horizontal Runs**

Malleable iron or steel flat bats formed to two parts holder bats having the ring bolted together with 10mm. bolts and with 10mm. diameter mild steel rod welded one end to the ring and threaded the other end for and including nut and washer for bolting to and including short lengths of mild steel channel or angle not less than 50 x 50mm. built into the structure or bolted there to with self drilling anchor bolts, or

Purpose made straps to the Architect's approval.

Where cast iron ventilating pipes passing through sloping roofs, necessary tightening by means of aluminium flashing well dressed down to the roof shall be provided.

Cast iron ventilating pipes passing through roofs shall terminate at least 300mm. above the roof level and shall be protected against insect penetration by a copper wire mosquito - proof balloon grating securely bound on the top of the pipe with stout copper wire.

At the foot of all cast iron discharge and ventilating stacks and where shown on the drawings and on other positions as directed or necessary for cleaning, inspection pipes with door shall be provided. On cast iron junctions inspection pipes shall be with standard bolted oval recess door, shaped internally to bore of pipe, on pipes inspection pipes shall be with large rectangular bolted door similar to 'BURNBROS' No. 636.

C. **Valves, Cocks, Taps etc.**

Stop valves shall comply with B.S. 1010:1959.

Copper - alloy gate valves shall comply with B.S. 1952:1964.

Copper - alloy check valves shall comply with B.S. 1953:1964

Brass ball valves shall comply with B.S. 1212:1953 copper floats for ball valves shall comply with B.S. 1968:1953; and plastic floats for it shall comply with B.S. 2456:1954.

Draw off taps shall be of brassware piccolo 2.

Sluice valves shall comply with B.S. 1218:1946.

Manually operated mixing valves for ablutionary and domestic purposes shall comply with B.S. 1415:1955.

Draining taps shall comply with B.S.2879: 1957.

Copper - alloy screw down stop valve shall comply with B.S 2060:1964.

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 all branch services for group control, or where else specified.

All valves, cocks and taps shall be of the correct pressure rating according to the recommendations of the relevant B.S. or the local Authority. At commencement of the contract, the Contractor shall, if necessary, ask the Architect for guidance on this point.

A. **Sanitary and Other Appliances**

The appliances shall be fixed in the positions shown on the drawings or as directed by the Architect.

The Contractor shall include in his rates for providing all necessary screws, bolts, etc, together with all jointing material required and also for temporary erecting and securing fittings 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.

Laboratory sinks shall be vulcathene acid resistant to manufacturers specification.
Water mixers shall comply with ref. No 85364 KM.

B. **Steel Water Storage Tanks**

Where specified as galvanised mild steel, water storage tanks shall comply with B.S. 417:1964. Galvanising shall take place after manufacture.
Pressed steel sectional water storage tanks shall comply with B.S. 1564:1949 and shall be similar to manufacture 'BRAITHWAITE'

Where positioned on roof or storey partition slabs, tanks shall be placed on minimum 150mm. high supports to the Architect's approval.

Water storage tanks shall be mosquito proofed by means of a well fitting bolted cover bedded on a thick gasket of felt or bitumen.

Overflow pipes from tanks shall discharge into open air or into floor gullies where nearby positioned, with tightly bound on with stout galvanised wire.

Elevated water Storage Tank.

Shall be Simtank/Polytank placed on and including constructing steel pipes platform with minimum height of 5.0m above ground level.

A. **Water Meters**

Water meters shall be installed by the Contractor in the positions shown on the drawings or where else instructed by the Architect.

B. **Fire Fighting Equipment**

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

Portable fire extinguishers shall comply with the following British standards:-

(a) Water type (soda acid)	B.S. 138:1948
(b) Foam type (chemicals)	B.S 740: Part 1:1948
(c) Foam type (gas pressure)	B.S. 740: Part 2:9152
(d) Water type (gas pressure)	B.S. 1382: 1948
(e) Carbon tetrachloride and chlorobrometnane	B.S. 1721:1960
(f) Carbon dioxide type	B.S. 3326:1960
(g) Dry powder type:	B.S. 3465:1962
(h) Water type (stored pressure)	B.S. 3709:1964

Fire hose couplings and ancillary equipment shall comply with B.S. 336:1965; rubber reel hose shall comply with B.S. 3169:1959.

Underground fire hydrants and surface box openings for same shall comply with B.S. 750:1964.

The installation of hydrants and fire extinguishers shall be in accordance with C.P. 402:101:1952 and CP 402: Part 3:1964 respectively.

If nothing else is specified, fire extinguishers and hose reels shall be supplied in the colour 'fire red' and be similar to manufacture **'ANGUS'**.

C. **Testing**

The whole of the water and discharge installations shall be tested to the satisfaction of the Architect and the local Authority. The Contractor shall provide all necessary testing apparatus and facilities for testing the installation and any defective work shall be replaced immediately and shall be subject of re-testing until found satisfactory.

Where pipes are to be chased into walls or otherwise concealed, the work shall be tested prior to lagging, making good chases, etc.

All galvanised mild steel cold water pipes shall be tested to a cold-water pressure of 8.0kg/cm^2, if nothing else is specified.

The testing pressure shall be applied by means of a manually operated test pump or, in the case of long mains of large diameter, by power-driven test pump. Pressure gauges shall be recalibrated before the test.

The pump shall maintain the test pressure for about one hour and a leakage as specified in C.P. 310. Section 502j. Shall be approved but any visible individual leak shall be repaired.

Valves, cocks and taps shall be absolutely tight under the test pressure for correspondence pipes as well as under a small pressure.

All discharge pipes shall be tested with air or smoke to a pressure equal to 40mm. water gauge and the pressure remains constant for a period not less than 3 minutes. The water seals of all sanitary appliances, which are installed, shall be fully charged and test plugs inserted into the opens ends of the pipe work to be tested. With the pressure applied, every trap shall retain not less than 25mm. seal.

All tests shall be repeated three times; the traps being recharged before each test and the maximum loss of seal in any one test, measured but a dipsticks, should be taken as a significant result.

All tests shall be carried out in the presence of a representative of the Local Authority and / or the Architect or his representative.

Upon completion of work, including re-testing if necessary, the installation shall be thoroughly flushed out and water pipes refilled with clean water ready for use.

SECTION 'J'

FLOOR, WALL AND CEILING FINISHINGS

Sand

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

Aggregate

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

Cement

Cement is to be as described for 'concrete work'

LIME

Lime is to be non-hydraulic hydrated lime to B.S. 980 Class 'A' obtained from an approved source and run into putty at least 24 hours before use.

Workmanship

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

Screeds and cement paving shall be laid in accordance with the relevant B.S. Code of Practice. Working joints between bays of the floor finish should be placed in accordance with the Architect's instructions and will be plain but joints placed over joints in the concrete bed under. Paving shall be damp cured with sand or saw dust 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.

In-situ paving 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.

Cement and Sand Paving

The cement and Sand paving shall be in the proportions of 1:4 by volume and incorporating or treated with an approved hardener.

Concrete Paving

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

Granolithic Paving

The aggregate for granolithic paving shall be in accordance with B.S. 1201 and shall be mixed in the proportions of 1:1:11/2 cement, fine and coarse aggregate respectively. The mix shall incorporate an approved hardener suitable for incorporation and not for surface treatment. The water cement ratio shall be kept as low as possible and shall not in any case exceed 0.45. The paving is not be laid to the full thickness described and to be finished with a wood float and no extra cement towelled into the surface which is to be laid true and level. The paving is to be thoroughly cured after laying by covering with polythene sheeting and periodically watered to keep it moist for at least one week after laying. The surface is to be polished with approved rotary carborundum discs mechanically operated coarse and fine grain and with cement and sand slurry to produce a blemish - free surface.

Terrazzo Paving

The in-situ terrazzo shall consist of white or coloured cement and marble aggregate; the Architect shall select the colours of the cement and aggregate. 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 flabbily particles or dust.

The underbid shall be cement and sand 1:4 by volume.

The terrazzo toping shall be laid to a minimum of 12mm. thickness in a plastic condition while the underbid is still green and this should be watered to minimise adsorption 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. Keeping moist by covering with damp sacking for at least 72 hours should cure the surface. 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.

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 in the proportions of 1:1:6 by volume applied to a minimum thickness of 10mm. and finished with a wood float finish. The second, third and fourth coats shall consist of one part of natural cement to four parts of fine white chippings to approval applied with an approved 'flicking machine' so that the first coat is completely covered and a thickness of 12mm. is obtained.

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 skim 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 considers that this will reduce the incidence of shrinkage cracks.

The Contractor shall cut out and make good 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.

Wall Tilling

Glazed wall tiles shall be from an approved manufacture and shall conform with the requirements of B.S. 1281. Tiles shall be white or coloured with slightly rounded or 'cushion edges' and unless otherwise described shall be 6mm. Thick. Tiles shall be laid with continuous straight joints and internal angles shall be butt jointed. Rounded on edge tiles shall be used in all external angles and edges of panels. Tiles shall be bedded in approved tile adhesive and pointed in white or coloured grouting.

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. trowel led smooth.

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. It shall be laid on a smooth screed.

Ceiling

Gypsum board of 9mm or 12mm thick shall be used for the purpose of ceiling with rhino tape.

SECTION 'K'

GLAZING

A. Glass

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 23 or 32 oz. (3 or 4mm. nominal thickness) flat drawn sheet of ordinary glazing quality.

Wire glass, Opaque glass, Brown glass, and Laminated safety glass shall be of 6mm thick.

Polished plate glass shall be 6mm thickness.

Glass for louver 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.

B. Putty

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

C. 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 be 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 sight lines of the sashes. All rebates must be treated with one coat of lacquer
(as described under 'Painting' hereafter) prior to glazing.

D. Cleaning and Protecting

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 and approved window cleaner and wash-leather and for removal of all paint splashes.

SECTION 'L'

PAINTING

Colour Range

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

Material

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

Robbialac Paints (Tanzania) Limited
Sadolins Paints (Tanzania) Limited
Goldstar paints (Tanzania) Limited

Paints are to be used strictly in accordance with the manufacturer's printed instructions.

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.

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 cracks and surface imperfections 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's lamer co-polymer' or other approved plastic emulsion paint in accordance with the manufacturer's instructions. When specified internal plastered wall surfaces are to be painted gloss. In additional 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 Lilac Polymeric gloss finish or other equal and approved gloss paint lightly rubbed down coats in accordance with the manufacturer's instructions.

A. Wood work Preparation

Large knots in woodwork are to be cut back and replaced with sound wood or scorched hack 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 surface. The stopping must be 'Sadofil' or other approved.

B. Metal work

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 'Galvanised' or other zinc paint in accordance with the 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 metal work is to receive one coat of white spirit or mordant de-greasing solution washed off prior to the application of calcium plummet primer followed by two undercoats and one finishing coat of gloss as previously described.

SECTION 'M'

DRAINAGE

A. 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 and the requirements of the Bye - Laws. No length of drain is to be covered until it has been tested and passed.

B. P.V.C. Drain Pipes

P.V.C. drainpipes shall comply with ISO R161, (4kg/cm^2) 'Pipes of plastic Materials for the Transport of Fluids.'

The drainpipes shall be with spigot and socket glued joints.

C. Cast Iron Drain Pipes

Shall be centrifugally cast (spun) iron drain pipes with spigot and socket to B.S 437 thoroughly coated inside and outside; alternatively similar pipes but Class 'B' in accordance with B.S. 1211 may be used according to availability. Fittings shall be in accordance with B.S. 1130.

Pipes shall be jointed with asbestos yarn and caulked with molten lead or jointed with special jointing compound all to approval.

D. Concrete drain Pipes

Precast concrete pipes shall be in general conformity with B.S. 556; concrete cylindrical Pipes and Fittings. The concrete mix used for the manufacture of ordinary pipes shall not be weaker than Grade 'A'.

For foul water drainage sulphate resisting concrete pipes shall always be used. The manufacturer of sulphate resisting pipes shall be in general conformity with B.S. 556. The concrete mix not weaker than Grade 'A'.

Pipes up to and including 450mm. diameter shall be unreinforced and shall incorporate spigot and socket type joints. Pipes above 450mm. diameter shall be reinforced with not less than steel fabric B.S. 110 or the equivalent in mild steel and shall have spigot and socket joints or if the Architect so approved shall have open type joints. The main reinforcement shall be extended continuously from the pipe barrel into the socket, the longitudinal bars being cranked as necessary.

No wall thickness of the pipe barrel 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.

A. Pitch Impregnated Fibre Drain Pipes

Pitch impregnated fibre drainpipes; couplings and fittings shall comply with B.S. 2760 Part 1 and 2.

B. Manholes

Manholes shall be constructed on drain lines in the positions indicated or wherever ordered by the Architect.

Manholes on pipe drains shall be constructed with an insitu base in the concrete class "C" which shall be raised to form the benching and invert of the manholes. 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 bases shall have circular inverts. The benching 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 Class 'C' and rendered with 15mm. 1:3 cement mortars. Rendering to be carried out in sulphate resisting cement for foul water drainage. The ends of all pipes 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 sieving and hand filling trenches where required for first 300mm. over the drain pipes.

Backfilling shall be executed with selected materials in 150mm. layers (300mm. layers if a mechanical rammed is used) each layer being well rammed and watered to obtain the maximum compaction. Care shall 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 surfaces material including top soil which differs in any nature whatsoever from the sub-strata, 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.

C. 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 pipes or joints which do not ring true or which show in any other way any sign of being defective shall be rejected.

Each pipe shall be laid accurately to line and gradient so that the finished pipe line shall be in a straight line both in horizontal and vertical planes. The contractor shall fix properly painted and secured positioned sight rails, the levels and positioning of which shall be checked by the Architect's representatives before the rails are used and as often as may be necessary. There shall be at no times 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 thereto.

A. Jointing P.V.C. Drain Pipes

The type of joint used for P.V.C. drainpipes is cemented spigot and socket. The jointing procedure is as follows:-

1. The spigot end shall be chamfered.
2. Clean spigot and socket with wet cloth and let dry
3. Un grease spigot and socket with acetone
4. Mark length of joint and spigot
5. Apply first a relatively thick layer of cement on to spigot and then a thin layer into socket.
6. Push home the joint to the mark quickly and give at once 90 degrees twist.
7. Remove pressed out cement
8. 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 pipes.

B. Jointing Precast Concrete Pipes

The contractor shall adopt such measures as may be approved by the Architect to ensure that every laid pipe is concentric with previously laid pipes with which it joints. Unless otherwise approved pipes shall be laid in an up gradient direction and spigot shall be laid in the direction of the flow. Before commencing the laying operation, the contractors 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:-

1. Before commencing the jointing operation the socket of the previously placed pipe and the spigot of the new pipe shall be clean and thoroughly soaked with water.
2. 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 tarred 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.
3. 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 trowel led to a smooth finish completely around the pipe.
4. 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 may direct all at the contractor's expenses.

A. Positioning of Floor Gullies etc.

The contractor shall before positioning floor gullies; duck foot bends for ventilating stacks etc. consult the Architect 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 may later direct.

B. Testing

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

Water shall be passed into the length under test until such times 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, seepage or weeping from any of the pipes or joints and if the head of water in a 76mm. diameter upstaged tube fitted at the upstream end 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 before 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.

SECTION 'N'

EXTERNAL WORKS

The Preambles for the previous Trade Section are applicable to this section together with the following Preambles:-

Earthworks

All excavations are to be carried out to lines and levels as shown on drawings or as directed by the Architect.

The contractor according to the Architect's instructions shall dispose of surplus materials.

Top Soil

Topsoil is defined as any layer of soil adjacent to the existing surface which contains or is discoloured by roots, or other organic matter in which in the opinion of the Engineer/Architect will affect the stability of any superimposed construction.

Topsoil shall be removed to a depth of 150mm. or such depths as may be directed, within the limits of the pavements.

The excavated topsoil shall either be stacked for re-use in soiling areas outside the limit for pavement or shall be removed and spread as directed by the Architect/Engineer.

Roads and Parking Areas

18. Materials for Sub-grade

Unsuitable soil is not accepted in the upper 250mm. of the sub-grade whether cut or fill. These soils include soils with CBR - value below 7% (measured by 100% standard compaction, and after 24 hours soaking), and soils with content of big roots or other vegetable matter and debris and other substances likely to hamper the compaction and stability of the sub-grade.

Soils on site will generally be accepted as materials for filling in the embankments. However, top soil, tree-roots or other soils containing vegetable matters will be rejected.

19. Formation of Sub-grade

The sub-grade shall be shaped to the correct cambers gradient and levels as shown on the drawings for the full width of the crown and shall be compacted to minimum 100% M.D.D. to a depth of at least 150mm.

Compaction shall be carried out at optimum moisture content, and the contractor shall ensure, when water is added to achieve this, that it shall be thoroughly mixed with the sub-grade material in the prescribed depth. The sub-grade shall be constructed in such a manner and to such levels that no single points deviates more than 30mm. from the stipulated levels. The deviation must not be one side.

Sub-base

A. **Mechanically Stabilised Gravel**

The gravel for mechanically stabilised gravel; shall comply with the following specifications:-

Non Max B.S. Sieve size	Base for stock yards	Sub-base for tarmac Percentage in weight passing sieve
	75mm.	20mm.

Notes

1. Not less than 10% should be retained between each pair of successive sieves specified for use, except the largest pair.
2. The materials passing sieve No. 36 shall have the following characteristics: LL = 25%.
3. The material passing sieve ¾" shall have CBR value exceeding 40% for sub-base use and 80% for base use, measured after compaction to 100% standard proctor and after 24 hours soaking.

B. Construction of Sub-base

The application and compaction of mechanically stabilised gravel for sub-base must be done in such a manner that segregation is avoided. The sub-base must be uniformly compacted, if necessary water must be added, to a minimum of 100% M.D.D. determined by on material passing B.S. sieve ¼" as determined by Test No. 10 B.S. 1377.

Compaction must preferably done with vibrating rollers, or pneumatic tyre - rollers and finished to a smooth even surface with a static smooth-wheel roller.

The contractor shall set out sufficient levelling points, each 20m. in both sides of the road for the control of the thickness of the sub-base.

Before application of sub-base material the sub-grade shall be inspected and approved by the Engineer. The Engineer's approval shall in no way relieve the contractor of any obligation under the contract.

A. **Evenness of Sub-base**

Simultaneously with compaction the sub-base must be made true to shape and level so that no point of the finished sub-base deviate more than 2cm. From the stipulated levels.

Deviations must not be one-sided. Filling in of depressions must only be done through previous scarification and re-compaction to homogenous layer.

Base Course

B. **Materials for Base course**

Stones for macadam shall comply with the following requirements:-

B.S. Sieve Size	Percentage Passing
3"	100
2.5"	95 - 100
1.5"	0 - 5

Note:

The stones shall be crushed stones with approximately cubic form and with an insignificant amount of elongated or flaky particles.

The aggregate crushing value should be maximum 35%.

The fines for choking and filling in voids shall be "crusher fines" non-plastic and with 95 - 100% passing sieve 3/16" and 5 - 15% passing sieve 200. Between the limits the fines shall be well graded.

C. **Construction of Base Course**

Before any base material may be placed on the sub-base, the sub-base shall be inspected and approved by the Engineer.

Any discrepancies shall be made good to the Engineer's approval before any work on the base may start.

The Engineer's approval of the sub-base shall in no way relieve the contractor of any obligations under the contract.

Stones for macadam base course and crusher fines for filling in the voids are described above.

On the approved sub-base the stones for macadam 40/75mm. single sized stones, shall be spread in a layer of even thickness according to type of sub-base.

The macadam shall be compacted by a roller of not less than 12/16 tonnes of weight until absolute firmness has been obtained. The rolling shall start from the lowest point and commence towards the slope. After the first few passages of the roller the evenness of the macadam shall be checked and excrescence and depressions are made good scarifying and remove respectively adding materials, where upon the rolling is resumed. The rolling shall continue until complete firmness has been obtained.

When the required firmness of the layer has obtained the voids in the layer are to be filled with crusher fines. The crusher fines shall be spread over the base course in a thin even layer and be crushed and rolled down into the voids. Together with the rolling water shall be added, through means of water-barrel with a sprinkler attached to ensure complete filling of all the voids. The operation shall be repeated until all voids up to the top of the macadam are filled in.

A. **Wearing Course**

The wearing course consists of a prime coat and 1 and 2 seal coat.
Before application of bitumen for wearing coat, the base course shall be inspected and approved but the Engineer. Any discrepancies shall be made good to the Engineer's approval before any work on the wearing course may start.

The Engineer's approval of the base course shall in no way relieve the contractor of any obligations under the contract.

B. **Prime Coat**

Bitumen for prime coat shall be of grade M.C.I. The temperature at application shall be 130 - 175' F (55-80'C). Prior to the application of the prime coat the surface of the base shall be swept clean of loose sand and dust and other foreign matters to the approval of the Engineer. In order to help the penetration of bitumen binder, into the base course, it may be necessary to slightly "wet" the base surface with water before application. Water though, may only be applied with the Engineer's sanction.

Bitumen for the prime coat shall be applied at a rate of 0.75kg/m^2 and blinded with sand or crushed fines at a rate of 2.5kg/sq.m.

The sand for blinding the prime coat shall be clean sharp sand of the type "Crusher Fines", 95-100% and 5-15% passing sieve 3/16", between those limits the sand shall be well graded.

After the prime coat has been applied the areas shall be closed to traffic for 24 hours to allow the primer to soak in the surface.

The Engineer can order the contractor to omit the blinding of the prime coat in which case the contractor shall ensure that no traffic passes on the prime coat at all.

The bitumen for the prime coat shall be spread in one even layer to the widths as shown on the drawings or as directed by the Engineer.

A. **First seal coat**

Prior to application of the first seal coat, primed surface of the base-course must be carefully inspected; all areas found to be holding excess of bitumen shall be made good, all to the satisfaction of the Engineer.

Bitumen for 1, seal coat shall cutback grade 500/700. The temperature at application shall be 250 - 300 'F (120-150'C).

Chippings for blinding 1, seal coat shall be single sized road stones conforming with B.S. 63 "Single sized road stones and chippings", and comply with the description below:

B.S. Sieve Size	Percentage Passing
0.75"	90 (Minimum)
0.5"	10 (Maximum)
3/8"	5 (Maximum)

Bitumen for the first seal coat shall be applied at a rate of 1.75kg/sq.m and blinded with the chippings at a rate of 14kg/sq.m. The Chippings shall be completely dry, clean and free of dust.

