

# Tender Announcement

Advertisement: **QC/2026/26**

Date: 25/03/2026

Qatar Charity office in (country) announces a practice according to the information provided below:

Tender #	A brief statement of the required items, works or services	Order classification	Requested number of documents	Temporary insurance	Cost of tender documents	Closing date
QC/2026/29	Constructing and Furnishing of 200 Sqm Mosque in Mwanza	200 sqm Mosque	Two documents	N/A	N/A	Date: 01/04/2026 Time: 1700HRS

## About The Practice :

It invites your respected company specialized in this field to participate by submitting their bid, according to the following conditions:

- 1-Tender documents can be downloaded through attachment provided through email.
- 2- The bid shall be submitted through the Email to [qctanzania@qcharity.org](mailto:qctanzania@qcharity.org)
- 3- Qatar charity is under no obligation to accept the lowest price of any offer.

4- The last date for submitting bids is on the date of 01<sup>st</sup> April 2026, and any bid received after this time will not be considered.

5- All personal data submitted in response to this tender will be processed in accordance with the Personal Data Protection Act, 2022 of Tanzania.

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This announcement is considered an integral part and complement to the terms and documents of the tender.

In the event of any inquiries or comments, send an e-mail to

[gctanzania@qcharity.org](mailto:gctanzania@qcharity.org) by 27<sup>th</sup> March sharp.

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## Tender Document

Practice Name	BUILDING AND FURNISHING 200 SQM MOSQUE PROJECT NUMBER 346787
Practice Number	QCTZ/2026/26
Practice Announcement Date	25/03/2026
Practice Closing Date	01/04/2026

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## Instructions for Submitting the Bid

### About Qatar Charity

Qatar Charity is an international, non-governmental organization dedicated to implementing humanitarian and development programs aimed at assisting and empowering people. Qatar Charity operates across more than 50 countries in Africa, Asia, and Europe. Its local programs consider humanitarian and developmental needs without applying a one size fits all approach. Qatar Charity targets countries where its projects are implemented objectively and transparently, in alignment with its core values: humanity, independence, neutrality, nondiscrimination, transparency, professionalism, cooperation, and belonging.-size-fits-all approach. Qatar Charity targets countries where its projects are implemented objectively and transparently, in alignment with its core values: humanity, independence, neutrality, non-discrimination, transparency, professionalism, cooperation, and belonging.

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### 1. General Provisions

- 1.1. Bidders must carefully read these instructions before submitting their responses.
- 1.2. Non-compliance with required conditions will result in bid disqualification.
- 1.3. Bidders must be fully aware of the contractual conditions and commitments before submitting their bid.

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### 2. Purpose

The purpose of this practice is to invite bids for **BUILDING AND FURNISHING 200 SQM MOSQUE**

### Tender Documents

- 2.1. Practice documents include:
  - 2.1.1. Tender Booklet (including annexes).
- 2.2. Qatar Charity reserves the right to amend the Practice Booklet at any time before the submission deadline and before awarding the tender, if necessary. Written notifications will be sent to bidders regarding any amendments. Qatar Charity may extend the submission deadline at its discretion.
- 2.3. All bids, documents, publications, and any copies extracted by any party shall remain the property of Qatar Charity.

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2.4. Communication with Qatar Charity (Office +255222600075) can be made through the following channels for inquiries related to the tender:

2.4.1

<b>Tender / Practice Number</b>		
<b>Inquiry Email</b>	qctanzania@qcharity.org	<b>Phone:</b> +255222600075
<b>Deadline for Inquiries</b>	27/03/2026	<b>Time:</b> 1400HRS

2.5. All inquiries must be written. Qatar Charity may circulate any replies to all bidders. Inquiries must clearly include:

- Tender number
- The question
- Bidder's information

### **3. Bid Submission**

Bidders must review all required documents in the Practice Booklet:

#### **First: Technical Offer**

**Required documents:**

1. Tender booklet and specifications signed and stamped on all pages without any alteration or deletion.
2. Company Memorandum Association.
3. Certificate of Incorporation/Brella Registration
4. Brella Extract
5. Valid Business License / Activity Permit.
6. Copies of passports / IDs of company owners and authorized signatory.

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7. Valid Tax Card / Tax Registration Certificate/ VAT if applicable
8. Recently issued a Tax Clearance Certificate.
9. Bank certificate indicating authorized signatories and IBAN.
10. Company Profile:
  - Company overview, fields of work, establishment, executed projects, supporting photos, manpower, equipment, geographic reach.
11. Certificates of experience and recommendation letters for previous projects including reports, contracts, completion certificates, demonstrating operational capacity and supply chain capabilities.
12. Reference list showing qualifications and similar completed projects within the last 4 years.
13. Financial capacity: audited financial statements for the last 3 years + recent bank certificate proving financial capability.
14. ID of signatories or contact personnel.
15. Other Registered and licensed with all relevant regulatory bodies in Tanzania if required such as TBS, TMDA, BAKWATA, PHAB, OSHA, CRB, ERB or any other applicable authority.