The chippings must be applied immediately after the bitumen to ensure a complete binding between bitumen and chippings while the bitumen is still warm.

After application of Chippings the road surface shall be rolled thoroughly with a pneumatic tyre roller. The area shall be closed for traffic for 24 hours after finishing the first seal coat.

B. **Second Seal Coat**

When the area has been open to traffic for the period of three months the second seal coat shall be applied. Before application the first seal coat shall be carefully inspected, and any areas not to be approved shall be made good. Excessive and loose chippings shall be brushed off so that the road surface appears with a firm even and clean texture to the satisfaction of the Engineer.

Bitumen for second seal coat shall be cut back Grade 500/700.

The temperature at application shall be 250 - 300 degrees Fahrenheit (120 - 150 degrees centigrade)

Chippings for blinding second seal coat shall be single sized road stones conforming to B.S. 63. "Single sized road stones and chippings" and comply with the description below:-

B.S. Sieve Size	Percentage Passing
1/2"	90 (Minimum)
3/8"	10 (Maximum)
3/16"	5 (Maximum)

Samples of all grades of stones and chippings shall be submitted to the Engineer for approval before any is delivered to the site.

Bitumen for the second seal coat shall be applied at a rate of 1.3kg/sq.m and blinded with the chippings at a rate of 12kg/sq.m The chippings shall be completely dry, clean and free of dust.
The chippings must be applied immediately after the bitumen to ensure a complete binding between bitumen and chippings while the bitumen is still warm.

After application of chipping, the road surface must be rolled thoroughly with pneumatic tyre roller. The road can be opened for traffic when the second seal coat is finished.

General Remarks in Surface Dressing

The plant used by the contractor for transporting, heating and spreading bitumen shall be an approved rubber tiered unit fitted with an efficient thermometer and heating control.
The distributors shall be equipped to provide constant rate of bitumen per square metre of surface at the full width of the work and there shall be a visible speedometer indicating the speed of the vehicle in metre per minute.
The spreading of chippings shall be by mechanical means with adjustable aperture to ensure an even spreading of chippings at the prescribed rate.
Application of bitumen for prime coat of seal coats must not take place when is wet after rain, while it is raining or when rain is likely to be expected shortly after the surface dressing is finished.
Measures shall be taken to prevent overlapping of surface dressing at both transversal and longitude final joints. At longitudinal joints either blinding off the already treated surface or by blocking off the distributing aggregate to the required width. At transversal joints the already treated surface shall be blinded off in any case so that the spreading of bitumen can be started at the exact right moment, and when the spreading until operates at the correct speed.
Hand spreading of bitumen shall be employed to touch up areas unavoidably missed by the distributor.

Precast Concrete Flags

A. The precast concrete flags shall conform in all respects to B.S. 368.

C. Precast Concrete Kerbs, Channels and Edgings

The precast concrete kerbs etc., shall conform in all respects to B.S. 340.

SECTION 'P'

DEMOLITIONS

These works must be carried out at times arranged and convenient to the Employer.

The contractor will be held fully responsible for any unnecessary damage caused to furniture, equipment in consequence of these works. He shall reinstate all damages at his own expenses and indemnify the employer against any loss whatever arising therefrom.

The contractor must give the necessary notices and must exercise all due care in the demolition. During the demolition works the contractor shall keep the debris constantly watered to minimise the dust arising and this must be included in his prices.

Unless otherwise stated all re-usable and approved materials arising from demolitions shall become the property of the Employer and the contractor shall dismantle such materials carefully and stack them in piles ready for inspection by the Architect. Debris and disqualified materials shall be removed from site.

SECTION VII

DRAWINGS

ROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL.

ELECTRICAL,FIRE ALARM SYSTEM, ICT SERVICES DRAWINGS

AND

MECHANICAL SERVICES DRAWINGS

ENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

ROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT (EMD) FOR GENERAL REFERRAL HOSPITAL.

ELECTRICAL LEGEND AND GENERAL NOTES

No.	Symbol	ELECTRICAL LEGEND	MOUNTING HEIGHT(mm)
1		LIGHT FITTING TYPE B 1X18W LED TUBE LIGHT FITTING 1200mm, 24W SURFACE, BATTEN FITTING OF SLIM CROSS SECTION AS SMART SENSE LIGHTING OR APPROVED	CEILING
2		WALL MOUNTED OUTDOOR LUMINAIRE IN BLACK DIE CAST ALUMINIUM WITH POLYCARBONATE BOWL WITH 18W LED FLOOD LIGHT IP65 PROTECTED, AS SMART SENSE LIGHTING OR APPROVED	WALL
3		RECESSED/SURFACE LED 24W IP44 LED DIAMOND TRIANGLE DOWNLIGHT WITH WHITE FROSTED GLASS AS SMART SENSE LIGHTING OR APPROVED	CEILING
4		VERMIN PROOF SURFACE/RECESSED DIAMOND LIGHT 24W LED LIGHT AS SMART SENSE LIGHTING OR APPROVED	CEILING
5		LIGHT SWITCH, 10A ONE WAY, ONE GANG FLUSH	1400 AFFL
6		LIGHT SWITCH 10A TWO WAY ONE/TWO GANG FLUSH	1400 AFFL
7		LIGHT SWITCH 10A ONE WAY, TWO GANG FLUSH	1400 AFFL
8		LIGHT SWITCH 10A ONE WAY THREE GANG FLUSH	1400 AFFL
9	AC	AIR CONDITIONER SWITCH 20A DP WITH NEON LAMP AND MARK "AIR CONDITIONER" [illegible]	300 AFFL
10	WH	20A DP WITH NEON INDICATOR FOR WATER HEATER	300 AFFL
11		SOCKET OUTLET, 13A TWIN, SWITCHED, FLUSH MOULDED PLASTIC	300 AFFL
12		2 X RJ45 VOICE AND DATA OUTLET POINT	300 AFFL
13	TV	TELEVISION OUTLET POINT COMPLETELY WITH ITS FACE PLATE	300 AFFL
	DB	DISTRIBUTION BOARD AS SPECIFIED IN SCHEMATIC DRAWINGS	1500 OR AS DECIDED ON SITE
14	MPB	MAIN PANEL BOARD AS SPECIFIED IN SCHEMATIC DRAWING	SURFACE ON WALL
15	D.A.C.	DATA CABINET WITH SWITCHES AND PATCH PANELS	FREE STANDING
16	EXIT	SINGLE SIDED EXIT LIGHT WITH 3HRS DURATION EMERGENCY BULKHEAD FOR 8W T16(T5) AS THORN VOYAGER EXE1	CEILING/WALL

GENERAL NOTES:

1. THE ELECTRICAL INSTALLATIONS SHALL COMPLY WITH IEE [illegible]
2. THE ELECTRICAL INSTALLATIONS SHALL COMPLY WITH IEE WIRING REGULATIONS 17th EDITION BS 7671 2008 WITH CURRENT AMENDMENTS AND GOVERNMENT CODE, BY LAWS AND REGULATIONS
3. THE INTERNAL INSTALLATIONS SHALL BE CARRIED OUT USING PVC INSULATED COPPER CABLES DRAWN INTO CONCEALED CONDUITS, CABLE TRAYS, TRUNKING AND DUCTS
4. SOCKET OUTLET, TV OUTLETS AND TELEPHONE POINTS SHALL BE MOUNTED AT 300mm AFFL
5. ALL WIRING ACCESSORIES SHALL BE [illegible] PVC BOXES ARE NOT ACCEPTABLE
6. DP SWITCHES AND LIGHTING SWITCHES SHALL BE MOUNTED AT 1400mm AFFL
7. EACH AC SHALL HAVE A [illegible] INDOOR UNIT AT LEAST [illegible]
8. THE NUMBER OF EARTH [illegible] SUCH THAT CONSOLIDATED EARTH [illegible]
9. DISTRIBUTION BOARDS [illegible] SHALL BE INSTALLED AT [illegible]mm AFFL
10. ALL WIRES, WHICH [illegible] SOCKET [illegible] AND LIGHT SWITCHES SHALL BE CLEARLY MARKED TO INDICATE THE CIRCUIT NUMBERS AS SHOWN ON DRAWINGS
11. ALL LIGHTING FITTINGS SHALL BE SUPPLIED COMPLETE WITH LAMPS OF CORRECT WATTAGE
12. THE [illegible] OF THE [illegible] SHALL BE AS PER SPECIFICATION, ANY OTHER FITTING OTHER THAN THOSE SPECIFIED SHALL NOT BE ACCEPTED
13. NO MORE THAN [illegible] SHALL BE ATTACHED TO ONE CIRCUIT
14. [illegible] SHALL BE MOUNTED [illegible]
15. ALL ELECTRICAL MATERIAL OTHER THAN THOSE SPECIFIED SHALL BE SUBMITTED TO APPROVAL PRIOR TO [illegible]
16. THE CONNECTION LINES FOR [illegible] AND LIGHTING POINTS ARE FOR GUIDANCE ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT CONNECTION LINES TAKING INTO ACCOUNT THE [illegible] ADOPTED
17. ALL TELEPHONE OUTLETS [illegible] 20mm DIAMETER PVC CONDUIT [illegible] POSITION, ENTRANCE LOCATION OF MAIN CABLE AND DISTRIBUTION UNIT TO BE DECIDED AT SITE

NOTES:

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:

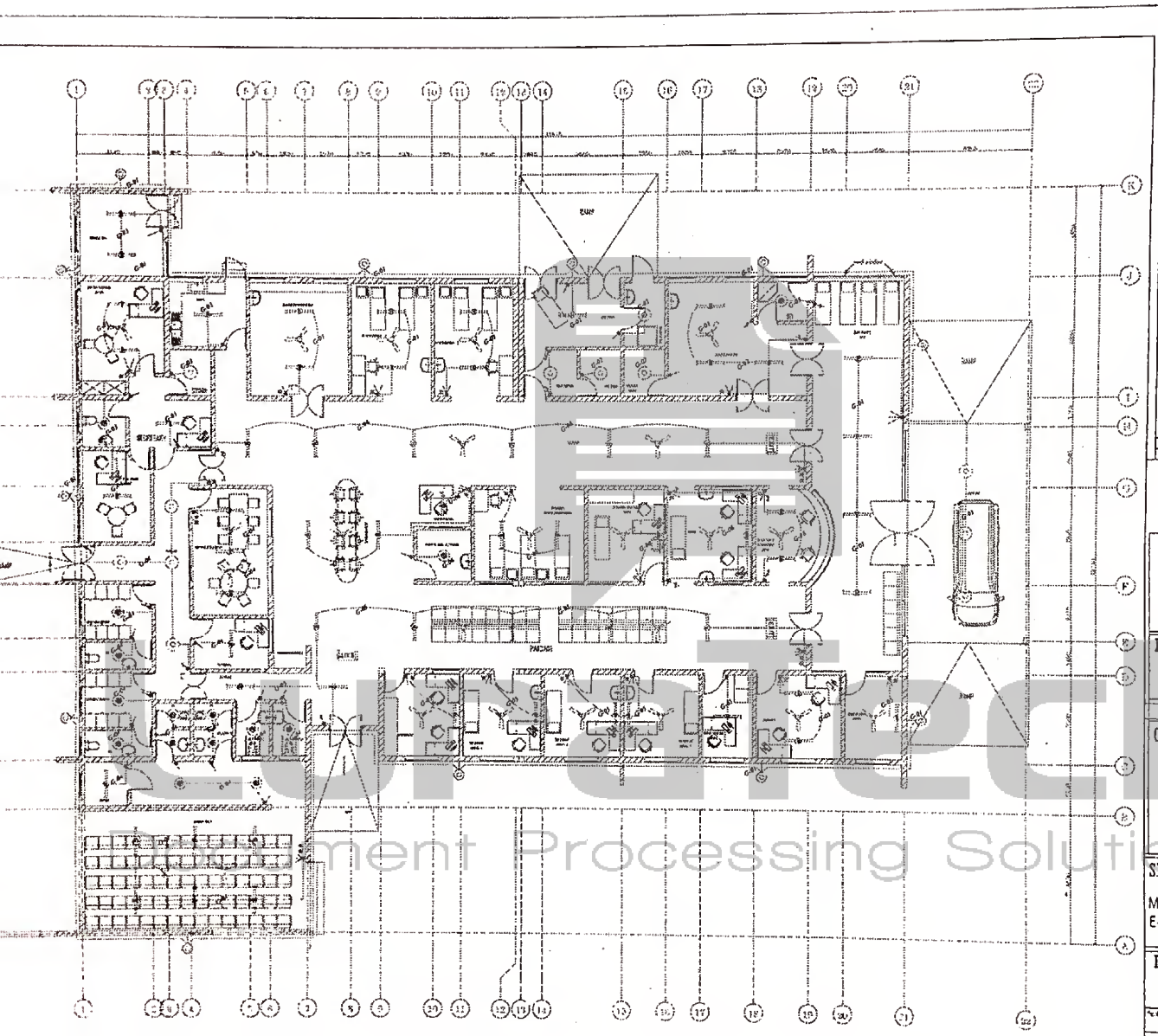
MSOFFE. S. Z
E-mail : smsoffe@gmail.com

DRAWING TITLE:

ELECTRICAL LEGEND, SYMBOLS AND GENERAL NOTES

Scale:	Date:	Drawn:	Design:	Checked:
	OCT 2016	M. S	M. S.	[illegible]

Drawing Number: MH/EMD/E-01



NOTES:

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL.

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN,

SERVICES DESIGNER:

MSOFFE. S. Z

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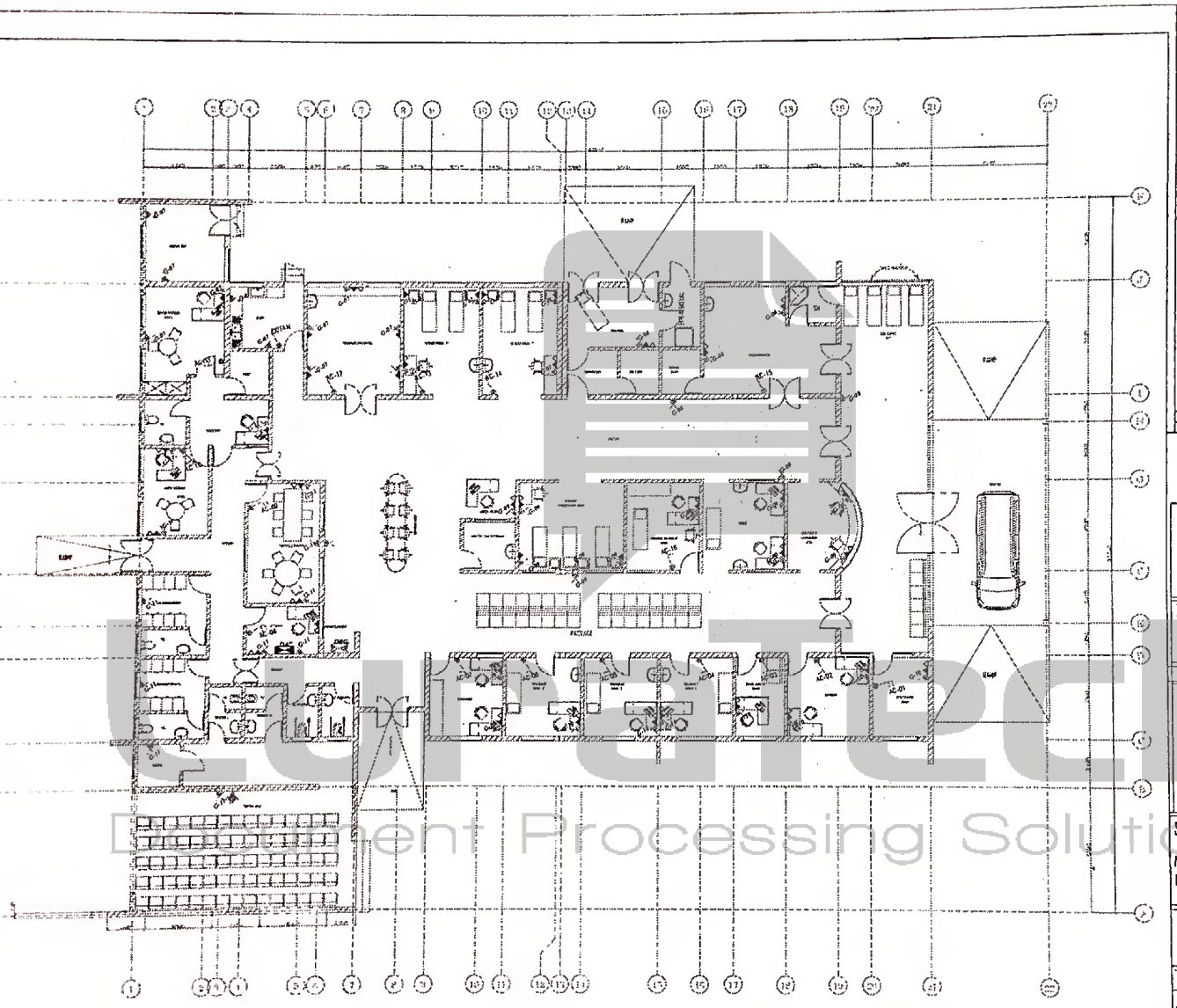
DRAWING TITLE:

FLOOR PLAN LIGHTING LAYOUT PLAN

MH/EMD/E-02



NOTES.

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

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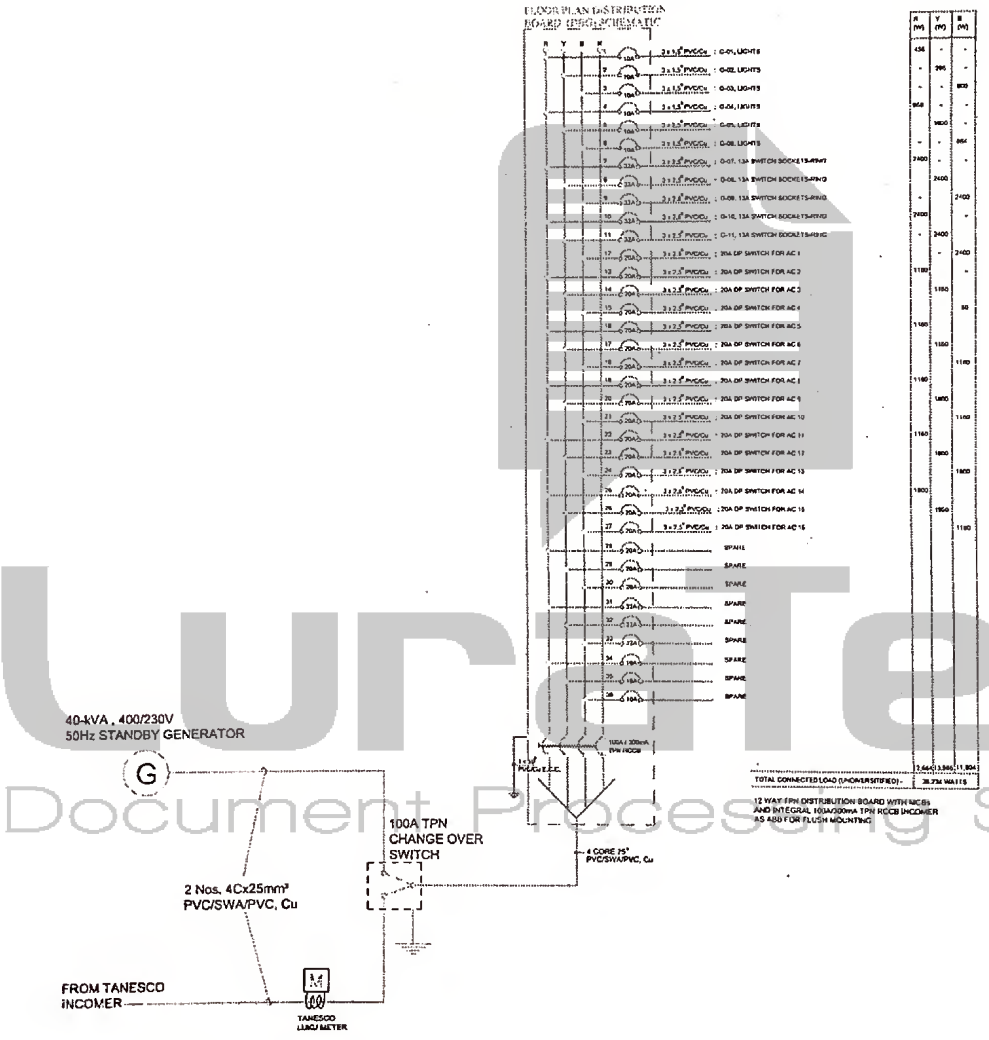
DRAWING TITLE:

FLOOR PLAN POWER AND ICT LAYOUT PLAN

MH/EMD/E-03



NOTES:

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN,

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DRAWING TITLE:

DISTRIBUTION BOARD SCHEMATIC

MH/EMD/E-04

FIRE DETECTION &ALARM SYSTEM LEGEND

S/No.	DESCRIPTION	SYMBOLS	MOUNTING
1	*Addressable fire control panel,Eurofire 3 loops, 6 zones ,as FEUR 6*		1200mm AFFL
2	Optical Smoke detectors as Od6-OPT, *Addressable* complete with base		OCL
3	Breakglass *Addressable*, complete with surface -box as FML-200R		1400mm AFFL
4	Firebell/*Addressable* sounder, 6inch as ABB624		300mm BCL
5	Fireproof cable, 1.5mm square twin with earth in 20mm pvc conduit	NA	In conduit
6	Carbon dioxide cylinders 4.5kg complete with mounting brackets		1200mm AFFL
7	Dry powder cylinders, 4.5 kg, complete with mounting brackets		1200mm AFFL
8	Heat detectors as AP6-FT8 *Addressable* complete with base		OCL

NOTE

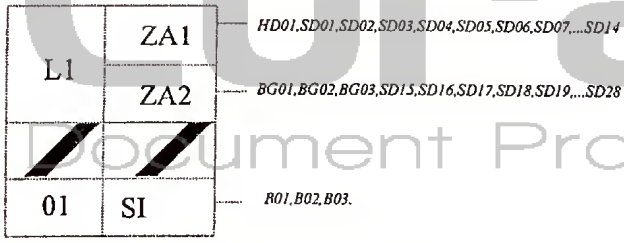
AFFL - After Floor Finish Level

BCL - Below Ceiling Level

OCL - On Ceiling Level

mm - Millimeter

ADDRESSABLE FIRE ALARM CONTROL PANEL (FACP)



FIRE DETECTION AND ALARM PANEL SCHEMATIC
(MF9308,1 LOOPS, 2 ZONES FIRE PANEL C/W BATTERIES{72 HOUR STANDBY}

NOTES:

REVISIONS

PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL.

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
MSOFFE. S. Z
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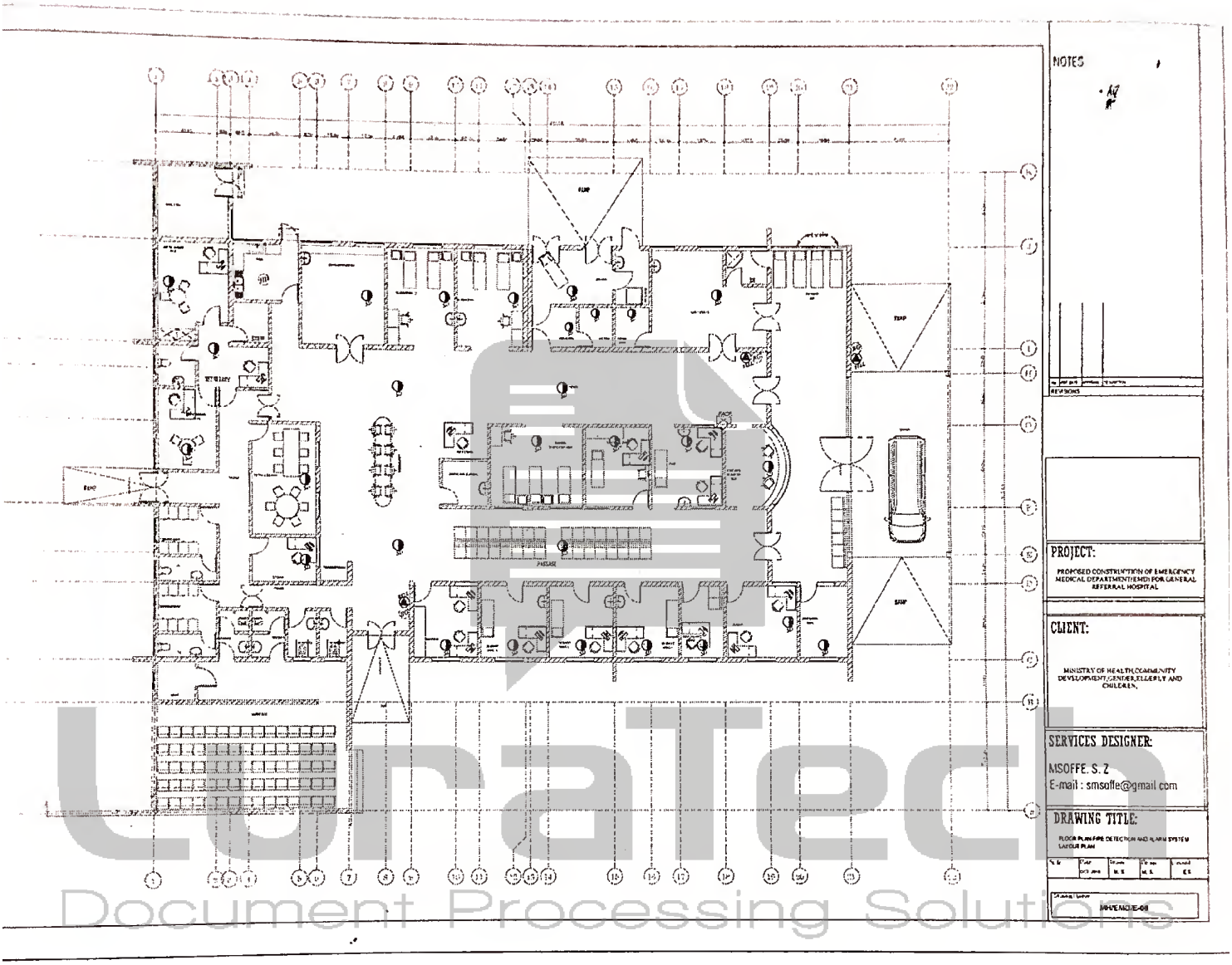
DRAWING TITLE:
FIRE DETECTION AND ALARM SYSTEM LEGEND AND FIRE ALARM CONTROL PANEL

MH/EMD/E-05



AIR CONDITION SERVICE
LIST OF DRAWINGS

S/No.	DESCRIPTION	DRAWING No.	DATE/REV.	
1	LIST OF DRAWINGS	MH/EMD/ME-AC/00	OCT,2019	
2	SYMBOLS, LEGEND & GENERAL NOTES& SCHEDULE OF EQUIPMENT	MH/EMD/ME-AC/01	OCT,2019	
3	AIR CONDITIONING EQUIPMENT & PIPING LAYOUT GROUND FLOOR PLAN	MH/EMD/ME-AC/02	OCT,2019	

NOTES:

REVISIONS

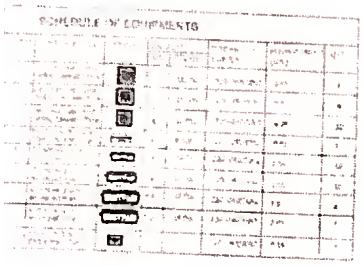
PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

DRAWING TITLE:
LIST OF DRAWINGS AIR CONDITIONING

MH/EMD/ME/AC-00



MBOLS:

Remote control

Condensate water disposal pipe as specified

Refrigerant pipes, as specified

GENERAL NOTES

1. INSTALLATION OF EQUIPMENT AND FITTINGS SHALL BE CARRIED OUT BY APPROVED CONTRACTOR TO RELEVANT CODES OF PRACTICE STANDARDS AND ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. REFRIGERANT PIPES SHALL BE DEOXIDIZED PHOSPHOROUS SEAMLESS COPPER OR EQUIVALENT CONFORMING BS 2771-72
3. REFRIGERANT PIPES SHALL BE INSULATED AS RECOMMENDED BY MANUFACTURER.
4. INSULATION MATERIALS SHALL BE CHEMICAL GROSS LINKED THICKNESS 13mm.
5. PIPE WORK SHALL FOLLOW THE HORIZONTAL LINES OF SPACE PROVIDED IN THE CEILING VOID AND VERTICAL ALONG SHAFTS.
   PROPER PROTECTIVE SLEEVE SHALL BE PROVIDED WHERE PIPES RUN WALLS AND SLAB
6. CONDENSATE WATER DISPOSAL PIPE SHALL BE RIGID PVC OR EQUIVALENT AND SHALL BE INSULATED BY MATERIALS AS SPECIFIED AND THICKNESS NOT LESS THAN 6mm.
7. POSITION OF UNITS AND ROUTE FOR TRUNKING ARE FOR GUIDANCE ONLY EXACT POSITIONS AND ROUTES SHALL BE AGREED ON SITE.
8. ALL NECESSARY SUSPENSION BOLTS AND BRACKETS SHALL BE INCLUDED.
9. ELECTRICAL INSTALLATION SHALL BE CARRIED OUT BY APPROVED CONTRACTOR AND IN ACCORDANCE WITH IEEE REGULATIONS.

NOTES

REVISIONS

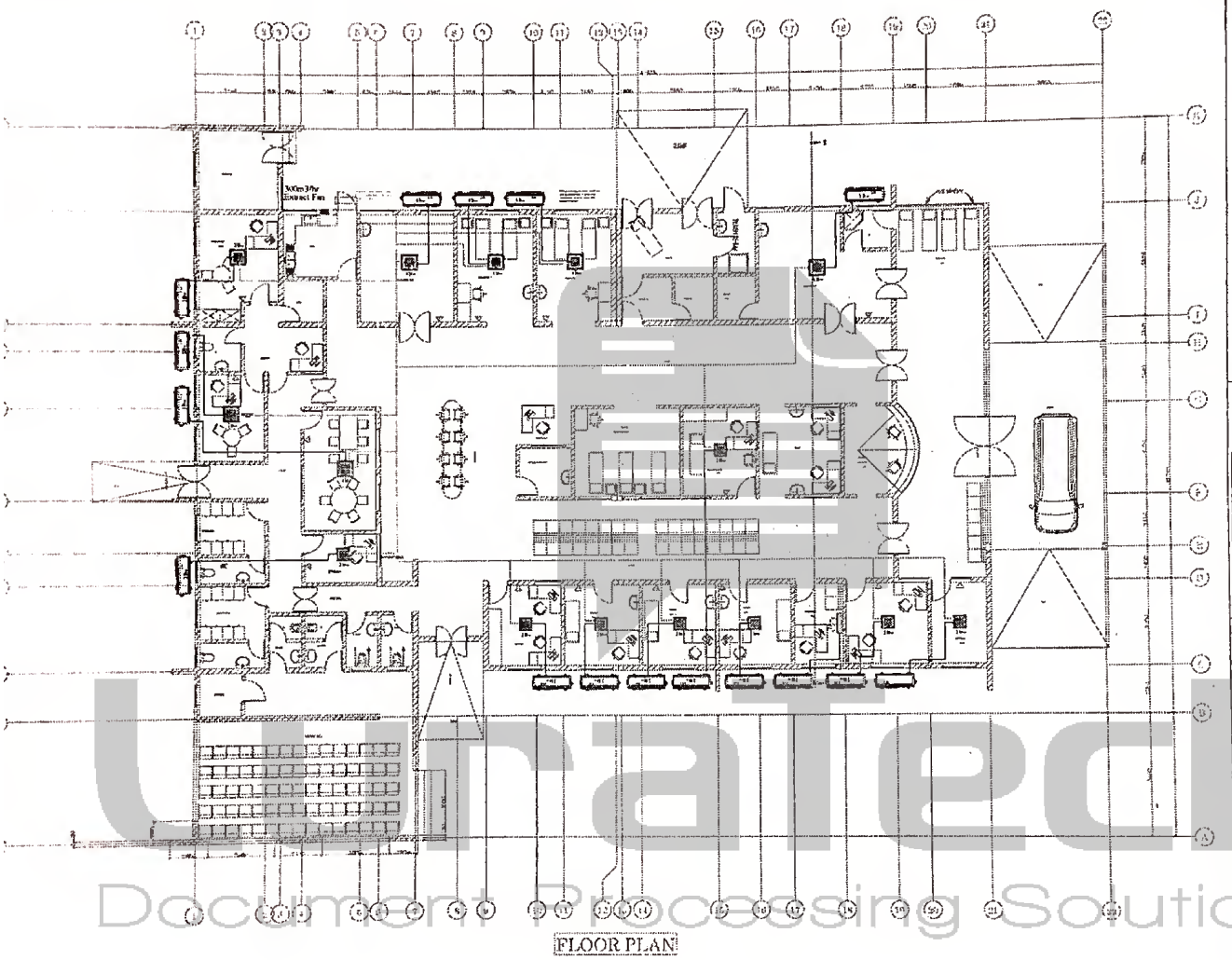
PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

DRAWING TITLE:
LIST OF LEGEND, SYMBOLS AND GENERAL NOTES

Drawing Number
MH/EMD/ME/AC-01



FLOOR PLAN

NOTES:

REVISIONS

PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT, GENDER,ELDERLY AND CHILDREN,

SERVICES DESIGNER:
PATRICIA D. S.
E-mail · pdshayo@gmail.com

DRAWING TITLE:
GROUND FLOOR-AIR CONDITIONING LAYOUT

MHEMDME/AC-02

GAS SERVICE
LIST OF DRAWINGS

S/No.	DESCRIPTION	DRAWING No.	DATE/REV.
1	LIST OF DRAWINGS	MH/EMD/GS-00	OCT,2019
2	SYMBOLS, LEGEND & GENERAL NOTES& SCHEDULE OF EQUIPMENT	MH/EMD/GS-01	OCT,2019
3	MEDICAL GAS INSTALLATION EQUIPMENT & PIPING LAYOUT GROUND FLOOR PLAN	MH/EMD/GS-02	OCT,2019

NOTES:

REVISIONS

PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

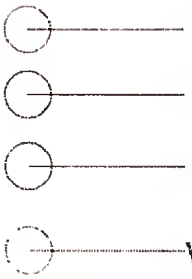
CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

DRAWING TITLE:
LIST OF DRAWINGS GAS INSTALLATION

MH/EMD/ME/GS-00

LEGEND



OXYGEN TERMINAL.

NITROUS OXIDE TERMINAL.

MEDICAL AIR TERMINAL.

VACUUM TREMINAL.

OXYGEN MED GAS LINE VALVE.

NITROUS OXIDE MED GAS LINE VALVE

MED AIR 4 BAR LINE VALVE

VACUUM MED LINE VALVE

LPG NON RETURN VALVE.

LPG QUARTER TURN VALVE.

PANIC SHUTOFF VALVE.

LPG REGULATOR

NOTES:

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL.

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN,

MECHANICAL DESIGNER:

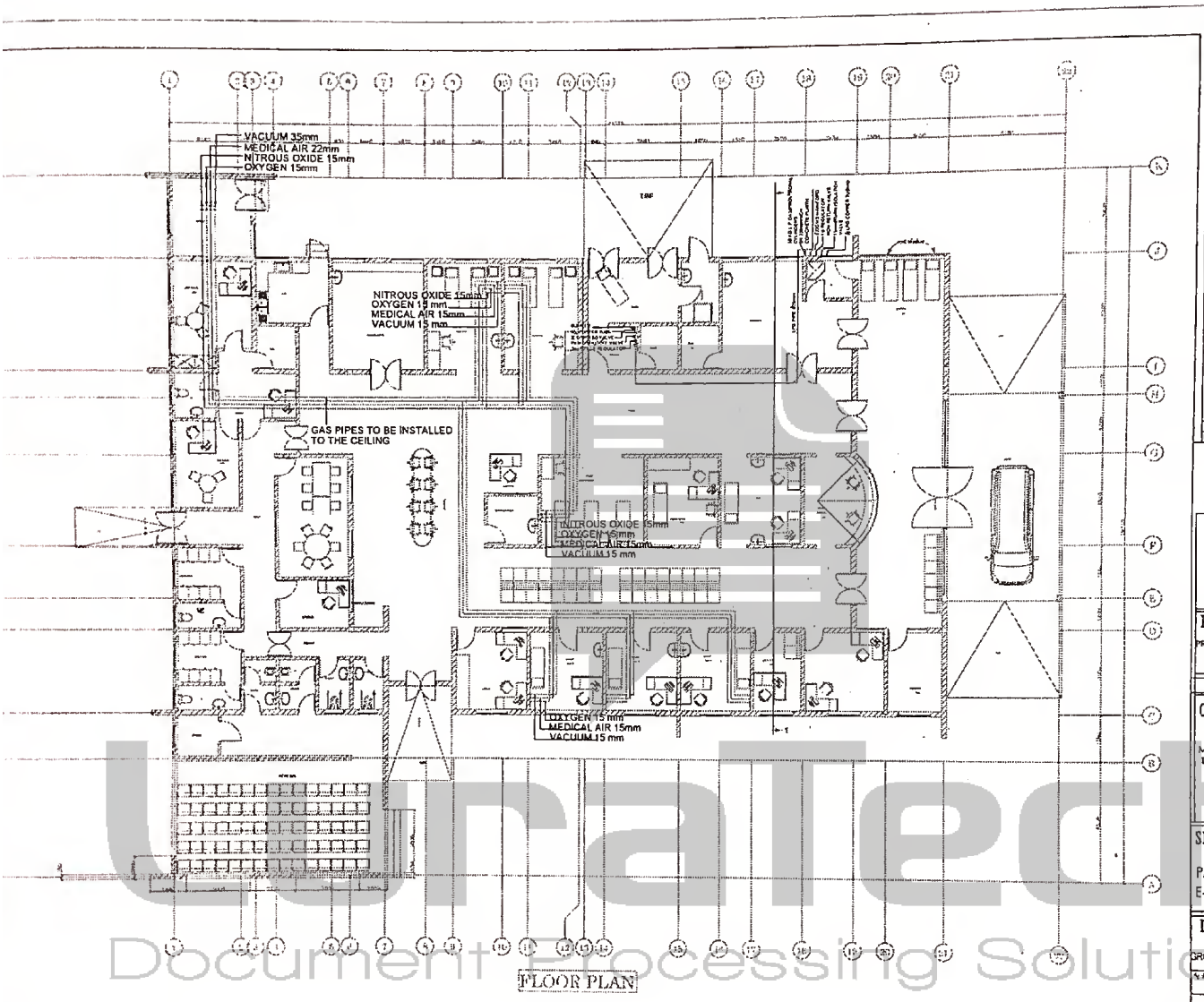
PATRICIA D. S.

E-mail : pdshayo@gmail.com

DRAWING TITLE:

LIST OF LEGEND, SYMBOLS AND GENERAL NOTES

MH/EMD/ME/GS-01



FLOOR PLAN

NOTES:

REVISIONS

PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN,

SERVICES DESIGNER:
PATRICIA D. S
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DRAWING TITLE:
GROUND FLOOR GAS INSTALLATION LAYOUT

MH/EMD/ME/GS-02

PLUMBING SERVICE
LIST OF DRAWINGS

S/No.	DESCRIPTION	DRAWING No.	DATE/REV.	
1	LIST OF DRAWINGS PLUMBING	MH/EMD/ME-PL/00	OCT,2019	
2	SYMBOLS, LEGEND & GENERAL NOTES& SCHEDULE OF EQUIPMENT	MH/EMD/ME-PL/01	OCT,2019	
3	WATER SUPPLY LAYOUT GROUND FLOOR PLAN	MH/EMD/ME-WS/02	OCT,2019	
4	WATER SUPPLY LAYOUT UNDERGROUND TANK DETAILS	MH/EMD/ME-WS/03	OCT,2019	
5	WASTE WATER LAYOUT GROUND FLOOR PLAN	MH/EMD/ME-WS/04	OCT,2019	
6	MANHOLE DETAILS	MH/EMD/ME-WS/05	OCT,2019	
7	SEPTIC TANK DETAILS	MH/EMD/ME-WS/06	OCT,2019	
8	SOAK AWAY PIT DETAILS	MH/EMD/ME-WS/07	OCT,2019	

NOTES:

REVISIONS

PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN,

SERVICES DESIGNER:
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DRAWING TITLE:
LIST OF DRAWINGS PLUMBING

MH/EMD/ME/PL-00

LEGEND

- COLD WATER SUPPLY PIPE
- SOIL WATER DRAINAGE PIPE
- GRAY WATER DRAINAGE PIPE
- STOP VALVE
- GT — GULLY TRAP
- FD/FG — FLOOR DRAIN/FLOOR GULLY
- MH — INSPECTION CHAMBER/MANHOLE (SOLID WASTE/WASTE WATER)
- COLD WATER TAP
- 'S' / 'P' WATER TRAP
- CLEANING EYE ON STACK PIPE AS SHOWN ON PLAN / ISOMETRIC WATER DIAGRAM
- HWB — HAND WASH BASIN
- SS — STAINLESS STEEL KITCHEN SINK
- WC — WATER CLOSET
- WH — WATER HEATER
- HS — HANDS SPRAY
- SP — SOIL WASTE PIPE
- WP — WASTE WATER PIPE

NOTES

FOUL WATER DRAINAGE:

- FOUL WATER DRAINAGE AND SANITARY PIPEWORK SHALL BE IN ACCORDANCE WITH BS 5572.
- WASTE/SOIL WATER AND VENT PIPES SHALL BE UPVC PIPES TO ISO/R/161 OR BS 4460/CLASS C, THE SIZES ARE INDICATED ON THE DRAWING.
- ALL BENDS AND TEES FOR VENT PIPES AND SULLAGE PIPES SHOULD HAVE RODDING PROVISION BY WAY OF CLEANING EYE FOR INSPECTION.
- WHERE PIPES ARE CROSSING BELOW PAVED AREAS, PIPES SHALL BE SURROUNDED WITH 150mm CONCRETE GRADE 15.
- GENERAL SLOPE FOR EXTERNAL SOIL WATER PIPEWORK SHALL BE 1% AND 0.5% FOR WASTE WATER PIPEWORK.
- BEFORE CONSTRUCTION OF THE DRAINAGE SYSTEM THE GROUND LEVELS OF THE SITE HAVE TO BE CHECKED FOR CONFORMITY WITH THOSE SHOWN ON DRAWINGS.
- MANHOLE COVER LEVEL SHALL BE AS SUCH TO SUITE ADJUCENT LEVELS, BUT SHALL ALWAYS BE 10 cm HIGHER THAN GROUND LEVEL.
- MANHOLE INVERT LEVELS REFERS TO +0.90 DATUM LEVEL OF THE GROUND FLOOR FINISH LEVEL.

WATER SUPPLY

- ALL INTERNAL WATER SUPPLY PIPES SHALL BE DIZAYN PP-R 80 SANITARY PIPES & FITTINGS GRADE TO BS 1387.
- EXTERNAL WATER SUPPLY PIPES SHALL BE DIZAYN PP-R 80 SANITARY PIPES & FITTINGS.
- WATER METER SHALL BE LOCATED UNDERGROUND IN A WATER METER CHAMBER WITH A REMOVABLE COVER
- TAPS AND VALVES SHALL BE COPPER ALLOY COMPLYING TO BS 5154 OR BS 1010. BALL VALVES SHALL BE IN ACCORDENCE WITH 1212.
- PIPES DIMENSIONS ARE IN MILLIMETERS NOMINAL DIAMETER.
- ALL INTERNAL WATER SUPPLY PIPES SHALL BE EMBODED IN WALLS OR FLOOR SLABS AS APPLICABLE OR ROOF LEVEL
- ALL WORKMANSHIP SHALL BE IN ACCORDANCE WITH BS 310.
- ALL PIPE CONNECTIONS TO TAPS AND SANITARY FITTINGS SHALL BE 15mm.
- SLEEVES HAS TO BE PROVIDED WHERE PIPES ARE CROSSING PAVED AREAS.
- WATER BOOSTER PUMPS:
  - -TWO PUMPS SHALL BE INSTALLED ONE SHALL BE DUTY AND THE OTHER SHALL BE STANDBY
  - - EACH PUMP SHALL HAVE A CAPACITY OF 3.6m 3 /hr AND 10m AVAILABLE HEAD.
  - -THE PUMPS SHALL BE OF MAKE GRUNDFOS, OR SIMILAR APPROVED
  - -THE PUMPS TO SUPPLIED COMPLETE WITH CONTROL PANEL, STARTER, AND FLOAT SWICHES.
  - -THE OPERATION OF PUMPS SHOULD BE VIA FLOAT SWICHES. THIS WILL ALSO INCLUDE DRY RUNNING PROTECTION.