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## **Second: Financial Offer**

1. Signed and stamped financial proposals.
2. Editable Excel format of the financial proposal (in addition to point 1).
3. The Tender Committee has the right to review price tables. If discrepancies occur between written and numerical values, the written value prevails. If discrepancies occur between unit price and total price, the unit price prevails.
4. Bid Letter showing bid date, total project cost, and bid validity (minimum 90 days except for framework contracts, which must be valid for at least 1 year).
5. Company name and documents must be in the official language and English. If discrepancies occur, the official language version prevails.

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6. Each company must submit **two separate files** (technical – financial) via [Email-gctanzania@qcharity.org](mailto:gctanzania@qcharity.org) with proper naming.

7. Qatar Charity does not accept bids not uploaded via email.

#### **8. 4. Bid Validity**

4.1. Awarded bidders must comply with all tender terms subject to written exceptions or agreed amendments.

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#### **5. Bid Costs**

5.1. Bidders are not entitled to claim any costs related to bid preparation, whether awarded or rejected.

5.2. Bidders are responsible for obtaining all necessary information at their own expense.

5.3. Information provided aims to guide bidders only.

5.4. Bidders must verify the sufficiency of information independently. Qatar Charity bears no responsibility for any resulting loss, damage, or expenses.

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#### **6. Bid Format**

6.1. All bid procedures must be completed by qualified staff. Do not assume Qatar Charity knows your organization; all forms must be fully completed.

Required annexes:

- **Annex A:** Bid Commitment Certificate
- **Annex B:** Technical Offer
- **Annex C:** Financial Offer
- Any other issued annexes.

6.2. Incomplete bids will not be considered.

6.3. Technical evaluation precedes financial evaluation.

6.4. Submission mechanism: companies must create a main folder named after the company, containing two subfolders (“Technical File”, “Financial File”).

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## **7. Price Accuracy**

7.1 Bidders must verify all calculations and ensure that all documents are completed, signed, and stamped.

## **8. Modification & Withdrawal**

8.1. No modifications are allowed after the tender closing date.

8.2. If a bidder withdraws before evaluation, Qatar Charity may confiscate the bid security without prior notice.

## **9. Confidentiality and Data Protection**

9.1 All information contained in the Invitation to Tender, as well as any information included in subsequent correspondence or any later negotiations, shall be considered confidential.

9.2 Bidders are not permitted to publish the Invitation to Tender, nor are they allowed to communicate or disclose any information to any third party. They are also prohibited from using such information for any commercial or industrial purpose unrelated to this tender.

9.3 The bidder may communicate or disclose any information to entities that require such information strictly for the purpose of preparing the bid or supporting any subsequent negotiations, provided that confidentiality obligations are fully observed.

9.4 Qatar Charity will treat all information submitted by bidders as “commercially confidential” (except for information required by law). Such information shall not be disclosed to any third party without the bidder’s written consent.

9.5 All personal data submitted in response to this tender will be handled in accordance with Tanzania’s Personal Data Protection Act, 2022. By participating, bidders consent to the use of their data solely for procurement purposes. Any cross-border transfer of personal data will comply with the legal safeguards outlined in the Act.

## **10. Prevention of Sexual Exploitation and Abuse**

Qatar Charity unequivocally condemns all forms of sexual exploitation and abuse, as well as bullying and various non-sexual abuses of power committed by its employees and affiliated personnel against any individual, irrespective of age, gender, sexuality, disability, religion, or ethnic origin

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## **11. Tender Timetable**

Item	Date
Tender announcement	25/03/2026
Deadline for technical inquiries	27/03/2026
Answers to inquiries	27/03/2026
Closing date & time	01/04/2026(1700HRS)

The bid shall be submitted through the [qctanzania@qcharity.org](mailto:qctanzania@qcharity.org)

## **12. Qatar Charity Information Security Policy**

Bidders must comply with the information security requirements of Qatar Charity as outlined below:

**12.1** The equipment or services must comply with all legal and regulatory requirements of the State.

**12.2** The equipment or services must comply with intellectual property rights requirements.

**12.3** Acceptable use requirements apply to all information accessed, used, or processed by the external party.

**12.4** The supplier or service provider shall be required to sign a Non-Disclosure and Compliance Agreement (NDA).

**12.5** The supplier or service provider must specify in writing all access permissions required to perform their work, whether related to access to physical premises or systems, or access to information during the contract period.