NOTES:

REVISIONS

PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL.

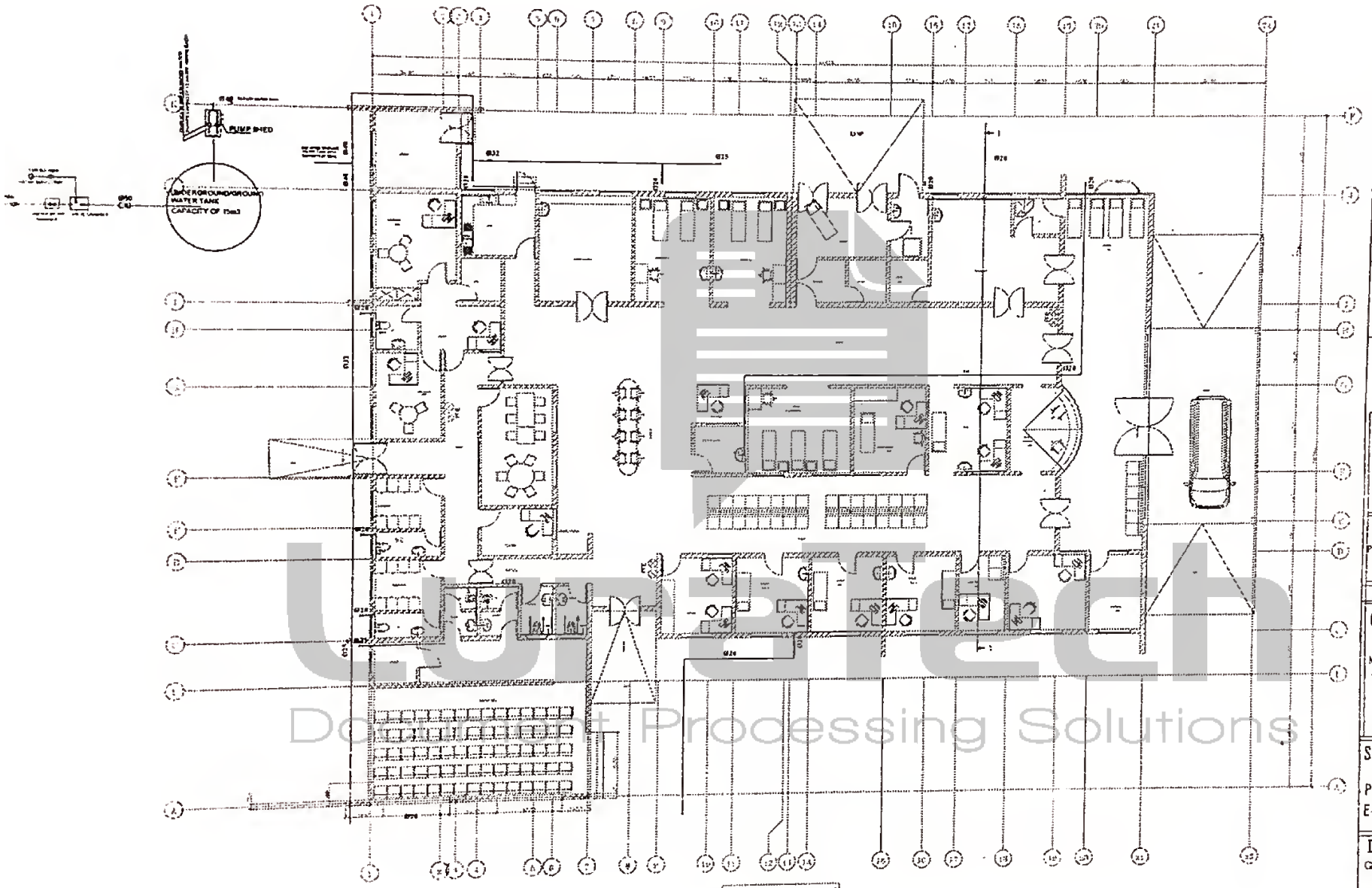
CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

DRAWING TITLE:
LIST OF LEGEND SYMBOLS AND GENERAL NOTES

MH/EMD/ME/PL-01

NOTES.



FLOOR PLAN

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

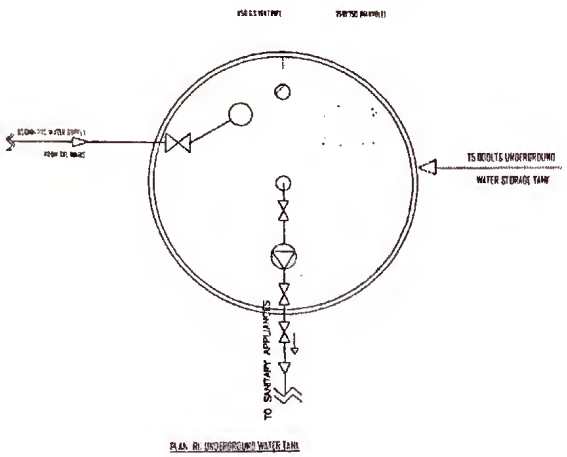
SERVICES DESIGNER:

PATRICIA O S.
E-mail . pdshayo@gmail.com

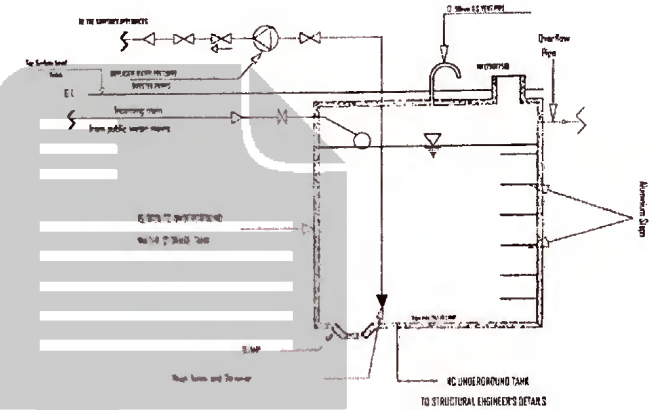
DRAWING TITLE:

GROUND FLOOR - WATER SUPPLY&FIRE FIGHTING LAYOUT

MH/EMD/ME/WS-02



PLAN OF UNDERGROUND WATER TANK



SECTION X-X

NOTES:

REVISIONS

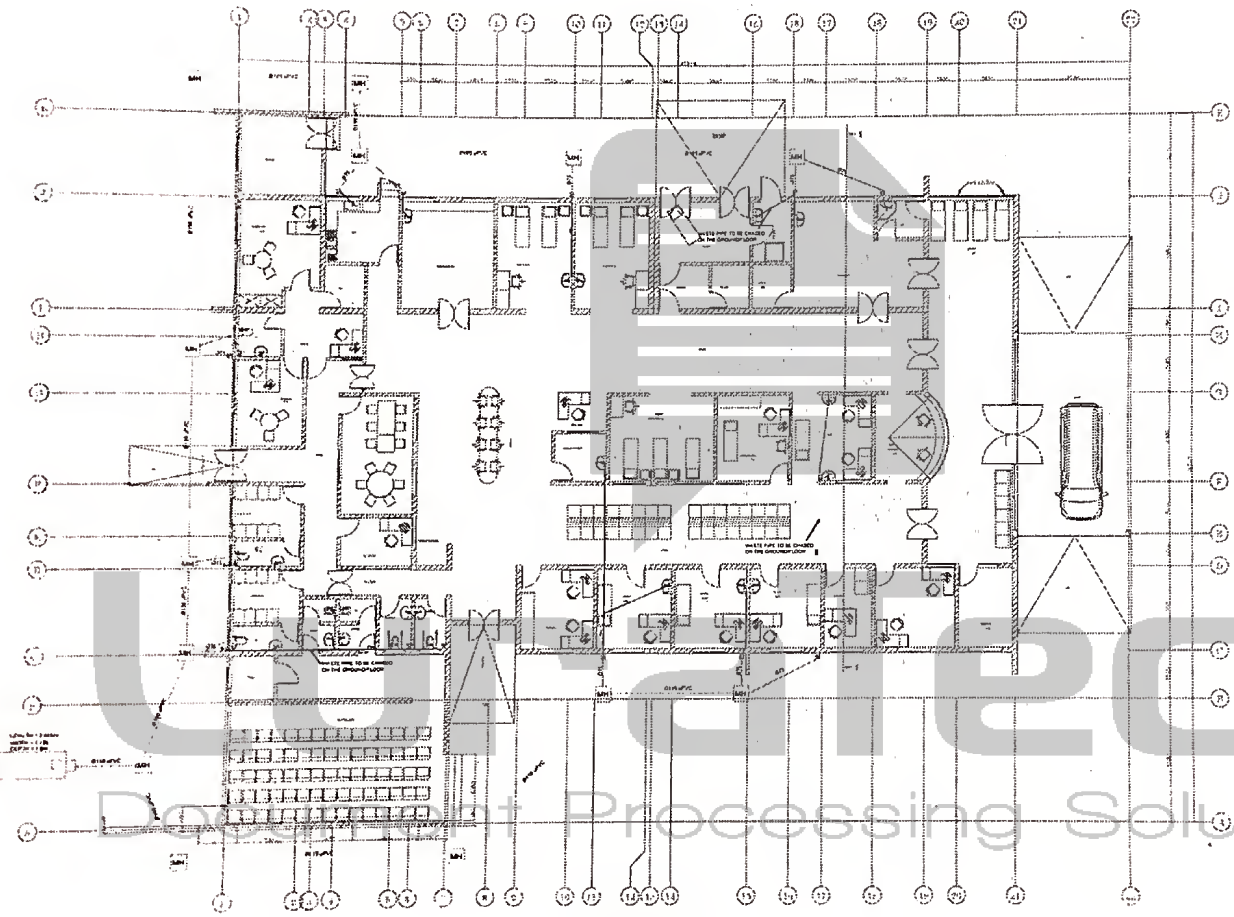
PROJECT:
PROPOSED LAUNDRY FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

DRAWING TITLE:
UNDERGROUND WATER STORAGE TANK DETAILS

MH/GRH/ME/WS-03



FLOOR PLAN

NOTES:

REVISIONS

PROJECT:

PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL.

CLIENT:

MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:

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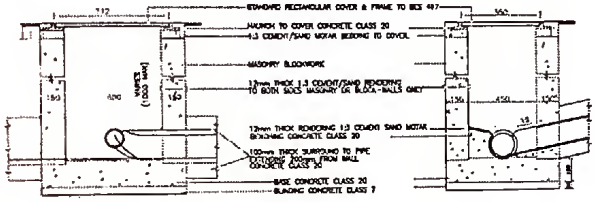
DRAWING TITLE:

GROUND FLOOR - WASTE WATER LAYOUT

MH/EMD/ME/WW-04

NOTES:

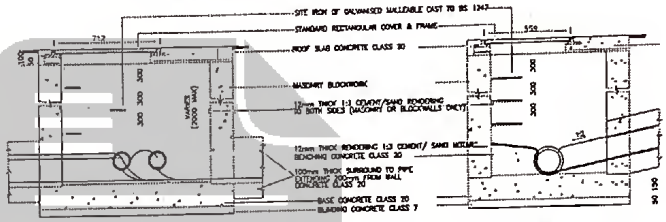
MASONRY BLOCKWORK OR IN SITU CONCRETE
MANHOLE LESS THAN 1. 1m TO CROWN PIPE



SECTION A-A Scale 1:25

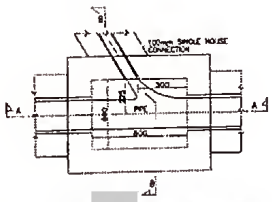
SECTION B-B Scale 1:25

MASONRY BLOCKWORK OR IN SITU CONCRETE
MANHOLE LESS THAN 2. 0m TO CROWN PIPE

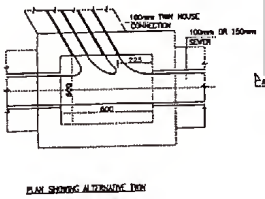


SECTION A-A Scale 1:25

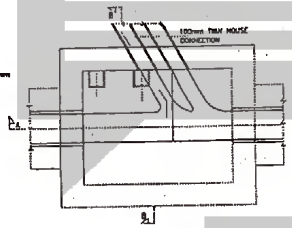
SECTION B-B Scale 1:25



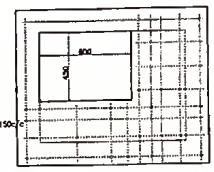
PLAN SHOWING SINGLE HOUSE CONNECTION Scale 1:25



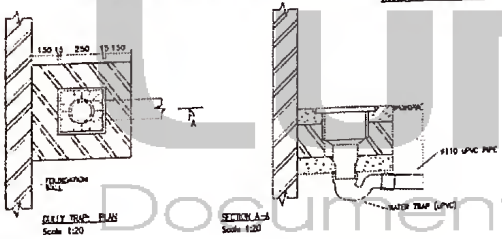
PLAN SHOWING ALTERNATIVE TWIN HOUSE CONNECTION Scale 1:25



PLAN SHOWING ALTERNATIVE TWIN HOUSE CONNECTION Scale 1:25

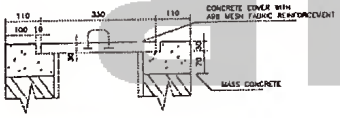


ROOF PLAN Scale 1:25



GULLY TRAP PLAN Scale 1:20

SECTION A-A Scale 1:20



COVER DETAIL (330x330mm) Scale 1:10

REVISIONS

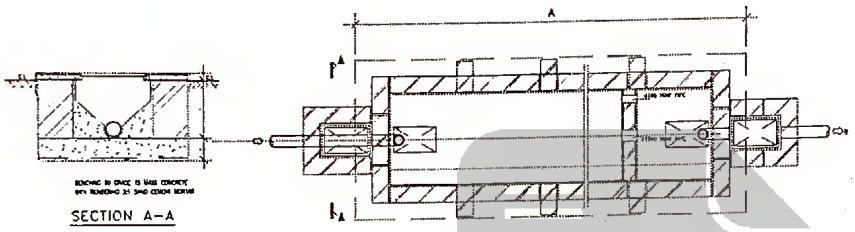
PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

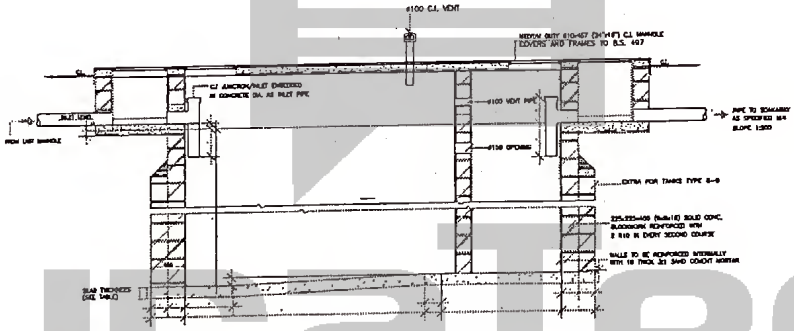
DRAWING TITLE:
MANHOLE DETAILS

MH-EMD-ME/WW-06



SECTION A–A

PLAN–SEPTIC TANK



LONGITUDINAL SECTION

NOTES

1. ALL CONCRETE TO BE GRADE C20 UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
3. BACKFILL MATERIAL TO BE APPROVED SAND/GRAVEL CAREFULLY RAMMED.

SEPTIC TANK SIZE

S. T. TYPE	LENGTH	WIDTH	DEPTH	BASE SLAB (FOUNDATION) A	B	THICKNESS
1	2310	930	1500	3085	1930	150
2	2770	930	1500	3545	1930	150
3	2770	930	1800	3545	1930	150
4	3465	1165	1500	4240	2165	225
*5	3465	1165	1800	4240	2165	225
6	4150	1390	1500	5375	2390	225
7	4150	1390	1800	5375	2390	225
8	4840	1625	1800	6065	2625	225
9	5330	1850	1800	6755	2950	225

N.B. SEPTIC TANKS TYPE 6 – 9 HAVE SUPPORTS ON WIDTH AS INDICATED ON LONGITUDINAL SECTION

* SEPTIC TANK TYPE NO.5 WILL BE USED.

NOTES:

REVISIONS

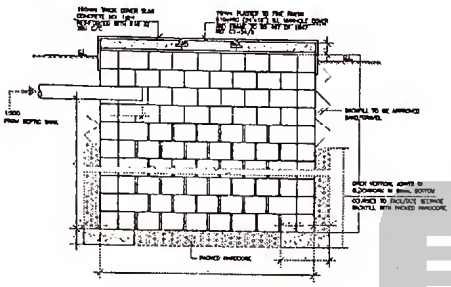
PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

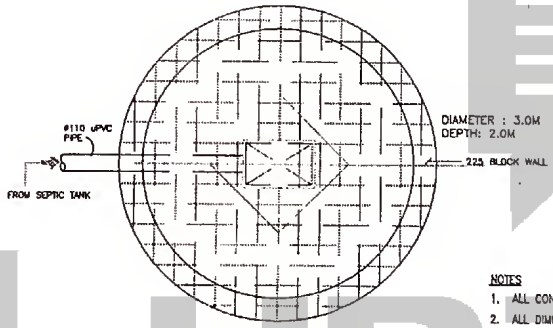
SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail com

DRAWING TITLE:
SEPTIC TANK DETAILS

MH/EMD/ME/WW-06



SECTION – SOAKAGE PIT



SOAKPIT PLAN

NOTES

1. ALL CONCRETE TO BE GRADE C20 UNLESS OTHERWISE STATED.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
3. BACKFILL MATERIAL TO BE APPROVED SAND/GRAVEL CAREFULLY RAMMED.

STANDARD SOAK PIT

ALL WASTES No. of users	SOIL WASTES No. of users	4 DIA	8 DIA	16 DIA	100 CUBIC M.	36 LITRES	49 DIA
1 TO 5	10	[illegible]	[illegible]	[illegible]	2.60	2850	
7	20	[illegible]	[illegible]	[illegible]	[illegible]	3503	
15	30	[illegible]	[illegible]	[illegible]	[illegible]	5100	
30	45	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
40	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
50	75	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
60	90	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
75	105	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
83	120	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

NOTES:

REVISIONS

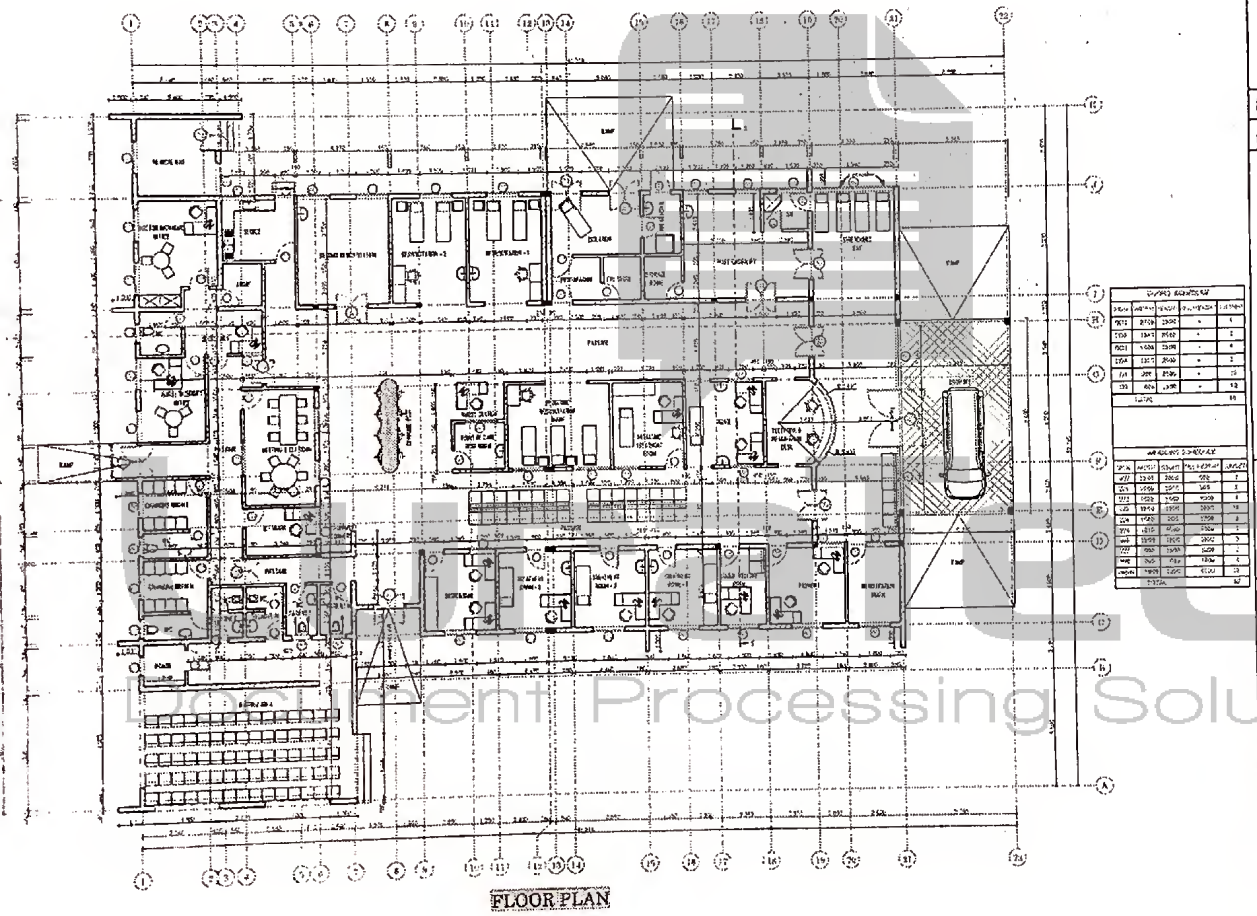
PROJECT:
PROPOSED CONSTRUCTION OF EMERGENCY MEDICAL DEPARTMENT(EMD) FOR GENERAL REFERRAL HOSPITAL

CLIENT:
MINISTRY OF HEALTH,COMMUNITY DEVELOPMENT,GENDER,ELDERLY AND CHILDREN.

SERVICES DESIGNER:
PATRICIA D. S.
E-mail : pdshayo@gmail.com

DRAWING TITLE:
SOAK AWAY PIT DETAILS

Drawing No.
MH/EMD/ME/WW-07



FLOOR PLAN

Notes
All measurements in mm

Revisions

no.	date	description

Client
Permanent Secretary,
Ministry of Health, Community Development,
Gender, Elderly and Children,
p.o box 743,
Dodoma.

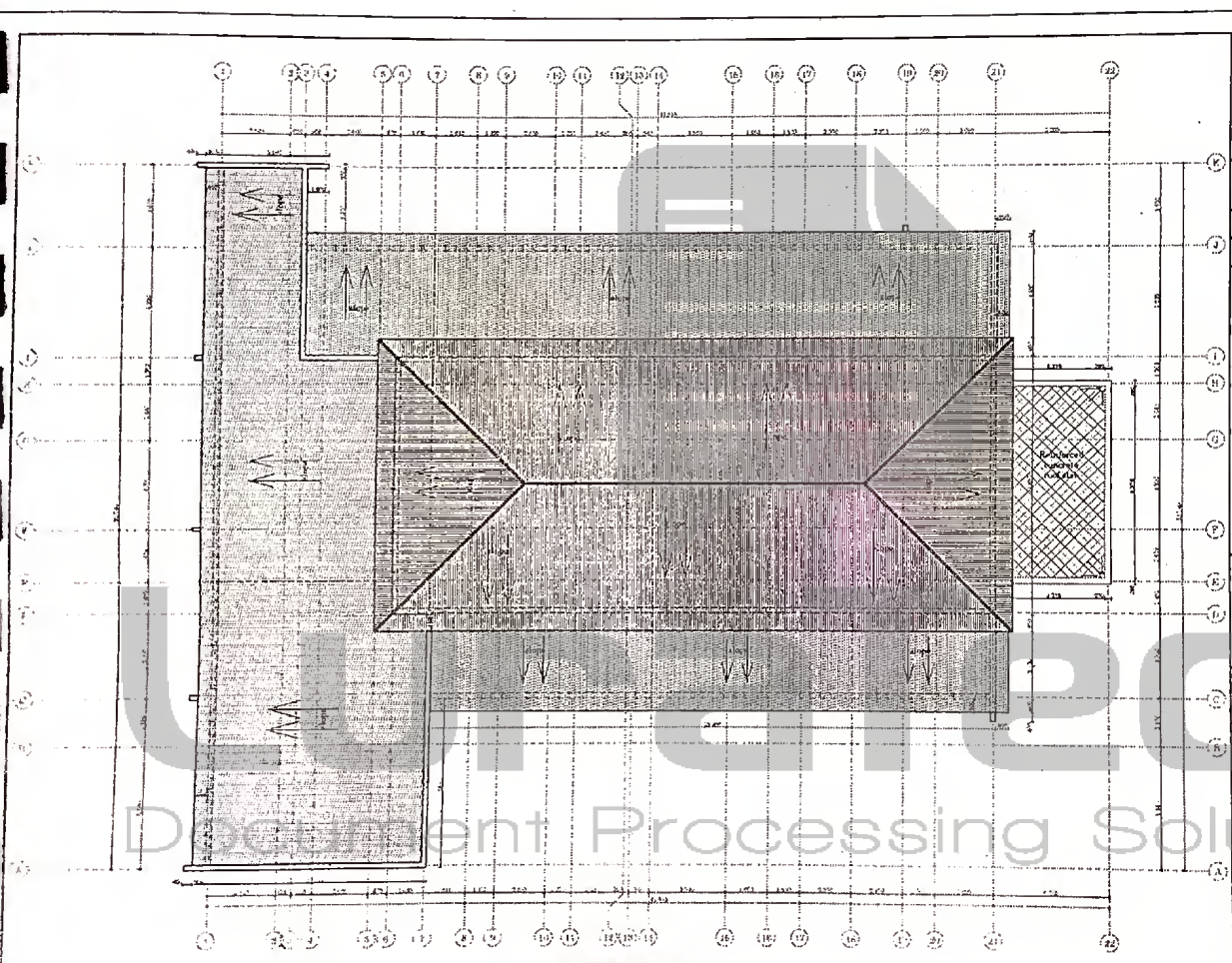
Financier:

Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community
Development, Gender, Elderly and Children,
P.o. Box. 743, Dodoma.

Job title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. ____ BLOCK____

Drawing title

Scale	Designed by: APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.



ROOF PLAN

Notes
All measurements in mm

Revisions

no.	date	description

Client
Permanent Secretary,
Ministry of Health, Community Development,
Gender, Elderly and Children,
p.o box 743,
Dodoma.

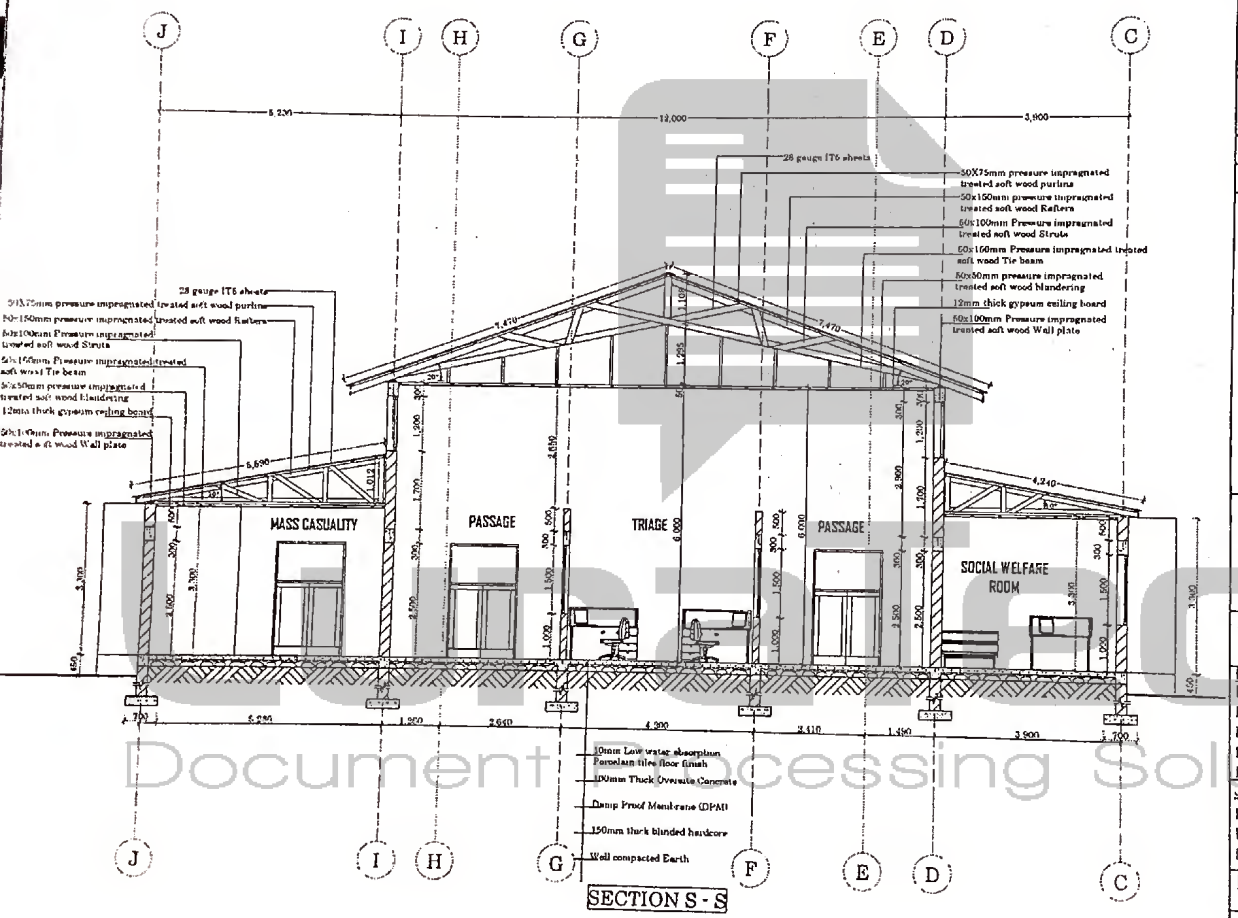
Financier:

Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community
Development, Gender, Elderly and Children,
P.o. Box 743, Dodoma.

Job title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. ____ BLOCK____

Drawing title

Scale	Designed by: APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.



SECTION S - S

Notes
All measurements in mm

Revisions

no.	date	description

Client
Pmanent Secretary,
Ministry of Health, Community Development, Gender, Elderly and Children,
p.o box 743,
Dodoma.

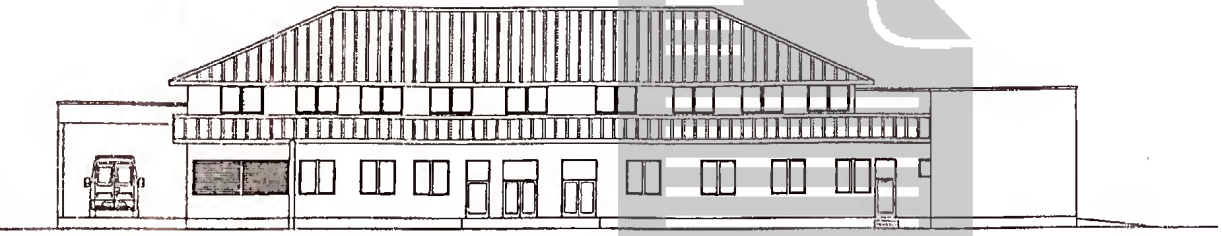
Financier:

Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community Development, Gender, Elderly and Children,
P.o. Box 743, Dodoma.

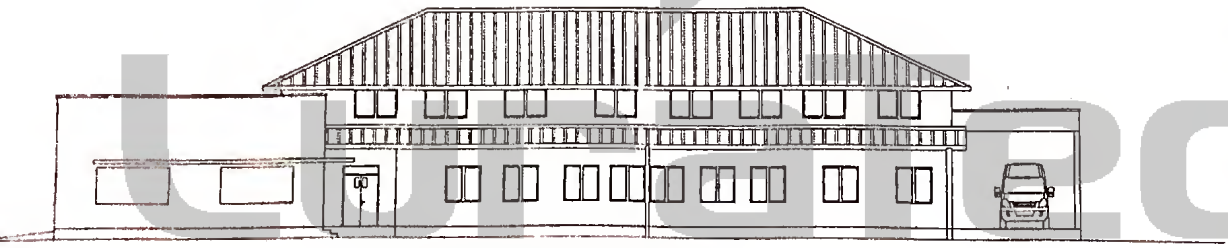
Job-title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. ..... BLOCK.....

Drawing title

Scale	Designed by: APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.



FRONT ELEVATION ZONAL & REGIONAL



REAR ELEVATION ZONAL & REGIONAL

Notes
All measurements in mm

Revisions

no.	date	description

Client
Permanent Secretary,
Ministry of Health, Community Development,
Gender, Elderly and Children,
p.o box 743,
Dodoma.

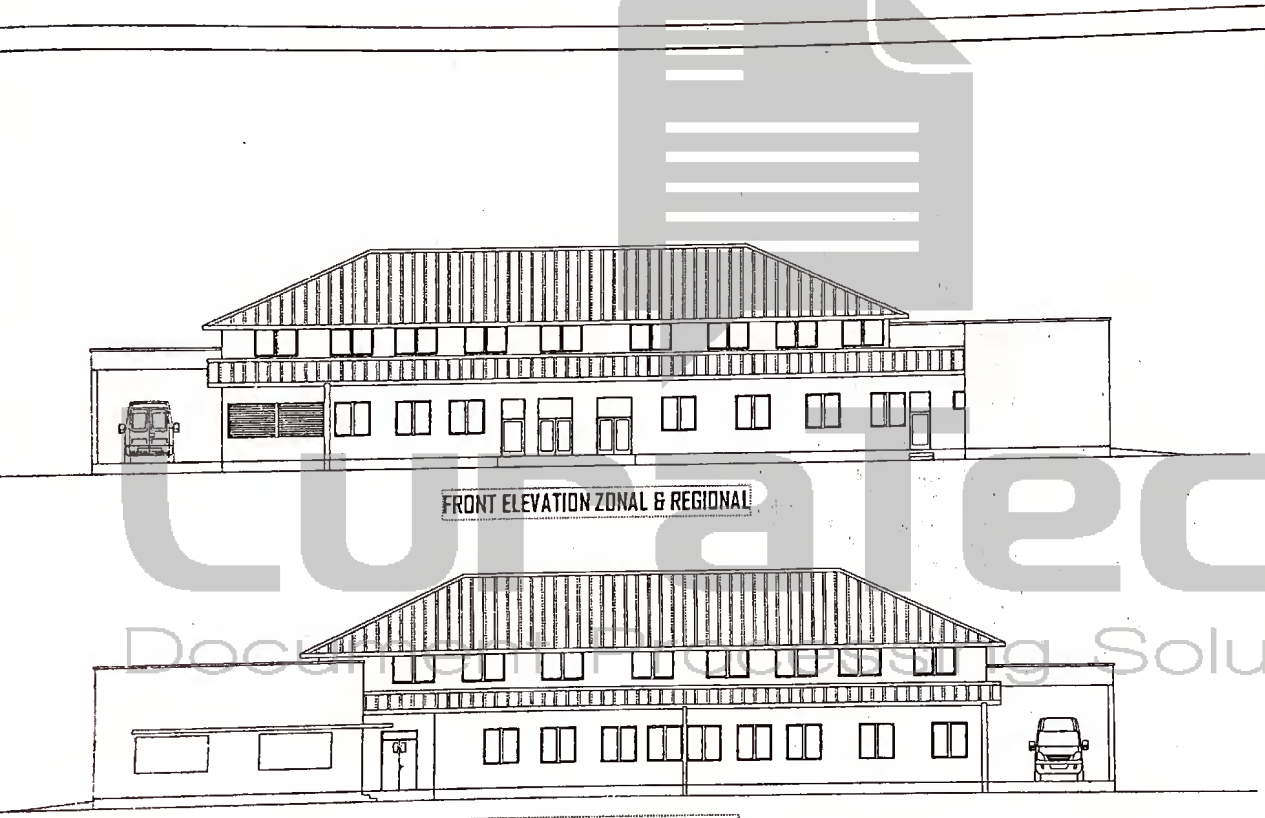
Financier:

Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community
Development, Gender, Elderly and Children,
P.o. Box. 743, Dodoma.

Job title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. ..... BLOCK.....

Drawing title

Scale	Designed by APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.



FRONT ELEVATION ZONAL & REGIONAL

REAR ELEVATION ZONAL & REGIONAL

Notes
All measurements in mm

Revisions

no.	date	description

Client
Pmanent Secretary,
Ministry of Health, Community Development,
Gender, Elderly and Children,
p.o box 743,
Dodoma.

Financier:

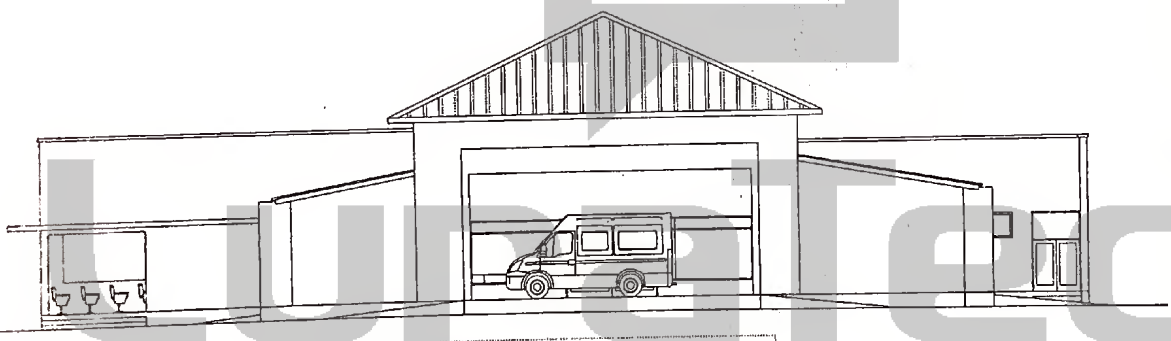
Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community
Development, Gender, Elderly and Children,
P.o. Box, 743, Dodoma.

Job title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. ..... BLOCK.....

Drawing title

Scale	Designed by: APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.

RIGHT SIDE ELEVATION ZONAL & REGIONAL



LEFT SIDE ELEVATION ZONAL & REGIONAL

Notes
All measurements in mm

Revisions

no.	date	description

Client
Permanent Secretary,
Ministry of Health, Community Development,
Gender, Elderly and Children,
p.o box 743,
Dodoma.

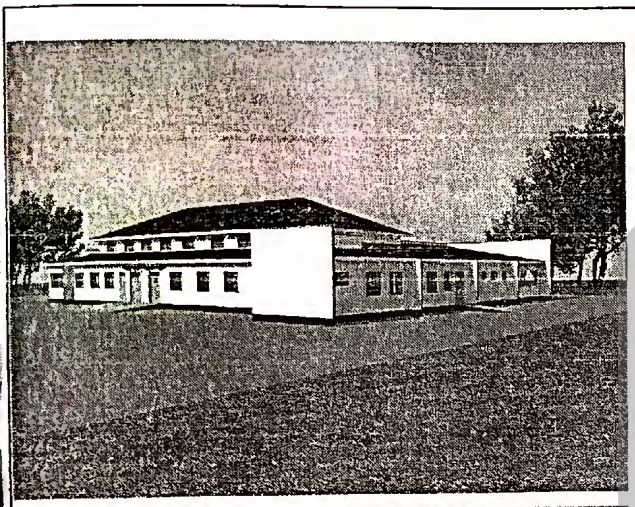
Financier:

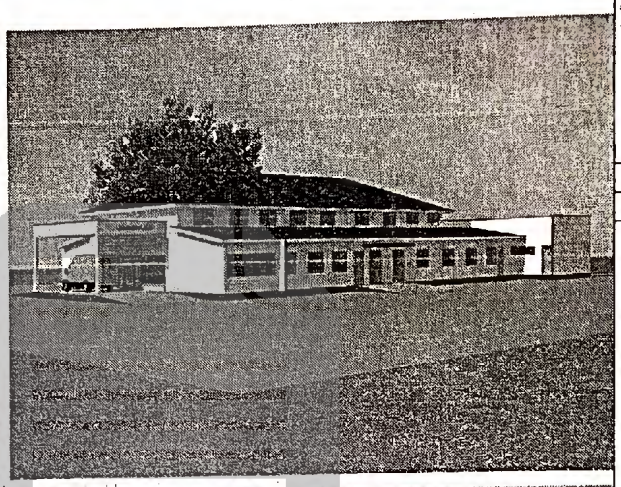
Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community
Development, Gender, Elderly and Children,
P.o. Box, 743, Dodoma.

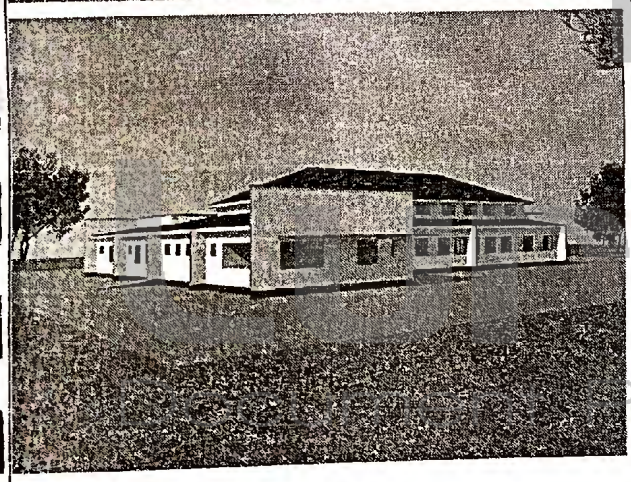
Job title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. ____ BLOCK____

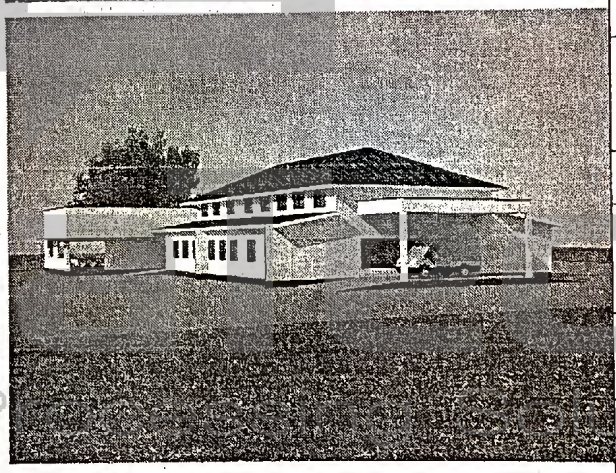
Drawing title

Scale	Designed by: APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.









Notes
All measurements in mm

Revisions

no.	date	description

Client
Permanent Secretary,
Ministry of Health, Community Development,
Gender, Elderly and Children,
p.o box 743,
Dodoma.

Financier:

Consultant:
Building and Engineering Section,
Planning and Policy Department,
Ministry of Health, Community
Development, Gender, Elderly and Children,
P.o. Box 743, Dodoma.