**12.6** The supplier or service provider must identify their information security level and ensure the confidentiality, integrity, and availability of the organization's information upon request.

**12.7** Acceptable use requirements shall apply to all information accessed, used, or processed by the external party.

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**12.8** All contracts and confidentiality agreements must be reviewed by the Legal Department if the contract is provided by the external party.

**12.9** Contracts must align with all information security policies and procedures, as well as the organization's regulations and policies in effect at the time of signing. **12.10** A Service Level Agreement (SLA) must be signed whenever applicable.

**12.11** The organization reserves the right to conduct any necessary audits when evaluating the services of the external party to verify the accuracy of submitted qualifications and the party's ability to fulfill contractual obligations.

**12.12** The organization has the right to retain reports and records of work monitoring to ensure the external party's compliance with information security requirements as documented in the signed contracts.

**12.13** Any changes made by the external party to the organization's information assets (systems or data) must be fully documented.

**12.14** The supplier awarded the tender must sign a Confidentiality and Non-Disclosure Form.

### **13. Important Instructions**

**13.1** If circumstances arise that require the cancellation or postponement of the tender evaluation, bidders shall be notified of such cancellation or postponement. In the event of postponement, all submitted bids shall remain valid for the extended duration.

**13.2** Each bid must be accompanied by an initial bid of security amounting to **5%**, submitted in the form of a certified bank cheque or a bank guarantee issued by an accredited bank in the State. Any bid not accompanied by the required bid of security will be disqualified. The certified cheque or bank guarantee shall be returned to bidders who are not awarded the tender.

**13.3** Cash payment of the initial bid security will **not** be accepted.

**13.4** The selected supplier will be formally notified in writing within **one week** from the final approval of the tender result. The supplier must submit a final performance guarantee of **not less than 10%** of the contract value within a period not exceeding ten (10) days from the day following the notification of award or increase the initial bid security to equal the required final guarantee, in order to ensure proper contract execution.

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**Annex A**  
**Bid**



قطر الخيرية  
QATAR CHARITY

**Commitment Certificate**

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Tender Number

QCTZ/2026/26

**Annex (A) Bid Commitment Certificate**

I, the undersigned / ....., authorized to submit the attached bid: ..... (Tender Number and Description) ....., in response to the Invitation to Tender issued by Qatar Charity, on behalf of: ..... (Name of Bidder) ....., hereby declare that all the following statements are true. I further declare that I have read and fully understood the contents of this certificate:

1. I understand that the attached bid will be disqualified if it is found that some or all of the information contained in this certificate is incorrect or incomplete.
2. I am duly authorized by the Bidder to sign this certificate and to submit the attached bid on the Bidder's behalf.
3. Any individual whose signature appears on the attached bid has been authorized by the Bidder to determine the bid terms and sign on behalf of the Bidder.
4. By participating in this tender, I agree to
5. **4.1** The terms, conditions, and provisions stipulated in this tender.

**4.2** Based on participation in this tender, I am legally bound to implement the project in accordance with the specifications stated in the Tender Document and Bill of Quantities, without deletion, amendment, or alteration. Qatar Charity reserves the right to apply penalties to the bidding company in accordance with Annex (B) "Performance Bond" included in the tender requirements. I am legally bound to the following:

**4.2.1** In the event of non-compliance with the above terms and conditions, Qatar Charity reserves the right to reclaim any fees it has incurred during the bid preparation process, with the value determined at Qatar Charity's sole discretion and in accordance with applicable local laws.

**4.2.2** Qatar Charity reserves the right to exclude any bid that does not comply with the rules and requirements, without providing reasons to any bidder.

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5.The Bidder’s submission has been made voluntarily and without consultation, communication, agreement, or arrangement with any competitor — including but not limited to matters relating to:

- **Continuation of Annex (A) Bid Commitment Certificate**
- The Bidder affirms that no consultation, communication, agreement, or arrangement has taken place with any competitor regarding:
  - Prices
  - Geographic areas in which the product or service will be provided (market allocation)
  - Methods, factors, or formulas used to calculate prices
  - Intention or decision to submit or not to submit a bid
  - Submitting a bid that does not comply with the specifications and conditions of the tender
- **6.** Furthermore, no consultations, communications, agreements, or arrangements have occurred with any other party regarding the type, quantity, specifications, conditions, or delivery of the products or services related to this Invitation to Tender.
- **7.** The terms of the attached bid were not known to, nor will they be disclosed by the Bidder—directly or indirectly—to any competitor prior to the official date and time of opening the tender envelopes or awarding the contract.

• **Name:** ..... **Signature:** -----  
-----

**Stamp:** -----

- **Instructions:**
- This certificate must be printed on the official letterhead of the company or engineering consultancy office, stamped, and submitted together with the bid. A valid authorization document on behalf of the bidding company must be attached, along with a copy of the authorized signatory’s valid identification document.