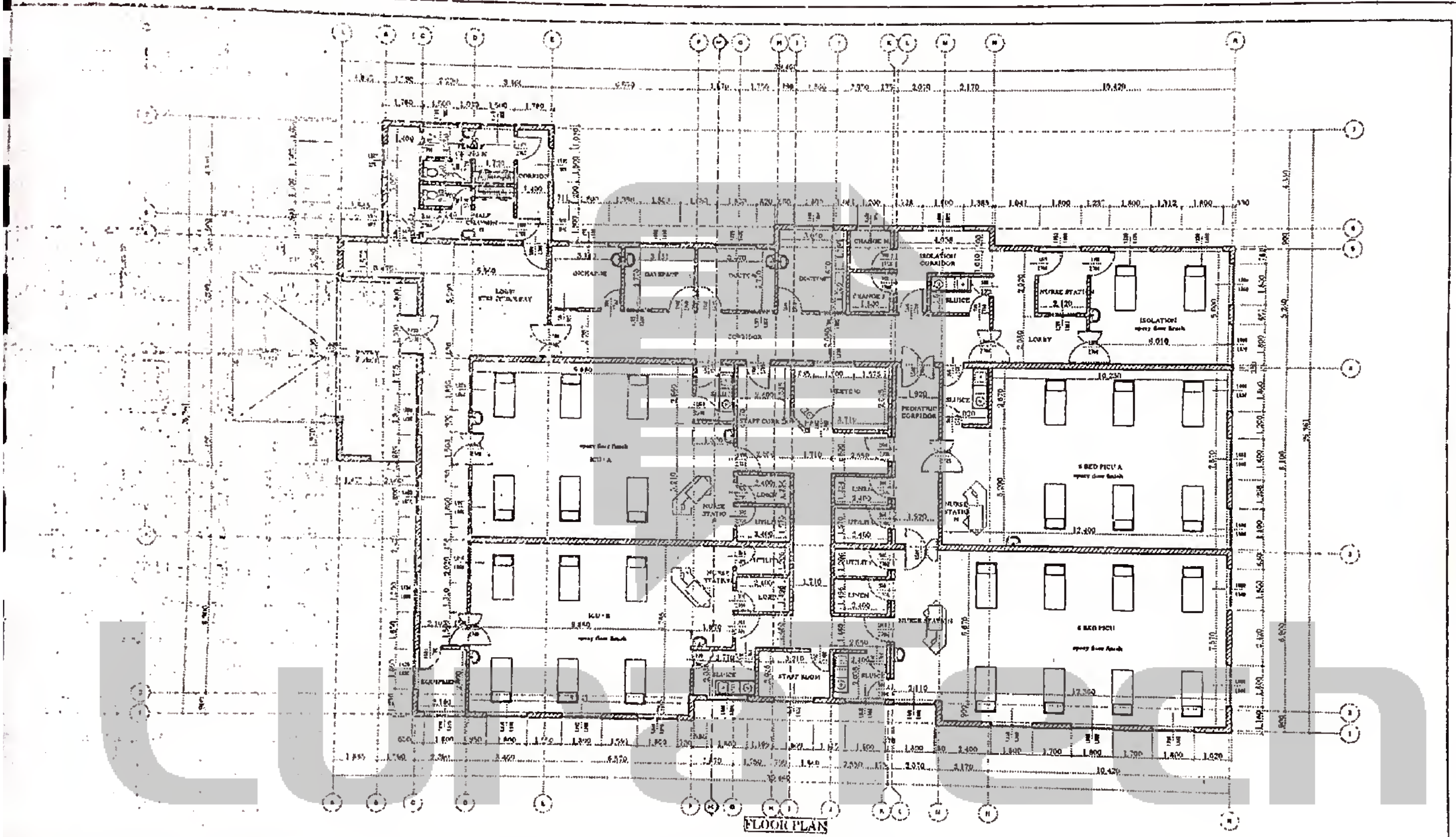
Job title
PROPOSED ZONAL AND REGIONAL REFERRAL EMERGENCE MEDICINE DEPARTMENT TO BE BUILT ON PLOT No. _____ BLOCK_____

Drawing title

Scale	Designed by: APN
Date MAY 2019	Checked by:
Job No.	Drawing No. Rev.

Special Conditions of Contract (SCC)

SCC Clause	GCC Clause	Description
1	1.1	The Employer is The Medical Officer In charge, P. O. Box 449, Mpanda.
		Contractor name and address The Contractor: ***Regional Manager,*** ***Tanzania Buildings Agency,*** ***P.O.BOX 152,*** *Mpanda.*
		The Adjudicator is to be appointed by National Construction Council of Tanzania (NCC)
		The Defects Liability Period is ***365 days***
		The name and identification number of the Contract is: ME.007/HQ/KRRH/2021/2022/W/01
		The Works consist of **Construction of Intensive care unit and Emergence department at Katavi Regional referral Hospital to be built at Rungwa in Mpanda Municipality.**
		The Start Date shall be .....
		The Intended Completion Date for the whole of the Works shall be: **32 Weeks**
		The site of the works is at;



FLOOR PLAN

Ministry of Health Community Development, Gender, Elderly & Children
Building Unit,
P.O. Box 743,
DODOMA

Approved by

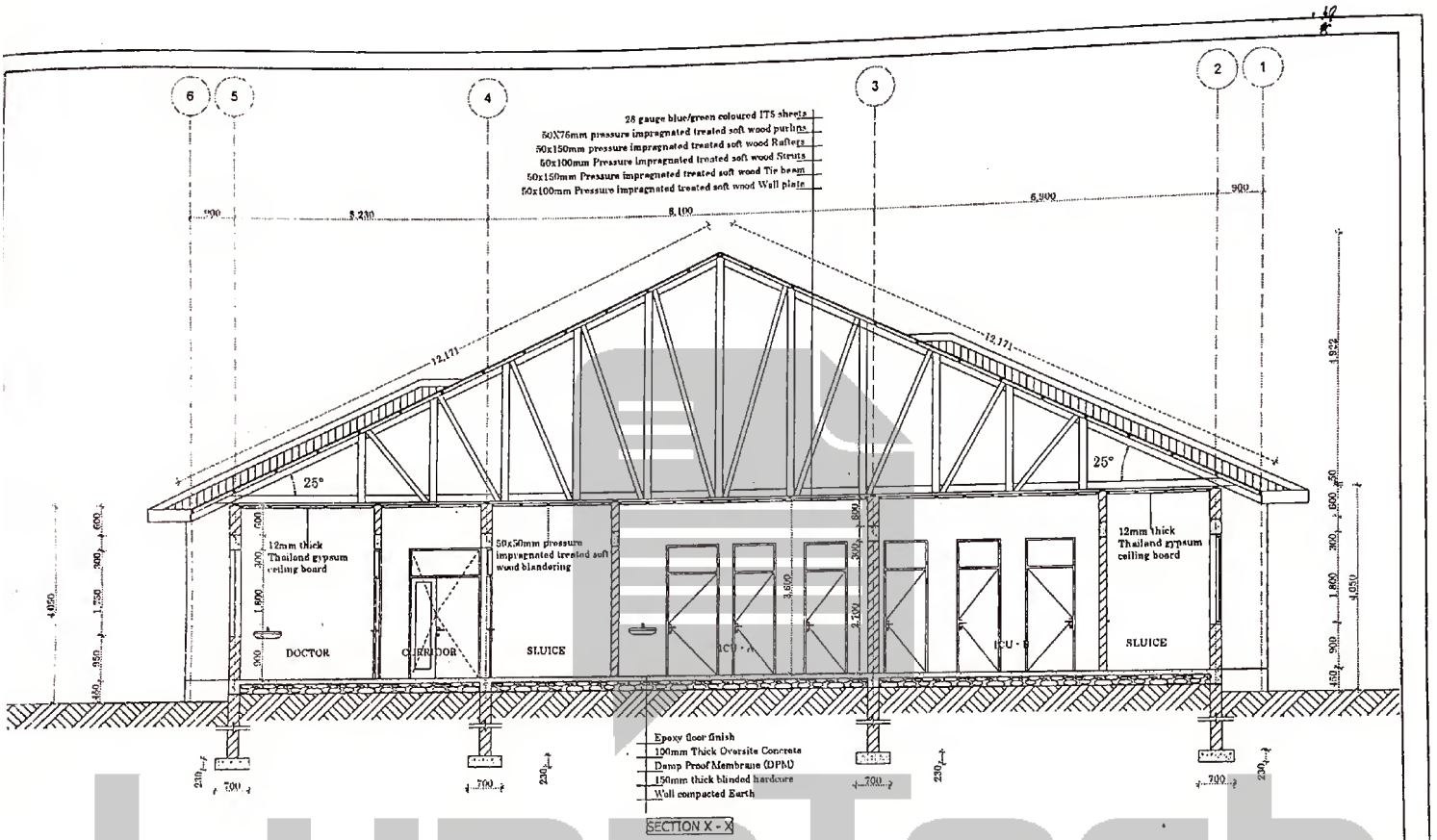
No.	Description	Date

Client: MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN.

Project: PROPOSED INTENSIVE CARE UNIT (ICU) TO BE BUILT AT REGIONAL REFERRAL HOSPITALS.

Drawing title	AS SHOWN
Project number	2021/11/01
Date	01 NOV. 2021
Drawn by	Ayubu P.Nasson
Checked by	Arch. Paul Korosso
Scale	

11/01/2021



Ministry of Health Community Development, Gender, Elderly & Children.
Building Unit
P.O. Box 743,
40478 DODOMA.

Approved by

No.	Description	Date

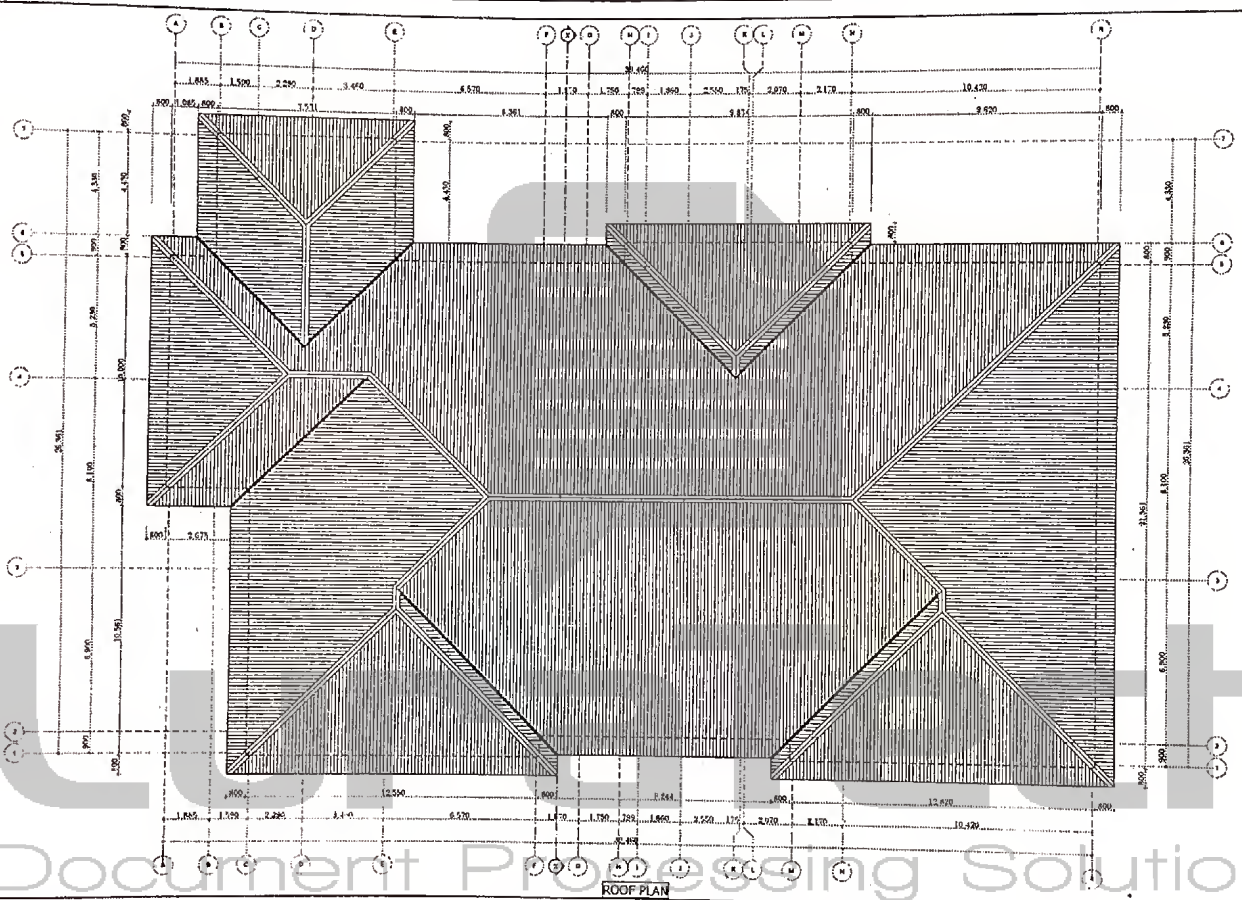
Client
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN.

Project
PROPOSED INTENSIVE CARE UNIT (ICU) TO BE BUILT AT REGIONAL REFERRAL HOSPITALS.

Drawing title
AS SHOWN

Project number	2021/11/01
Date	01 NOV. 2021
Drawn by	Ayubu P.Nasson
Checked by	Arch. Paul Korosso
Scale	

11/01/2021



ROOF PLAN

Ministry of Health Community Development, Gender, Elderly & Children.
Building Unit
P.O. Box 743,
40478 DODOMA.

Approved by

No.	Description	Date

Client
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN.

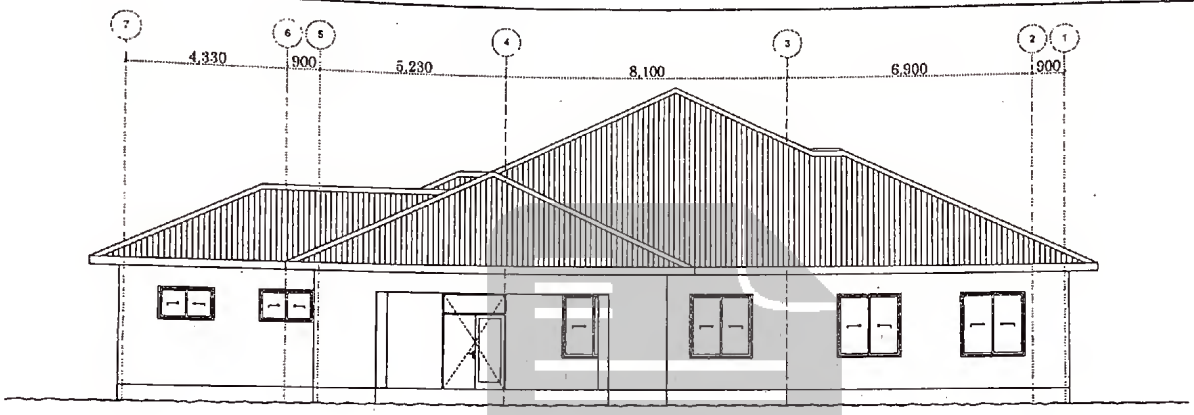
Project
PROPOSED INTENSIVE CARE UNIT (ICU) TO BE BUILT AT REGIONAL REFERRAL HOSPITALS.

Drawing title

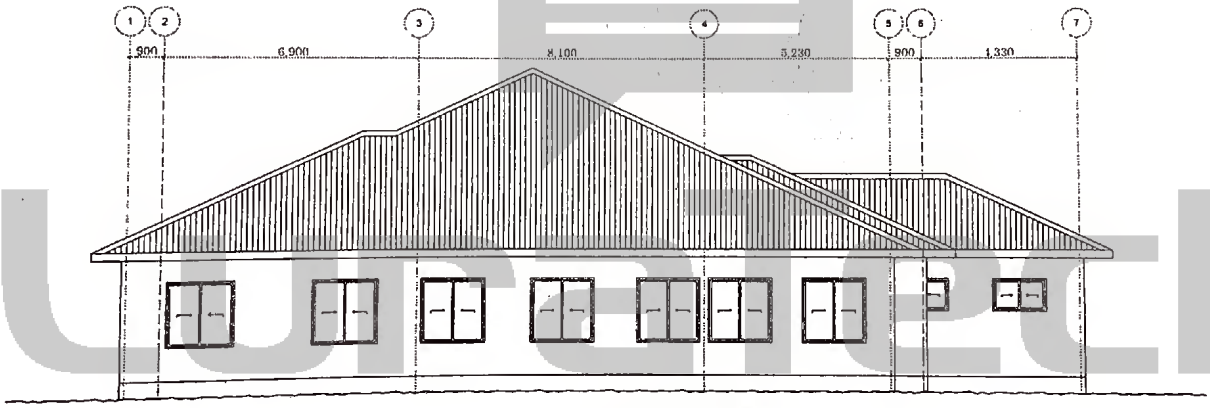
Project number	2021/11/01
Date	01 NOV, 2021
Drawn by	Ayubu P.Nasson
Checked by	Arch. Paul Koroso

Scale: AS SHOWN

11/01/2021



FRONT ELEVATION



REAR ELEVATION

Health Community Development, Gender, Children.
ril
43,
DOMA.

Approved by

No.	Description	Date

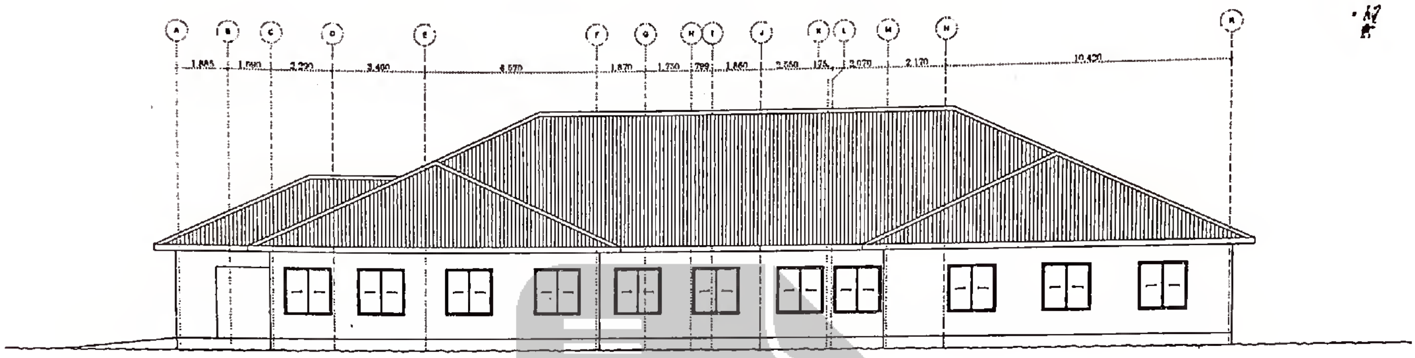
Client
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN.

Project
PROPOSED INTENSIVE CARE UNIT (ICU) TO BE BUILT AT REGIONAL REFERRAL HOSPITALS.

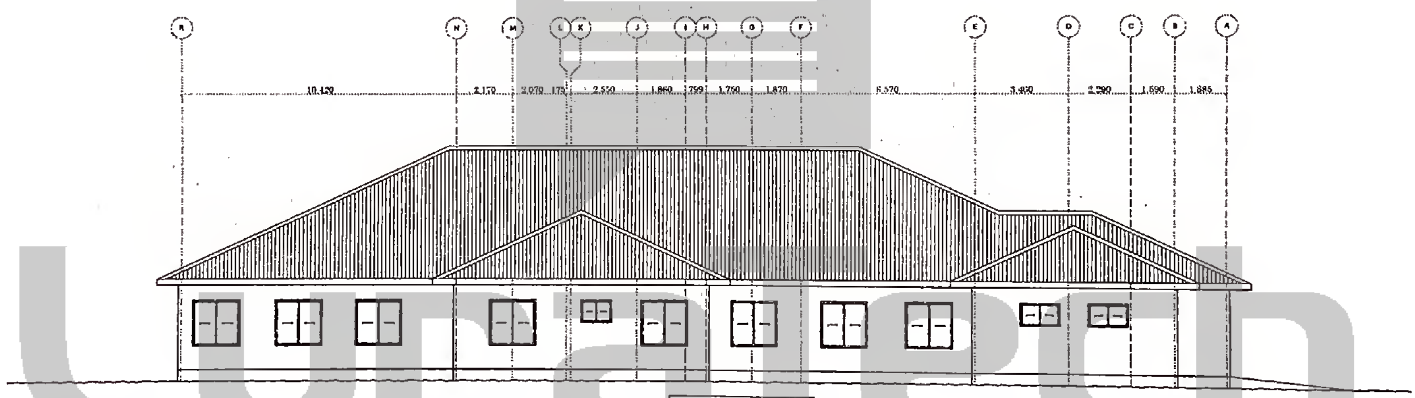
Drawing title
AS SHOWN

Project number	2021/11/01
Date	01 NOV. 2021
Drawn by	Ayubu P.Nasson
Checked by	Arch. Paul Korosso
Scale	

11/01/2021



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

try of Health Community Development, Gender,
ly & Children.
ing Unit
Box 743
DODOMA.

Approved by

No.	Description	Date

Client

MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN.

Project

PROPOSED INTENSIVE CARE UNIT (ICU) TO BE BUILT AT REGIONAL REFERRAL HOSPITALS.

Drawing title

AS SHOWN

Project number	2021/11/01
Date	01 NOV. 2021
Drawn by	Ayubu P.Nasson
Checked by	Arch. Paul Korosso

Scale

11/01/2021

SECTION VIII

PRICED BILL OF QUATINTY (BOQ)

EMERGENCY DEPARTMENT (EMD)

ID	DESCRIPTION	Page Nr	AMOUNT (TZS)
	BILL NR 03: MEASURED WORK -FMD BLOCK		
	MEASURED WORKS SUMMARY		
1	SUBSTRUCTURE	3/1-5	47,796,932.64
2	FRAME	3/2-1	2,954,800.00
3	WALLS AND PARTITIONS	3/3-1	4,715,000.00
4	DOORS	3/4-2	4,274,850.00
5	WINDOWS	3/5 1	2,236,368.00
6	ROOFING	3/6-2	10,680,228.35
7	EXTERNAL WALL FINISHES	3/7-1	3,760,000.00
8	FLOOR FINISHINGS	3/8-1	7,334,600.00
9	INTERNAL WALL FINISHINGS	3/9-1	15,392,000.00
10	CEILING FINISHINGS	3/10-1	16,870,000.00
11	ELECTRICAL		9,984,656.00
12	ICT		5,700,000.00
13	PLUMBING		5,700,000.00
14	GAS		1,500,000.00
	TO GENERAL SUMMARY	TZS	138,899,434.99

MWS03

138,899,135

REGIONAL MANAGER
TANZANIA BUILDINGS AGENCY
P. O. BOX .....
MPANDA KATAVI REGION

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD BLOCK				
	ELEMENT NR 01: SUBSTRUCTURE (ALL PROVISIONAL)				
	EXCAVATION AND EARTHWORK				
	Site Preparation				
	Clear site of small bushes, scrub, undergrowth, trees not exceeding 600mm girth and the like and grub up roots				
A	approximately total area 987m2	1,000	m2	400.00	400,000.00
	Removal of Vegetable Soil				
B	Setting out	1	Item	1,516,500.00	1,516,500.00
	Excavate oversite to remove vegetable soil				
B	average 150 mm deep and remove from site	987	m2	400.00	394,800.00
	General excavation from stripped ground level				
	Excavate foundation trench				
C	up to 1.50 m deep	695	m3	10,000.00	6,954,801 36
	Excavate pit for column bases or the like				
D	up to 1.50 m deep	17	m3	18,000.00	302,400.00
	EXTRA OVER general excavation for -				
E	excavating in rock (Provisional)	100	m3		
	Earth Cutting				
	Excavation over areas by using mechanical excavators/manually including uprooting of vegetation, grass, brush wood and saplings of girth up to 30 cm (measured at a height of 1 m above ground level), cutting the heaps and filling in ditches including transporting and stacking materials suitable for backfilling with in a lead of 50 m within the construction site , complete with all equipment, labour complete as directed by the consultant and Project Structural Engineer.				
F	Over 0 5m but not exceeding 1 5m deep		m3		N/A
	To Collection			TZS	9,568,501.36

	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	Surplus excavated material				
	Remove from site				
A	to tip supplied by the Contractor	198	m3	4,000.00	790,563.75
	Backfilling				
	Selected excavated material				
B	around foundations or the like	436	m3	4,000.00	1,742,331.29
	Disposal of water				
	Allow for keeping all excavations irrespective of depth free from general surface water, spring or running water by pumping, baling or by other means necessary				
C	generally	1	Item		-
	Planking and strutting				
	Allow for the provision and subsequent removal of planking and strutting to uphold and maintain all faces of excavations irrespective of depths and ground conditions				
D	generally	1	Item		-
	Hardcore				
	Hardcore beds; crushed stones; compacted				
E	150mm thick; hardcore bed on compacted natural ground	987	m2	3,000.00	2,961,000.00
	Soil sterilization				
	Aldrin 0.50% solution or other equal and approved anti-termite treatment applied at a rate of 7 litres per m2				
F	to surfaces of compacted hardcore	987	m2	300.00	296,100.00
G	around foundations	610	m	300.00	182,944.79
	CONCRETE WORK				
	Plain in-situ concrete				
	Normal; mix Grade 15 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
H	50mm blinding bed	213	m2	10,000.00	2,126,884.20
	To Collection			TZS	8,099,824.03

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	CONCRETE WORK (CONT'D)				
	Reinforced in-situ concrete				
	Normal; mix Grade 25 at 28 days - 19mm aggregate vibrated strength 25N/mm2 at 28 days				
A	Column bases	2	m3	30,000.00	58,800.00
B	Strip foundations	36	m3	30,000.00	1,076,954.76
C	Starter columns	1	m3	30,000.00	42,000.00
D	Ground beam	18	m3	30,000.00	538,477.38
E	Steps, stair cases and the like	2	m3	30,000.00	50,463.00
F	Ramps, landing and the like	24	m2	18,000.00	432,000.00
G	100 mm horizontal bed	987	m2	18,000.00	17,766,000.00
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers (all provisional)				
	Bars; high yield steel; BS 4446-1989 ; grade 460; type 2 ; ribbed in beams, slabs, walls, columns and the like				
H	irrespective of sizes	4.577	Ton	270,000.00	1,235,790.00
	Fabric mesh reinforcement; BS reference A193				
I	Weighing 3.02 kgs/m2 ; 300 mm side and end laps	1,011	m2	3,000.00	3,033,000.00
	Sawn formwork				
	Vertical or battering surfaces				
J	foundation and column bases	135	m2	4,000.00	541,724.48
K	columns	6	m2	4,000.00	24,729.60
L	ground beams	206	m2	4,000.00	823,200.00
M	to ramps 175mm high	34	m2	4,000.00	134,400.00
	edges of ground floor slabs; not exceeding 150mm high	204	m		
	To Collection			TZS	25,757,539.22

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	Concrete Sundries				
A	500 Gauge polythene damp-proof membrane, laid with 200 mm side and end laps on blinded hardcore to receive concrete	987	m2	300.00	296,100.00
	WALLING				-
	Brickwork and block work				-
	Solid concrete blocks to B.S. 6073 type "A" with compressive cement strength of 7 N/mm 2 at 28 days, bedded and jointed in mortar (1:3)				-
B	230 mm wall	469	m2	5,000.00	2,346,397.90
	Damp-proof courses				-
	Hessian based bituminous felt damp proof course to B.S. 743 type 5A with 200 mm laps bedded and pointed in cement morrar (1:3)				-
C	230 mm wide	287	m	300.00	86,091.60
	Wall Finishing				-
	In-situ finishing to brickwork, block work or concrete base				-
	Two coats render in cement and sand (1:4) with a wood float finish				-
D	15 mm thick to walls	164	m2	5,000.00	821,239.27
	Apply one coat Acrylic Primer, one undercoat Stucco and one coat matt finish as manufactured by Caparol or other approved equal				-
	To plastered or rendered wall surfaces				-
E	walls	164	m2	5,000.00	821,239.27
	PROTECTION				-
F	Allow for protecting the work in this Element	1	Item		-
	To Collection			TZS	4,371,068.03

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	COLLECTION				
	Page	3/1 1			9,568,501.36
	Page	3/1-2			8,099,824.03
	Page	3/1-3			25,757,539.22
	Page	3-1-4			4,371,068.03
	CARRIED TO SUMMARY 3/1 5			TZS	47,796,932.64

NO	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 02 : FRAMES				
	CONCRETE WORK				
	Reinforced in-situ concrete including vibrating around reinforcement				
	Normal; mix Grade 25 at 28 days - 19mm aggregate vibrated strength - 25N/mm2 at 28 days				
A	ring beams/ lintels/slab	30	m3	30,000.00	900,000.00
B	Columns and the like	3	m3	30,000.00	90,000.00
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers (all provisional)				
	Bars; high yield steel; BS 4446-1989 ; grade 460; type 2 ; ribbed in beams, slabs, walls, columns and the like				
C	Irrespective of sizes	2.24	Ton	270,000.00	604,800.00
	Formwork				
	Sawn formwork				
	Sides and soffits of horizontal beams, slab and the like requiring strutting up to 3.50 m above structural support				
D	Sides and soffits of beams and the like	256	m2	5,000.00	1,280,000.00
E	to vertical or battering sides of columns and the like	16	m2	5,000.00	80,000.00
	CARRIED TO SUMMARY			TZS	2,954,800.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 03 : WALLS AND PARTITIONS				
	WALLING				
	Solid concrete blocks to B.S. 6073 type "A" with compressive strength of 7 N/mm 2 at 28 days, bedded and jointed in cement mortar (1:3)				
	solid type: Externally				
A	230mm thick walls	376	m2	5,000.00	1,880,000.00
	Solid type :Internally				
B	150 mm thick walls	567	m2	5,000.00	2,835,000.00
	CARRIED TO SUMMARY			TZS	4,715,000.00

2,954,800.00

ID	DESCRIPTION	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 04: DOORS				
	JOINERY				
	Selected Mkongo or similar approved hardwood timber				
	Frames; to surfaces requiring plugging ; rough grounds				
	Fixing Frame				
A	50 x 150 mm	52	No	25,000.00	1,300,000.00
B	Architraves 25 x 80mm	104	m		
	DOORS				
	Doors ; selected Mkongo or similar and approved hardwood; fixing into timber frames				
	45mm thick door with 150mm wide stiles; 150mm wide top and intermediate rails and 250 mm wide bottom rail and including framing; pair of equal door leaves each of 900x2100mm; fixed glazed fanlight overall size 1800x400mm; 180 deg. Swing ; including all fixing accessories and fittings				
	overall size 3500 x 2500 mm high	1	Nr	30,000.00	30,000.00
D	overall size 1500 x 2500 mm high	10	Nr	30,000.00	300,000.00
E	overall size 1000 x 2500 mm high	25	Nr	30,000.00	750,000.00
F	overall size 1000 x 2100 mm high	12	Nr	30,000.00	360,000.00
	To Collection			TZS	2,740,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	IRON MONGERY				
	All Ironmongery to be Hafele unless otherwise specified				
	Supply and fix the following ironmongery procured from the Hafele or other equal and approved source to aluminium section or timber with suitable screws provided				
A	Hinges 100 x 76 x 2mm; heavy duty brass butt hinges	58.5	pr	5,000.00	292,500.00
B	Mortice lock set; complete	39	Nr	5,000.00	195,000.00
C	150mm high stainless steel kick plates ; max. 900mm wide	25	Pr	5,000.00	125,000.00
	PAINTING AND DECORATING				
	Internal Works				
	Prepare surface and apply one undercoat and two finishing coats Eco-friendly wood varnishes, ordoless and low VOC from approved manufacturer/supplier				
	Timber surfaces				
D	general surfaces over 300mm girth	213	m2	2,500.00	532,350.00
E	frame or the like 100mm to 200mm girth	156	m	2,500.00	390,000.00
	To Collection			TZS	1,534,850.00
	COLLECTION				
	Page			3/4-1	2,740,000.00
	Page			3/4-2	1,534,850.00
	CARRIED TO SUMMARY			TZS	4,274,850.00

ID	DESCRIPTION	QTY	UNIT	RATE	AMOUNT TZS
	BILL NR. 03 MEASURED WORK - CMD				
	ELEMENT NR. 05: WINDOWS				
	METALWORK AND GLAZING				
	Natural silver aluminium, windows ; 45 x 100mm aluminium section framing all framing, mullions and transoms as required; including 5mm clear glass; assembling with stainless steel screws to joints, and fixing to concrete or blockwork grounds, sealing all round with non-hardening mastic; all standard ironmongery for aluminium sections; glazing beads and rubber gaskets				
A	Overall size 3950mm x 2000mm high	1	Nr	10,000.00	10,000.00
B	Overall size 3085mm x 2000mm high	2	Nr	10,000.00	20,000.00
C	Overall size 1800mm x 1500mm high	1	Nr	10,000.00	10,000.00
D	Overall size 1500mm x 1500mm high	19	Nr	10,000.00	190,000.00
E	Overall size 1500mm x 800mm high	3	Nr	10,000.00	30,000.00
F	Overall size 1310mm x 1500mm high	1	Nr	10,000.00	10,000.00
G	Overall size 1200mm x 1500mm high	9	Nr	10,000.00	90,000.00
H	Overall size 900mm x 1500mm high	2	Nr	10,000.00	20,000.00
I	Overall size 900mm x 800mm high	9	Nr	10,000.00	90,000.00
J	Overall size1800mm x 1200mm high	18	Nr	10,000.00	180,000.00
					650,000.00
	WINDOW GRILLS				
	Supply and fix mild steel window grill comprising of 25x25mm frame made of square hollow mild steel sections, 20x6mm thick flat bars welded together including all materials grinding and polishing all welded conditions to smooth necessary additional surfaces welded to metal rods fixed in the wall, painted				
K	Overall size 3950mm x 2000mm high	1	Nr	10,000.00	10,000.00
L	Overall size 3085mm x 2000mm high	2	Nr	10,000.00	20,000.00
M	Overall size 1800mm x 1500mm high	1	Nr	10,000.00	10,000.00
N	Overall size 1500mm x 1500mm high	19	Nr	10,000.00	190,000.00
P	Overall size1500mm x 800mm high	3	Nr	10,000.00	30,000.00
Q	Overall size 1310mm x 1500mm high	1	Nr	10,000.00	10,000.00
R	Overall size 1200mm x 1500mm high	9	Nr	10,000.00	90,000.00
S	Overall size 900mm x 1500mm high	2	Nr	10,000.00	20,000.00
T	Overall size 900mm x 800mm high	9	Nr	10,000.00	90,000.00
U	Overall size1800mm x 1200mm high	18	Nr	10,000.00	180,000.00
	MOSQUITO GAUZE				
	The following Mosquito netting with their associated beads, and all fixing devices				
	Supply and fix two layers of mosquito net/gauze as specified by Architect				
V	over 300mm wide	143	m²	2,000.00	286,368.00
	CARRIED TO SUMMARY			TZS	2,236,368.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 06				
	ROOF				
	PITCHED ROOF STRUCTURE: **Treated softwood; pressure impregnated; complete with all necessary fixing accessories and fittings**				
A	150 x 50mm. Rafters	511	m	1,200.00	613,030.56
B	150 x 50mm. Bottom chord.	474	m	1,200.00	569,003.82
C	150 x 50mm. Struts.	316	m	1,200.00	378,964.35
D	150 x 50mm. Wall plate.	209	m	1,200.00	250,992.00
E	75x50mm purlins	766	m	1,200.00	919,612.62
	Prime quality softwood; Podocarpus				
F	250 x 25mm. Fascia and barge boards.	195	m	1,200.00	234,360.00
	ROOF COVERINGS				
	Resincot 28 guage IT5 profile colour coated aluminium zinc alloy roof sheeting as manufactured by Aluminium Africa Ltd. ; laid with one corrugation side laps , 75mm. head laps ; fixed with EPDE plastic head colour matched galvanised drive screws to steel Z-purlins at 600 mm centres				
G	roof coverings ; sloping not exceeding 45 degrees from horizontal	1234	m2	5,000.00	6,168,750.00
H	Hip capping; not exceeding 300mm girth	98	m	3,000.00	292,500.00
J	Ridge	56	m	3,000.00	168,750.00
K	Valley	44	m	3,000.00	131,250.00
	Bolts				
L	10mm m.s bolts	185	Nr	700.00	129,500.00
M	12mm m.s bolts	104	Nr	700.00	72,520.00
N	300x 100x 75 mm wide 3mm thick plate cast in concrete	52	Nr	700.00	36,260.00
P	12mm plywood gusset	52	Nr	700.00	36,260.00
			To Collection	TZS	10,001,753.35

NO	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	RAIN WATER GOODS				
A	100mm Diameter PLASTO down pipe, fixing with and including brackets	48	m	3,500.00	168,000.00
B	Extra; swan neck.	12	Nr	3,500.00	42,000.00
C	Extra; Bend	12	Nr	3,500.00	42,000.00
D	Extra; shoe.	12	Nr	3,500.00	42,000.00
	Carrodon Terrain uPvc rainwater gutter and pipework system ; BS 4576 ; white colour ; fascia brackets at 1.8 m centres ; slip in fittings in running length including all accessories				
E	110 mm. uPVC pipe stand off wall brackets clips at 1800mm. Centres	110	m	3,500.00	384,475.00
	PROTECTION				
F	Allow for protecting the work in this Element	1	Item		
	To Collection			T shs	678,475.00
	COLLECTION				
	Page Nr.	3/6-1			10,001,753.35
"	"	3/6-2			678,475.00
	TO BILL NR 03 SUMMARY			TZS	10,680,228.35
	3/6-2				

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 07: EXTERNAL WALL FINISHES				
	IN-SITU FINISHINGS				
	Cement and sand render; 15mm. thick backing coat of cement and sand (1:4) ; steel troweled				
	15mm. one coat work to walls; to concrete or blockwork base ; externally				
A	wall	376	m2	5,000.00	1,880,000.00
	PAINTING AND DECORATING				
	PREPARE SURFACE AND APPLY ONE COAT GOLD STAR, UNIVERSAL PRIMER THINNED 10% ; TWO COATS GOLDSTAR 'WEATHERGUARD PAINT				
	Plastered Walls/Columns; externally				
B	over 300mm girth	376	m2	5,000.00	1,880,000.00
	CARRIED TO SUMMARY			TZS	3,760,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE	AMOUNT
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 08: FLOOR FINISHINGS				
	Supply and install full bodied Porcelain floor tiles as RAK; Non sleepery; natural matt finish ; bedding in premixed thin cement mortar and grouting with coloured sandless tile grout;				
A	400x400mm.x 10mm; 3mm joints straight both ways; to screeded concrete;	987	m2	7,000.00	6,909,000.00
B	150 x 12mm skirting	266	m	1,600.00	425,600.00
	C- tiles or other equal and approved by the Architect; bedding in cement mortar; ramps and the like				
C	generally	24	m2		
	Beds and backing to brickwork, blockwork or concrete base				
	Mortar ; cement and sand (1:4)				
	30 mm. beds, screeded; to floors; level to concrete base				
D	to floors; generally	987	m2		-
E	to Ramp	24	m2		-
F	to skirting, 150mm high	266	m		-
	CARRIED TO SUMMARY			TZS	7,334,600.00

	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 09: INTERNAL WALL FINISHINGS				
	IN-SITU FINISHINGS				
	Cement and sand render; 15mm. thick backing coat of cement and sand (1:4) ; steel troweled finish				
	15mm. one coat work to walls; to concrete or blockwork base ; internally				
A	Wall	1 510	m2	5,000.00	7,550,000.00
	Ceramic wall tiles ; ceramic ; white glazed fixing in premixed tiler's cement and grouting with white cement on completion ; all muPVC edges and trims				
	400 x 400 x 8mm.; 4mm. joints straight both ways; to walls ; to cement and sand rendered and scratched backing				
B	bright white matt ; on new walls	146	m2	7,000.00	1,022,000.00
	Beds and backing; one coat work; cement and sand (1:4); wood floated				
C	12mm Thick backing; to walls; to receive wall tiles.	146	m2		0.00
	PAINTING AND DECORATING				
	Prepare surface and apply one coat alkaline resistant primer, two coats wash and wear silk and two coats anti-fungal wash and wear paint; odorless and low VOC				
	Plastered or rendered surfaces				
D	over 300mm girth	1 364	m2	5,000.00	6,820,000.00
	CARRIED TO SUMMARY			TZS	15,392,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -EMD				
	ELEMENT NR. 10: CEILING FINISHINGS				
	PLAIN SHEET FINISHINGS				
	Moisture resistant gypsum plasterboard BS 1230 Pt. 2•1970 ; tapered edge wallboards fixing with plasterboard self tapping galvanized drive screws ; head holes filled and sanded , taped and scrimmed board joints ; all to receive direct decoration				
	12mm ; butt joints ; to ceilings ; to metal framework base				
A	over 300mm wide; horizontal ceilings not exceeding 3.50 m above floor level	987	m2	5,000.00	4,935,000.00
	Cornices and Edge Trims				
B	44x22mm double rebated SA Pine Cornice, primed and painted to specification	333	m	2,500.00	831,250.00
	SOFTWOOD BRANDERING				
	Framework				
	Treated softwood concealed framework at 600 mm centres both ways for mounting gyproc or fibre cement sheeting ; all bracing and pinning together ; plugging and screwing framework at perimeter;				
C	50x 50mm thick	2,468	m	2,500.00	6,168,750.00
	PAINTING AND DECORATING				
	Prepare surface and apply one coat alkaline resistant primer, two coats wash and wear silk and two coats anti-fungal wash and wear paint				
	Plasterboard surfaces; internal				
	Ceilings				
D	over 300mm girth	987	m2	5,000.00	4,935,000.00
	TO BILL NR 03 SUMMARY			TZS	16,870,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	SERVICES				
	ELECTRICAL INSTALLATION				
	First Fix	1	Item	4,484,656.00	4,484,656.00
	Second Fix			5,500,000.00	5,500,000.00
	PLUMBING INSTALLATIONS				
A	First Fix	1	Item	3,500,000.00	3,500,000.00
	Second Fix	1	Item	3,500,000.00	3,500,000.00
B	ICT				-
	First Fix	1	Item	2,700,000.00	2,700,000.00
	Second Fix	1	Item	3,000,000.00	3,000,000.00
C	GAS	1	m	1,500,000.00	1,500,000.00
	TO BILL NR 03 SUMMARY			TZS	24,184,656.00

INTENSIVE CARE UNIT (ICU)

ID	DESCRIPTION	Page Nr	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICT		
	MEASURED WORKS SUMMARY		
1	SUBSTRUCTURE	3/1-5	40,489,431.43
2	FRAME	3/2-1	2,031,932.49
3	WALLS AND PARTITIONS	3/3-1	3,035,000.00
4	DOORS	3/4-2	4,532,500.00
5	WINDOWS	3/5-1	820,000.00
6	ROOFING	3/6-2	9,096,032.72
7	EXTERNAL WALL FINISHES	3/7-1	2,420,000.00
8	FLOOR FINISHINGS	3/8-1	5,141,003.64
9	INTERNAL WALL FINISHINGS	3/9-1	9,959,100.00
10	CEILING FINISHINGS	3/10-1	11,789,272.73
11	ELECTRICALINSTALLATION		7,500,000.00
12	ICT		3,700,000.00
13	PLUMBING		5,000,000.00
14	GAS		3,000,000.00
	TO GENERAL SUMMARY	TZS	108,514,273.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICUBLOCK				
	ELEMENT NR 01: SUBSTRUCTURE (ALL PROVISIONAL)				
	EXCAVATION AND EARTHWORK				
	Site Preparation				
	Clear site of small bushes, scrub, undergrowth, trees not exceeding 600mm girth and the like and grub up roots				
A	approximately total area 433m2	2,000	Item	400.00	800,000.00
	Removal of Vegetable Soil				
	Excavate oversite to remove vegetable soil				
B	average 150 mm deep and remove from site	746	m2	1,000.00	745,920.00
	General excavation from stripped ground level				-
	Excavate foundation trench				-
C	up to 1.50 m deep	301	m3	10,000.00	3,014,241.36
	Excavate pit for column bases or the like				-
D	up to 1.50 m deep	7	m3	10,000.00	67,200.00
	EXTRA OVER general excavation for:-				-
E	excavating in rock (Provisional)	43	m3		-
	Earth Cutting				-
	Excavation over areas by using mechanical excavators/manually including uprooting of vegetation, grass, brush wood and saplings of girth up to 30 cm (measured at a height of 1 m above ground level), cutting the heaps and filling in ditches including transporting and stacking materials suitable for backfilling with in a lead of 50 m within the construction site , complete with all equipment, labour complete as directed by the consultant and Project Structural Engineer.				-
F	Over 0.5m but not exceeding 1.5m deep		m3		-
	To Collection				4,627,361.36

ID	DESCRIPTIONS	QTY	UNIT		
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	Surplus excavated material				
	Remove from site				
A	to tip supplied by the Contractor	158	m3		
	Backfilling				
	Selected excavated material				
B	around foundations or the like	88	m3		
	Disposal of water				
	Allow for keeping all excavations irrespective of depth free from general surface water, spring or running water by pumping, baling or by other means necessary				
C	generally	1	Item		
	Planking and strutting				
	Allow for the provision and subsequent removal of planking and strutting to uphold and maintain all faces of excavations irrespective of depths and ground conditions				
D	generally	1	Item		
	Hardcore				
	Hardcore beds; crushed stones; compacted				
E	150mm thick; hardcore bed on compacted natural ground	678	m2	3,000.00	2,034,327.27
	Soil sterilization				
	Aldrin 0.50% solution or other equal and approved anti-termite treatment applied at a rate of 7 litres per m2				
F	to surfaces of compacted hardcore	678	m2	300.00	203,432.73
G	around foundations	105	m	300.00	31,505.89
	CONCRETE WORK				
	Plain in-situ concrete				
	Normal; mix Grade 15 at 28 days - 19mm aggregate vibrated strength 15N/mm2 at 28 days				
H	50mm blinding bed	195	m2	10,000.00	1,950,772.60
	To Collection			TZS	4,220,038.49