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## Annex B

# Technical Proposal

Tender Number	QCT/2026/026
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### Annex B - Technical Proposal

#### 1. Scope of Work Details

1.1 The project shall be implemented within the city of Dar es Salaam and the agreed upon regions.-upon regions.

#### 2. Work Plan and Ability to Meet Project Execution Requirements

2.1 The bidder must submit the following with detailed descriptions:

2.1.1 A comprehensive timeline for executing the work, including a delivery schedule.

2.1.2 Identification of the project team.

2.1.3 Clear definition of the roles and responsibilities of the project team members.

2.1.4 Appointment of a supervisor by the company to communicate with Qatar Charity, specifying an official email address for formal correspondence and a WhatsApp number for urgent notifications, maintenance matters, and coordination between both parties.

2.1.5 The supplying company shall bear full responsibility for all safety and security procedures throughout the entire project implementation period. The company shall be solely legally and criminally liable for any damage to property or loss of life resulting from poor

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### 5.1 Packed Well

### 5.2 Good Quality

### 5.3 Environmentally friendly

## 6. Legal and Regulatory Requirements

**6.1 The contractor (supplying company) shall bear full responsibility for obtaining all activity related permits for the shops and grocery stores, including the supply and delivery of materials and goods, and for providing containers as required by the Ministry of Municipality or any legally authorized entities in the country.-related permits for the shops and grocery stores, including the supply and delivery of materials and goods, and for providing containers as required by the Ministry of Municipality or any legally authorized entities in the country.**

**6.2 Compliance with local environmental regulations, labor and employment laws, Civil Defense requirements, and any other applicable legislation is mandatory.**

## 7. Payment Terms:

**Payments will be linked to completion milestones, including:**

- **Supply of goods and materials.**
- **Final handover.**

## **9. Bid Submission Procedure and Instructions to Bidders**

**9.1 The technical and financial proposals must be submitted in one file, in accordance with the attached templates, via email (one for the technical file and one for the financial file).**

### **9.2 Bid Validity:**

**The bid must remain valid for less than (90) days from the closing date.**

### **9.3 Inquiries:**

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All inquiries must be submitted in writing / via email during the tender period, at least two (2) days before the closing date. Clarifications or addenda, if any, will be issued accordingly.



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## Annex C

# Financial Proposal

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**Tender Number QCTZ/2026/26**

**Financial Offer Instructions**

Please review our financial proposal for Tender No.: **QCTZ/2026/26**

**Requirements for the Bidder:**

- Submit the financial offer in the currency: ----- **(Name of Currency)**
- Review the attached Bill of Quantities (BOQ) and specify the **unit price** and **total price** for each item/description **without altering** the description, unit, quantity, or required amount.
- Write the total financial offer **in both figures and words** in the designated section.

**Financial Offer Summary:**

**Total Amount (in figures and words):**

----- (Currency).

**Validity of this offer:** (---) days.

<b>Date:</b> ....., <b>Time:</b> .....	<b>Company Stamp</b>
<b>Name of the Authorized Signatory:</b>	
<b>Signature of the Authorized Signatory:</b>	

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### Evaluation Criteria and Weighting

Category	Criteria	Weight
Company Registrat	A mandatory requireme	—

### Technical Proposal (50%)

Criteria	Weight
Compliance and company acknowledgment	10%
Company profile (company overview – field projects)	10%
Operational capacity and supply chain cap	20%
Experience in the field with a list of projec	30%
Evaluation of submitted samples and asse: specifications	15%

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Financial capability and financial guarantees	15%	
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**Financial Proposal (50%)**

Criteria	Weight
Financial offers are evaluated based on the taking into consideration price realism and	100%

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**Bill of Quantities – Annex C/1**

Company Name: .....

Tender / Practice No.: ----- Office: -----  
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**Bill of Quantities for Pricing**

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No	Item	Description	Unit	Unit P	Quantity	Total
1						0
2						0
3						0
4						0
5						0
6						0
7						0
8						0
9						0
10						0

**Grand Total: 0**

**Amount in Words:**

---

**Company Stamp & Signature:**

.....

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## Commitment Form to comply with Tender document Terms and conditions

Date: ..... / ..... / .....