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	CONCRETE WORK (CONT'D)				
	Reinforced in-situ concrete				
	Normal; mix Grade 25 at 28 days - 19mm aggregate vibrated strength 25N/mm2 at 28 days				
A	Column bases	2	m3	30,000.00	58,800.00
B	Strip foundations	30	m3	30,000.00	914,666.76
C	Starter columns	1	m3	30,000.00	42,000.00
D	Ground beam	15	m3	30,000.00	457,333.38
E	Steps, stair cases and the like	2	m3	30,000.00	50,463.00
F	Ramps, landing and the like	14	m2	30,000.00	420,000.00
G	100 mm horizontal bed	678	m2	30,000.00	20,343,272.73
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers (all provisional)				
	Bars; high yield steel; BS 4446-1989 ; grade 460; type 2 ; ribbed in beams, slabs, walls, columns and the like				
H	irrespective of sizes	3.927	Kg	270,000.00	1,060,290.00
	Fabric mesh reinforcement; BS reference :A193				
I	Weighing 3.02 kgs/m2 ; 300 mm. side and end laps	692	m2	3,000.00	2,076,327.27
	Sawn formwork				
	Vertical or battering surfaces				
J	foundation and column bases	114	m2	4,000.00	455,170.88
K	columns	6	m2	4,000.00	24,729.60
L	ground beams	148	m2	4,000.00	591,136.00
M	to ramps 175mm high	20	m2	4,000.00	78,400.00
	edges of ground floor slabs; not exceeding 150mm high	157	m	4,000.00	629,440.00
	To Collection			TZS	27,202,029.62

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	Concrete Sundries				
A	500 Gauge polythene damp-proof membrane, laid with 200 mm side and end laps on blinded hardcore to receive concrete	678	m2	300.00	203,432.73
	WALLING				
	Brickwork and block work				
	Solid concrete blocks to B.S. 6073 type "A" with compressive cement strength of 7 N/mm 2 at 28 days, bedded and jointed in mortar (1:3)				
B	230 mm wall	364	m2	5,000.00	1,822,181.90
	Damp-proof courses				
	Hessian based bituminous felt damp proof course to B.S. 743 type 5.A with 200 mm laps bedded and pointed in cement mortar (1:3)				
C	230 mm wide	228	m	5,000.00	1,138,860.00
	Wall Finishing				
	In-situ finishing to brickwork, block work or concrete base				
	Two coats render in cement and sand (1:4) with a wood float finish				
D	15 mm thick to walls	128	m2	5,000.00	637,763.67
	Apply one coat Acrylic Primer, one undercoat Stucco and one coat matt finish as manufacrured by Caparol or other approved equal				
	To plastered or rendered wall surfaces				
E	walls	128	m2	5,000.00	637,763.67
	PROTECTION				
F	Allow for protecting the work in this Element	1	Item		
	To Collection			TZS	4,440,001.96

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	ELEMENT NR 01: SUBSTRUCTURE CONT'D				
	COLLECTION				
	Page	3/1-1			4,627,361.36
	Page	3/1-2			4,220,038.49
	Page	3/1-3			27,202,029.62
	Page	3-1-4			4,440,001.96
	CARRIED TO SUMMARY 3/1-5			TZS	40,489,431.43

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 02 : FRAMES				
	CONCRETE WORK				
	Reinforced in-situ concrete including vibrating around reinforcement				
	Normal; mix Grade 25 at 28 days - 19mm aggregare vibrated strength 25N/mm2 at 28 days				
A	ring beams/ lintels	16	m3	30,000.00	480,000.00
B	Columns and the like	1	m3	30,000.00	30,000.00
	REINFORCEMENT				
	Reinforcement including bends, hooks, tying wire, distance blocks and ordinary spacers (all provisional)				
	Bars; high yield steel; BS 4446-1989 ; grade 460; type 2 ; ribbed in beams, slabs, walls, columns and the like				
C	Irrespective of sizes	1	kg	270,000.00	367,200.00
	Formwork				
	Sawn formwork				
	Sides and soffits of horizontal beams, slab and the like requiring strutting up to 3.50 m above structural support				
D	Sides and soffits of beams and the like	220	m2	5,000.00	1,099,532.49
E	to vertical or battering sides of columns and the like	11	m2	5,000.00	55,200.00
	CARRIED TO SUMMARY			TZS	2,031,932.49

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 03 : WALLS AND PARTITIONS				
	WALLING				
	Solid concrete blocks to B.S. 6073 type "A" with compressive strength of 7 N/mm 2 at 28 days, bedded and jointed in cement mortar (1:3)				
	solid type: Externally				
A	230mm thick walls	242	m2	5,000.00	1,210,000.00
	Solid type :Internally				
B	150 mm thick walls	365	m2	5,000.00	1,825,000.00
	CARRIED TO SUMMARY			TZS	3,035,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 04: DOORS				
	JOINERY				
	Selected Mkongo or similar approved hardwood timber				
	Frames; to surfaces requiring plugging ; rough grounds				
	Frame				
A	50 x 150 mm	50	m	25,000.00	1,250,000.00
B	Architraves 25 x 80mm	100	m		-
	DOORS				
	Doors ; selected Mkongo or similar and approved hardwood; fixing into timber frames				
	45mm thick door with 150mm wide stiles; 150mm wide top and intermediate rails and 250 mm wide bottom rail and including framing; pair of equal door leaves each of 900x2100mm, fixed glazed fanlight overall size 1800x400mm; 180 deg. Swing ; including all fixing accessories and fittings				
C	overall size 1800 x 2500 mm high	10	Nr	30,000.00	300,000.00
E	overall size 1000 x 2500 mm high	40	Nr	30,000.00	1,200,000.00
	To Collection			TZS	2,750,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	IRON MONGERY				
	All Ironmongery to be Hafele unless otherwise specified				
	Supply and fix the following ironmongery procured from the Hafele or other equal and approved source to aluminium section or timber with suitable screws provided				
A	Hinges 100 x 76 x 2mm; heavy duty brass butt hinges	75	pr	5,000.00	375,000.00
B	Mortice lock set; complete	50	Nr	5,000.00	250,000.00
C	150mm high stainless steel kick plates ; max. 900mm wide	20	Pr	5,000.00	100,000.00
	PAINTING AND DECORATING				
	Internal Works				
	Prepare surface and apply one undercoat and two finishing coats Eco-friendly wood varnishes, ordoless and low VOC from approved manufacturer/supplier				
	Timber surfaces				
D	general surfaces over 300mm girth	273	m2	2,500.00	682,500.00
E	frame or the like 100mm to 200mm girth	150	m	2,500.00	375,000.00
	To Collection			TZS	1,782,500.00
	COLLECTION				
	Page			3/4-1	2,750,000.00
	Page			3/4-2	1,782,500.00
	CARRIED TO SUMMARY			TZS	4,532,500.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR, 05: WINDOWS				
	METALWORK AND GLAZING				
	Natural silver aluminium win dows ; 45 x 100mm aluminium section framing all framing, mullions and transomes as required; including 5mm clear glass; assembling with stainless steel screws to joints and fixing to concrete or blockwork grounds, sealing all round with non-hardening mastic; all standard ironmongery for aluminium sections; glazing beads and rubber gaskets				
A	Overall size 1800x 1500mm high	31	Nr	10,000.00	310,000.00
B	Overall size 1500x 1500mm high	6	Nr	10,000.00	
C	Overall size 900x800mm high	7	Nr	10,000.00	70,000.00
	WINDOW GRILLS				
	Supply and fix mild steel window grill comprising of 25x25mm frame made of square hollow mild steel sections, 20x4mm thick flat bars welded together including all materials grinding and polishing all welded conditions to smooth necessary additional surfaces welded to metal rods fixed in the wall, painted				
D	Overall size 1800x 1500mm high	31	Nr	10,000.00	310,000.00
E	Overall size 1500x 1500mm high	6	Nr	10,000.00	60,000.00
F	Overall size 900x800mm high	7	Nr	10,000.00	70,000.00
	MOSQUITO GAUZE				
	The following Mosquito netting with their associated beads, and all fixing devices				
	Supply and fix two layers of mosquito net/gauze as specified by Architect				
G	over 300mm wide	83	m2		
	CARRIED TO SUMMARY			TZS	820,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 06				
	ROOF				
	PITCHED ROOF STRUCTURE: Treated softwood; pressure impregnated; complete with all necessary fixing accessories and fittings				
A	150 x 50mm. Rafters	412	m	1,200.00	494,379.49
B	150 x 50mm. Bottom chord.	382	m	1,200.00	458,874.05
C	150 x 50mm. Struts.	255	m	1,200.00	305,616.41
D	150 x 50mm. Wall plate.	183	m	1,200.00	219,240.00
E	75x50mm purlins	717	m	1,200.00	860,282.77
	Prime quality softwood; Podocarpus				
F	250 x 25mm. Fascia and barge boards.	158	m	1,200.00	189,000.00
	ROOF COVERINGS				
	Resincot 28 guage IT5 profile colour coated aluminium zinc alloy roof sheeting as manufactured by Aluminium Africa Ltd. ; laid with one corrugation side laps ; 75mm. head laps ; fixed with EPDE plastic head colour matched galvanised drive screws to steel Z-purlins at 600 mm centres				
G	roof coverings ; sloping nor exceeding 45 degrees from horizontal	1053	m2	5,000.00	5,265,000.00
H	Hip capping; nor exceeding 300mm girth	78	m	3,000.00	234,000.00
J	Ridge	45	m	3,000.00	135,000.00
K	Valley	35	m	3,000.00	105,000.00
	Bolts				
L	10mm m.s bolts	207	Nr	700.00	145,040.00
M	12mm m.s bolts	104	Nr	700.00	72,520.00
N	300x 100x 75 mm wide 3mm thick plate cast in concrete	52	Nr	700.00	36,260.00
P	12mm plywood gusset	52	Nr	700.00	36,260.00
		To Collection		TZS	8,556,472.72

ID	DESCRIPTIONS	QTY	UNIT	RATE	AMOUNT
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 08: FLOOR FINISHINGS				
	Supply and install full bodied Porcelain floor tiles as RAK; Non sleepery; natural matt finish ; bedding in premixed thin cement mortar and grouting with coloured sandless tile grout;				
A	400x400mm.x 10mm; 3mm joints straight both ways; to screeded concrete;	678	m2	7,000.00	4,746,763.64
B	150 x 12mm skirting	246	m	1,600.00	394,240.00
	C- tiles or other equal and approved by the Architect; bedding in cement mortar; ramps and the like				
C	generally	14	m2		
	Beds and backing to brickwork, blockwork or concrete base				
	Mortar ; cement and sand (1:4)				
	30 mm. beds, screeded; to floors; level to concrete base				
D	to floors; generally	678	m2		-
E	to Ramp	14	m2		-
F	to skirting, 150mm high	246	m		-
	CARRIED TO SUMMARY			TZS	5,141,003.64

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 07: EXTERNAL WALL FINISHES				
	IN-SITU FINISHINGS				
	Cement and sand render; 15mm. thick backing coat of cement and sand (1:4) ; steel troweled				
	15mm. one coat work to walls; to concrete or blockwork base ; externally				
A	wall	242	m2	5,000.00	1,210,000.00
	PAINTING AND DECORATING				
	PREPARE SURFACE AND APPLY ONE COAT GOLD STAR, UNIVERSAL PRIMER THINNED 10% ; TWO COATS GOLDSTAR 'WEATHERGUARD PAINT				
	Plastered Walls/Columns; externally				
B	over 300mm girth	242	m2	5,000.00	1,210,000.00
	CARRIED TO SUMMARY			TZS	2,420,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 09: INTERNAL WALL FINISHINGS				
	IN-SITU FINISHINGS				
	Cement and sand render; 15mm. thick backing coat of cement and sand (1:4) ; steel troweled finish				
	15mm. one coat work to walls; to concrete or blockwork base ; internally				
A	Wall	972	m2	5,000.00	4,860,000.00
	Ceramic wall tiles ; ceramic ; white glazed fixing in premixed tiler's cement and grouting with white cement on completion ; all muPVC edges and trims				
	400 x 400 x 8mm.; 4mm. joints straight both ways; to walls ; to cement and sand rendered and scratched backing				
B	bright white matt ; on new walls	120	m2	7,000.00	836,850.00
	Beds and backing; one coat work; cement and sand (1:4); wood floated				
C	12mm Thick backing; to walls; to receive wall tiles.	120	m2		0.00
	PAINTING AND DECORATING				
	Prepare surface and apply one coat alkaline resistant primer, two coats wash and wear silk and two coats anti-fungal wash and wear paint; odorless and low VOC				
	Plastered or rendered surfaces				
D	over 300mm girth	852	m2	5,000.00	4,262,250.00
	CARRIED TO SUMMARY			TZS	9,959,100.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	SERVICES				
	ELECTRICAL INSTALLATION				
	First Fix	1	Item	3,500,000.00	3,500,000.00
	Second Fix			4,000,000.00	4,000,000.00
	PLUMBING INSTALLATIONS				
A	First Fix	1	Item	2,500,000.00	2,500,000.00
	Second Fix	1	Item	2,500,000.00	
B	ICT				
	First Fix	1	Item	1,700,000.00	1,700,000.00
	Second Fix	1	Item	2,000,000.00	2,000,000.00
C	GAS	1	m	3,000,000.00	3,000,000.00
	TO BILL NR 03 SUMMARY			TZS	16,700,000.00

ID	DESCRIPTIONS	QTY	UNIT	RATE (TZS)	AMOUNT (TZS)
	BILL NR. 03: MEASURED WORK -ICU				
	ELEMENT NR. 10: CEILING FINISHINGS				
	PLAIN SHEET FINISHINGS				
	Moisture resistant gypsum plasterboard BS 1230 Pt. 2 1970 ; tapered edge wallboards fixing with plasterboard self tapping galvanized drive screws ; head holes filled and sanded ; taped and scrimmed board joints ; all to receive direct decoration				
	12mm ; butt joints ; to ceilings ; to metal framework base				
A	over 300mm wide; horizontal ceilings not exceeding 3.50 m above floor level	678	m2	5,000.00	3,390,545.45
	Cornices and Edge Trims				
B	44x22mm double rebated SA Pine Cornice, primed and painted to specification	308	m	2,500.00	770,000.00
	SOFTWOOD BRANDERING				
	Framework				
	Treated softwood concealed framework at 600 mm centres both ways for mounting gyproc or fibre cement sheeting ; all bracing and pinning together ; plugging and screwing framework at perimeter;				
C	50x 50mm thick	1,695	m	2,500.00	4,238,181.82
	PAINTING AND DECORATING				
	Prepare surface and apply one coat alkaline resistant primer, two coats wash and wear silk and two coats anti-fungal wash and wear paint				
	Plasterboard surfaces; internal				
	Ceilings				
D	over 300mm girth	678	m2	5,000.00	3,390,545.45
	TO BILL NR 03 SUMMARY			TZS	11,789,272.73

SECURITY DECLARATION FORM

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WORKS AND TRANSPORT
TANZANIA BUILDINGS AGENCY

Telegrams " **MAJENGO" Katavi**
Telephone: **+255 737 205 906/7**
Fax: **+255 736 607 490**
Email: **rm.katavi@tba.go.tz**

Regional Manager's Office
P. O. Box 152,
MPANDA,
KATAVI.

Ref. No: GB/TBA/KTV/64/581/03/93

Date: 07th Feb, 2022

TENDER SECURING DECLARATION

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Tender Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Purchaser for the period of time to be 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) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Signed:.....

In the capacity of ..... TANZANIA BUILDINGS AGENCY

Name ..... REGIONAL MANAGER TANZANIA BUILDINGS AGENCY P. O. BOX MPANDA-KATAVI REGION

Dated on ..... 07 day of 02/2022

SECTION XI

ANTI BRIBERY MEMORANDAM

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WORKS AND TRANSPORT
TANZANIA BUILDINGS AGENCY

Telegrams " **MAJENGO" Katavi**
Telephone: **+255 737 205 906/7**
Fax: **+255 736 607 490**
Email: **rm.katavi@tba.go.tz**

Ref. No: GB/TBA/KTV/64/581/03/92

Regional Manager's Office
P. O. Box 152,
MPANDA,
KATAVI.

Date: 07th Feb, 2022

MEMORANDUM

(Regulation 78(2) of the Public Procurement Regulations, 2013 –Government Notice No.446 Of 2013 as amended in 2016.)

This company **Tanzania Buildings Agency** places importance on competitive tendering taking place on the basis that is, free, fair competitive and not open to abuse. It is pleased to confirm that we will not offer or facilitate directly or indirectly any improper inducement or reward to any public officer their relation or business associates, in connection with this tender or in the subsequent performance of the contract if it is successful.

This company has an Anti-Bribery Policy/Code of Conduct and a Compliance Program which includes all reasonable steps necessary to assure that the No bribery commitment given in this statement will be complied by its managers and employees as well as by the third parties working with this company on the public sector projects or contract including the agents, consultant, consortium partners, sub-contractors and suppliers. Copies of our Anti-Bribery Policy/Code of Conduct and Compliance Program are attached.

Authorized Signature: .....

Name & Title of Signatory: Arch. Henrico Banati, **Ag. REGIONAL MANAGER**

Name of Bidder: **TANZANIA BUILDINGS AGENCY**

Address: **P.O. Box 152, Mpanda.**

REGIONAL MANAGER TANZANIA BUILDINGS AGENCY P.O. BOX 152 MPANDA-KATAVI REGION

SECTION XII

SPECIAL POWER OF ATTORNEY

SPECIAL POWER OF ATTORNEY

THAT BY THIS POWER OF ATTORNEY given on this 15TH, **day of** FEBRUARY, **2022**

We **Tanzania Buildings Agency (TBA)**, a Government owned Agency under the Ministry of Works and Transport **(MoWT),** whose Headquarter Office is located along Sokoine Drive Dar es Salaam Opposite Karimjee Hall, of P.O. Box 9542 Dar es Salaam **DO HEREBY APPOINT** and **NOMINATE ARCH. HENRICO BAHATI AG. REGIONAL MANAGER OF TBA P. O BOX 152, KATAVI, TANZANIA** be our Attorney and act with full power and for our commitment construction service in respect of **"PROPOSED CONSTRUCTION OF ICU AND EMD BUILDINGS OF KATAVI REGIONAL HOSPITAL AT KATAVI."** to do (either or all of) the following acts:-

1. To sign, execute, endorse all documents related to the above project including signing contract;
2. To negotiate contracts for works/services;
3. To open and close accounts for the above project only;
4. To do any acts or abstain from doing any act which would otherwise be done or abstained from being done by myself;
5. To commence any action(s), suit(s), or defend us in any actions;
6. To do all acts, deeds and things that the said Attorney considers necessary or proper for or in connection with the preparation, execution and award of the said tender as fully and effectually in all respects as the Company would have done.
7. **AND GENERALLY,** to execute and do all such deeds and things which they shall deem necessary or appropriate with the same effect as if we had done, execute or performed it ourselves in relation to the above named projects.

   THAT, the said **ARCH. HENRICO BAHATI,** undertake to be bound by such acts or abstinences as aforesaid.

   This Power of Attorney is valid until the conclusion of the mentioned projects herein.

IN WITNESS HEREOF, I am entitled to sign for and on behalf of **TANZANIA BUILDINGS AGENCY** this Power of Attorney on this 15TH Day of FEBRUARY 2022.

SIGNED with the **COMMON SEAL** of the

TANZANIA BUILDINGS AGENCY

In my presence this 16TH Day of FEBRUARY 2022

SEAL OF DONOR

Name: **ARCH. DAUD W. KONDORO,**
Signature: ____________
Postal Address: **P. O. Box 9542,**
DAR ES SALAAM.
Designation: **CHIEF EXECUTIVE.**

Name: **ANGELICA LUBANGO,**
Signature: ____________
Postal Address: **P. O. Box 9542,**
DAR ES SALAAM.
Qualification: **Ag. MANAGER OF LEGAL SERVICES**

ACKNOWLEDGEMENT

I **ARCH. HENRICO BAHATI** do hereby acknowledge and accept to be Attorney of the said Tanzania Building Agency (TBA) under the terms and conditions contained in this **POWER OF ATTORNEY** and I promise to perform and discharge my duties as the lawfully appointed Attorney faithfully and honestly.

SIGNED AND DELIVERED by the said
ARCH. HENRICO BAHATI, who is
Personally Known to me/ identified to me
By ____________
The latter being known to me personally
This 16TH FEBRUARY 2022

DONEE

BEFORE ME
Name: TARAJAH MWASANYAMBA
Signature: ____________
Postal Address: P.O. BOX 1338, DSM
Qualification: **COMMISSIONER FOR OATHS/ ADVOCATE**

TANZANIA BUILDINGS AGENCY

In my presence this ...14TH... Day of ...FEBRUARY... 2022

SEAL OF DONOR

Name: **ARCH. DAUD W. KONDORO,**
Signature: ____________
Postal Address: **P. O. Box 9542,**
DAR ES SALAAM.
Designation: **CHIEF EXECUTIVE.**

Name: **ANGELICA LUBANGO,**
Signature: ____________
Postal Address: **P. O. Box 9542,**
DAR ES SALAAM.
Qualification: **Ag. MANAGER OF LEGAL SERVICES**

ACKNOWLEDGEMENT

I **ARCH. HENRICO BAHATI** do hereby acknowledge and accept to be Attorney of the said Tanzania Building Agency (TBA) under the terms and conditions contained in this **POWER OF ATTORNEY** and I promise to perform and discharge my duties as the lawfully appointed Attorney faithfully and honestly.

SIGNED AND DELIVERED by the said
ARCH. HENRICO BAHATI, who is
Personally Known to me/ identified to me
By____________
The latter being known to me personally
This...14TH FEBRUARY 2022...

DONEE

BEFORE ME

Name: TARATAN MWAKASITYAMBA
Signature: ____________
Postal Address: P.O. BOX 1338, DSM
Qualification: **COMMISSIONER FOR OATHS/ ADVOCATE**