I, the undersigned:

Full Name: \_\_\_\_\_

Position / Title: \_\_\_\_\_

Representative of Company: \_\_\_\_\_

Full Address of the Company: \_\_\_\_\_

As the legal representative of the above-mentioned company, I hereby acknowledge and commit to the following:

1. Full review and understanding of all clauses, technical, financial, and administrative specifications included in the Tender document Terms and Conditions for **BUILDING AND FURNISHING 200 SQM MOSQUE** Projects, along with all its annexes and attachments.
2. Full compliance with all conditions, provisions, and standards listed in the Tender document Terms and Conditions without any reservation, including:
  - Technical specifications for project implementation.
  - Approved timelines.
  - Applicable legal and regulatory requirements.
3. Submission of all required legal and administrative documents as part of the bid, ensuring their validity and accuracy, and assuming full legal responsibility for any incorrect information.
4. Implementation of the project according to the highest quality standards and in full compliance with the technical criteria approved by the project owner.
5. Adherence to all instructions issued by the granting authority during the evaluation, contracting, and implementation stages.
6. Acknowledgment that this commitment form is an integral part of the company's bid, and that any breach of its contents may lead to bid disqualification or termination of the contract without any right to compensation.
7. Commit to attach all tender documents.

This commitment has been signed with full intent and responsibility.

Signature of the Legal Representative: \_\_\_\_\_

Full Name: \_\_\_\_\_

Official Company Stamp



## **GENERAL CONDITIONS OF CONTRACT**

### **DESIGN AND BUILD CONSTRUCTION WORKS**

**QATAR CHARITY TANZANIA  
HOUSE NO. 22 "A" & "B" OYSTERBAY  
MSASANI PENINSULA AREA  
PO BOX 8504  
DAR ES SALAAM, TANZANIA**

# GENERAL CONDITIONS OF CONTRACT (GCC) FOR DESIGN AND BUILD OF CONSTRUCTION WORKS

## Table of Contents

<b>1: General Provisions</b> .....	<b>8</b>
1.1 Definition .....	8
1.2 Interpretation .....	13
1.3 Communications .....	13
1.4 Governing Language and Law .....	13
1.5 Priority of Documents .....	13
1.6 Assignment .....	14
1.7 Care and Supply of Documents .....	14
1.8 Error in the Employer's Requirements .....	14
1.9 Employer's Use of Contractor's Documents .....	15
1.10 Contractor's Use of Employer's Documents .....	15
1.11 Confidential Details .....	15
1.12 Compliance with Laws .....	16
1.13 Taxes and Duties .....	16
1.14 Joint and Several Liability .....	16
1.15 Instructions, Inspections and Audits .....	16
<b>2. The Employer</b> .....	<b>17</b>
2.1 Right of Access to the Site .....	17
2.2 Permits, Licences or Approvals .....	18
2.3 Employer's Personnel .....	18
2.4 Suspension of Financing .....	18
2.5 Employer's Claims .....	18
2.6 Employer's Supplied Materials .....	18
<b>3. The Project Manager</b> .....	<b>20</b>
3.1 Project Manager's Appointment, Duties and Authority .....	20
3.2 Project Manager's Representative .....	20
3.3 Delegation by the Project Manager .....	23
3.4 Instructions of the Project Manager .....	24
3.5 Replacement of the Project Manager .....	24
3.6 Determinations .....	24
<b>4. The Contractor</b> .....	<b>25</b>
4.1 Contractor's General Obligations .....	25

4.2	Performance Security and ES Performance Security .....	26
4.3	Contractor's Representative .....	27
4.4	Subcontractors .....	29
4.5	Nominated Subcontractors.....	29
4.6	Co-operation.....	29
4.7	Setting Out .....	30
4.8	Safety Procedures .....	31
4.9	Quality Assurance .....	31
4.10	Site Data .....	31
4.11	Sufficiency of the Accepted Contract Amount .....	32
4.12	Unforeseeable Physical Conditions .....	33
4.13	Rights of Way and Facilities .....	34
4.14	Avoidance of Interference .....	34
4.15	Access Route .....	34
4.16	Transport of Goods .....	35
4.17	Contractor's Equipment .....	35
4.18	Protection of the Environment .....	36
4.19	Electricity, Water and Gas.....	36
4.20	Employer's Equipment and Free-Issue Materials .....	36
4.21	Progress Reports.....	37
4.22	Security of the Site.....	39
4.23	Contractor's Operations on Site .....	40
4.24	Fossils.....	40
4.25	Suppliers (other than Subcontractors).....	41
4.26	Code of Conduct .....	42
4.27	Milestones.....	43
	<b>5. Design .....</b>	<b>44</b>
5.1	General Design Obligations .....	44
5.2	Contractor's Documents .....	45
5.3	Contractor's Undertakings .....	47
5.4	Technical Standards and Regulations .....	47
5.5	Training.....	48
5.6	As-Built Documents .....	48
5.7	Operation and Maintenance Manuals.....	49
5.8	Design Error.....	49
	<b>6. Staff and Labour.....</b>	<b>49</b>
6.1	Engagement of Staff and Labour.....	49
6.2	Rates of Wages and Conditions of Labour.....	50
6.3	Persons in the Service of Employer.....	51

6.4	Labour Laws.....	51
6.5	Facilities for Staff and Labour.....	51
6.6	Health and Safety of Personnel.....	51
6.7	Contractor's Superintendence .....	54
6.8	Contractor's Personnel .....	54
6.9	Records of Contractor's Personnel and Equipment.....	55
6.10	Disorderly Conduct .....	56
6.11	Key Personnel.....	56
6.12	Foreign Personnel.....	57
6.13	Supply of Foodstuffs and Water .....	57
6.14	Measures against Insect and Pest Nuisance .....	57
6.15	Alcoholic Liquor or Drugs.....	57
6.16	Arms and Ammunition .....	57
6.17	Festivals and Religious Customs.....	58
6.18	Funeral Arrangements .....	58
6.19	Prohibition of Forced or Compulsory Labour.....	58
6.20	Prohibition of Harmful Child Labour.....	58
6.21	Employment Records of Workers.....	59
6.22	Workers' Organisations.....	59
6.23	Non-Discrimination and Equal Opportunity .....	60
6.24	Contractor's Personnel Grievance Mechanism.....	60
6.25	Training of Contractor's Personnel.....	61
	<b>7. Plant, Materials and Workmanship .....</b>	<b>61</b>
7.1	Manner of Execution.....	61
7.2	Samples.....	61
7.3	Inspection.....	62
7.4	Testing.....	62
7.5	Rejection.....	63
7.6	Remedial Work.....	64
7.7	Ownership of Plant and Materials.....	64
7.8	Royalties .....	65
	<b>8. Commencement, Delays and Suspension.....</b>	<b>65</b>
8.1	Commencement of Works.....	65
8.2	Time for Completion .....	66
8.3	Programme .....	66
8.4	Extension of Time for Completion .....	67
8.5	Rate of Progress .....	68
8.6	Liquidated Damages.....	69
8.7	Suspension of Work.....	69

8.8	Consequences of Suspension.....	69
8.9	Payment for Plant and Materials in Event of Suspension .....	70
8.10	Prolonged Suspension.....	70
8.11	Resumption of Work.....	70
<b>9.</b>	<b>Tests on Completion .....</b>	<b>71</b>
9.1	Contractor’s Obligations .....	71
9.2	Delayed Tests .....	72
9.3	Retesting.....	72
9.4	Failure to Pass Tests on Completion.....	72
<b>10.</b>	<b>Employer’s Taking Over .....</b>	<b>73</b>
10.1	Taking Over of the Works and Sections.....	73
10.2	Taking Over of Parts of the Works.....	74
10.3	Delay of Tests on Completion .....	75
10.4	Surfaces Requiring Reinstatement .....	76
<b>11.</b>	<b>Defects Liability.....</b>	<b>76</b>
11.1	Completion of Outstanding Work and Remedying Defects.....	76
11.2	Cost of Remedying Defects .....	76
11.3	Extension of Defects Liability Period .....	76
11.4	Failure to Remedy Defects.....	77
11.5	Removal of Defective Work.....	78
11.6	Further Tests.....	78
11.7	Right of Access.....	78
11.8	Contractor to Search.....	78
11.9	Performance Certificate .....	78
11.10	Unfulfilled Obligations .....	79
11.11	Clearance of Site .....	79
<b>12.</b>	<b>Tests after Completion.....</b>	<b>79</b>
12.1	Procedure for Tests after Completion .....	79
12.2	Delayed Test.....	80
12.3	Retesting.....	80
12.4	Failure to Pass Tests after Completion.....	81
<b>13.</b>	<b>Variations and Adjustments.....</b>	<b>82</b>
13.1	Right to Vary.....	82
13.2	Value Engineering .....	83
13.3	Variation Procedure.....	84
13.4	Payment in Applicable Currencies.....	84
13.5	Provisional Sums.....	85
13.6	Daywork.....	85
13.7	Adjustments for Changes in Legislation.....	86

13.8	Adjustments for Changes in Cost .....	87
<b>14.</b>	<b>Contract Price and Payment .....</b>	<b>89</b>
14.1	The Contract Price .....	89
14.2	Advance Payment .....	89
14.3	Application for Interim Payment Certificates.....	91
14.4	Schedule of Payments.....	92
14.5	Plant and Materials intended for the Works.....	93
14.6	Issue of Interim Payment Certificates .....	94
14.7	Payment and Currency .....	96
14.8	Delayed Payment .....	97
14.9	Payment of Retention Money.....	97
14.10	Statement at Completion.....	98
14.11	Application for Final Payment Certificate .....	99
14.12	Discharge.....	100
14.13	Issue of Final Payment Certificate .....	100
14.14	Cessation of Employer's Liability.....	100
<b>15.</b>	<b>Termination by Employer.....</b>	<b>101</b>
15.1	Notice to Correct .....	101
15.2	Termination by Employer .....	101
15.3	Valuation at Date of Termination .....	103
15.4	Payment after Termination.....	103
15.5	Employer's Entitlement to Termination for Convenience.....	103
15.6	Corrupt or Fraudulent Practices .....	104
<b>16.</b>	<b>Suspension and Termination by the Contractor .....</b>	<b>104</b>
16.1	Contractor's Entitlement to Suspend Work.....	104
16.2	Termination by Contractor.....	105
16.3	Cessation of Work and Removal of Contractor's Equipment .....	106
16.4	Payment on Termination.....	107
<b>17.</b>	<b>Risk and Responsibility .....</b>	<b>107</b>
17.1	Indemnities.....	107
17.2	Contractor's Care of the Works .....	108
17.3	Employer's Risks.....	109
17.4	Consequences of Employer's Risks.....	109
17.5	Intellectual and Industrial Property Rights.....	110
17.6	Limitation of Liability .....	111
17.7	Use of Employer's Accommodation/ Facilities.....	111
<b>18.</b>	<b>Insurance.....</b>	<b>112</b>
18.1	General Requirements for Insurances .....	112
18.2	Insurance for Works and Contractor's Equipment .....	114

18.3	Insurance against Injury to Persons and Damage to Property .....	115
18.4	Insurance for Contractor's Personnel .....	116
<b>19.</b>	<b>Force Majeure.....</b>	<b>116</b>
19.1	Definition of Force Majeure.....	116
19.2	Notice of Force Majeure.....	117
19.3	Duty to Minimize Delay .....	117
19.4	Consequences of Force Majeure .....	117
19.5	Force Majeure Affecting Subcontractor.....	118
19.6	Optional Termination, Payment and Release.....	118
19.7	Release from Performance .....	119
<b>20.</b>	<b>Claims, Disputes and Arbitration.....</b>	<b>119</b>
20.1	Contractor's Claims.....	119
20.2	Appointment of the Dispute Avoidance and Resolution Board.....	121
20.3	Failure to Agree on the Composition of the Dispute Avoidance and Resolution Board.....	122
20.4	Obtaining Dispute Avoidance and Resolution Board's Decision.....	123
20.5	Amicable Settlement.....	124
20.6	Arbitration.....	124
20.7	Failure to Comply with Dispute Avoidance and Resolution Board's Decision .....	125
20.8	Expiry of Dispute Avoidance and Resolution Board's Appointment.....	125

<b>1: General Provisions</b>	
<b>1.1 Definition</b>	In these Conditions of Contract, (General Conditions and Special Conditions), the following words and expressions shall have the meanings stated. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.
<b>1.1.1 The Contract</b>	<p><b>“Contract”</b> means the Contract entered between the Employer and the Contractor for design and construction of works.</p> <p><b>“Letter of Acceptance”</b> means the letter of formal acceptance of the bid, signed by the Employer and communicated to the Contractor.</p> <p><b>“Form of Tender”</b> means the document entitled Form of Tender, which was completed by the Contractor and includes the signed offer to the Employer for the works.</p> <p><b>“Employer’s Requirement”</b> means the document entitled Employer’s Requirement, as included in the Contract, and any additions and modifications to the Employer’s Requirement in accordance with the Contract. Such document specifies the Works.</p> <p><b>“Drawings”</b> means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract.</p> <p><b>“Schedules”</b> means the document(s) entitled schedules, completed by the Contractor and submitted with the Form of Tender, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices.</p> <p><b>“Tender”</b> means the Form of Tender and all other documents which the Contractor submitted with the Form of Tender, as included in the Contract.</p> <p><b>“Bill of Quantities”</b> and <b>“Day Work Schedule”</b> and <b>“Schedule of Payment Currencies”</b> mean the documents so named (if any) which are comprised in the Schedules.</p>
<b>1.1.2 Parties and Persons</b>	<p><b>“Party”</b> means the Employer or the Contractor, as the context requires.</p> <p><b>“Employer”</b> means the person named as Employer in the <b>Special Conditions of Contract (SCC)</b> and the legal successors in title to this person.</p> <p><b>“Contractor”</b> means the person(s) named as contractor in the Form of Tender accepted by the Employer and the legal</p>

	<p>successors in title to this person(s).</p> <p><b>“Project Manager”</b> means the person appointed by the Employer to act as the Project Manager for the purposes of the Contract and named in the <b>SCC</b>, or other person appointed from time to time by the Employer and notified to the Contractor under <b>Sub-Clause 3.5</b> [Replacement of the Project Manager].</p> <p><b>“Contractor’s Representative”</b> means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under <b>Sub-Clause 4.3</b> [Contractor’s Representative], who acts on behalf of the Contractor.</p> <p><b>“Employer’s Personnel”</b> means the Project Manager, the assistants referred to in <b>Sub-Clause 3.3</b> [Delegation by the Project Manager] and all other staff, labour and other employees of the Project Manager and of the Employer; and any other personnel notified to the Contractor, by the Employer or the Project Manager, as Employer’s Personnel.</p> <p><b>“Contractor’s Personnel”</b> means the Contractor’s Representative and all personnel whom the Contractor utilises on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works.</p> <p><b>“Subcontractor”</b> means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works; and the legal successors in title to each of these persons.</p> <p><b>“Dispute Avoidance and Resolution Board(DARB)”</b> means the person or three persons appointed under <b>Sub-Clause 20.3</b> [Appointment of the <b>Dispute Avoidance and Resolution Board</b>] or <b>Sub-Clause 20.3</b> [Failure to Agree on the Composition of the <b>Dispute Avoidance and Resolution Board</b>]</p>
<p><b>1.1.3 Dates, Tests, Periods and Completion</b></p>	<p><b>“Base Date”</b> means the date 28 days prior to the latest date for submission of the Bid.</p> <p><b>“Commencement Date”</b> means the date notified under Sub-Clause 8.1 [Commencement of Works].</p> <p><b>“Time for Completion”</b> means the time for completing the Works or a Section (as the case may be) under Sub-Clause 8.2 [Time for Completion], as stated in the SCC (with any extension under Sub-Clause 8.4 [Extension of Time for Completion]), calculated from the Commencement Date.</p> <p><b>“Tests on Completion”</b> means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Sub-Clause 9 [Tests on Completion] before the Works or a Section (as the</p>

	<p>case may be) are taken over by the Employer.</p> <p><b>“Taking-Over Certificate”</b> means a certificate issued under <b>Sub-Clause 10</b> [Employer’s Taking Over].</p> <p><b>“Tests after Completion”</b> means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Employer’s Requirement after the Works or a Section (as the case may be) are taken over by the Employer.</p> <p><b>“Defects Liability Period”</b> means the period for notifying defects in the Works or a Section (as the case may be) under <b>Sub-Clause 11.1</b> [Completion of Outstanding Work and Remedying Defects], which extends over twelve months except if otherwise stated in the SCC (with any extension under <b>Sub-Clause 11.3</b> [Extension of Defects Liability Period]), calculated from the date on which the Works or Section is completed as certified under <b>Sub-Clause 10.1</b> [Taking Over of the Works and Sections].</p> <p><b>“Performance Certificate”</b> means the certificate issued under <b>Sub-Clause 11.9</b> [Performance Certificate].</p> <p><b>“Milestone”</b> means a part of the Works stated in the Contract Data (if any), and described in detail in the Employer’s Requirements as a Milestone, which is to be completed by the time for completion stated in Sub-Clause 4.27 [Milestones]</p> <p><b>“Milestone certificate”</b> means the certificate issued by the Project Manager under Sub-Clause 4.27 [Milestones].</p> <p><b>“day”</b> means a calendar day and <b>“year”</b> means 365 days.</p>
<p><b>1.1.4 Money and Payments</b></p>	<p><b>“Accepted Contract Amount”</b> means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.</p> <p><b>“Contract Price”</b> means the price defined in <b>Sub-Clause 14.1</b> [The Contract Price], and includes adjustments in accordance with the Contract.</p> <p><b>“Cost”</b> means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.</p> <p><b>“Final Payment Certificate”</b> means the payment certificate issued under <b>Sub-Clause 14.13</b> [Issue of Final Payment Certificate].</p> <p><b>“Final Statement”</b> means the statement defined in <b>Sub-Clause 14.11</b> [Application for Final Payment Certificate].</p> <p><b>“Foreign Currency”</b> means a currency in which part (or all) of the Contract Price is payable, but not the Local Currency.</p> <p><b>“Interim Payment Certificate”</b> means a payment certificate</p>

	<p>issued under <b>Sub-Clause</b> 14 [Contract Price and Payment], other than the Final Payment Certificate.</p> <p><b>Currency</b>” means the currency of the Country.</p> <p>“<b>Payment Certificate</b>” means a payment certificate issued under <b>Sub-Clause</b> 14 [Contract Price and Payment].</p> <p>“<b>Provisional Sum</b>” means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under <b>Sub-Clause</b> 13.5 [Provisional Sums].</p> <p>“<b>Retention Money</b>” means the accumulated retention moneys which the Employer retains under <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates] and pays under <b>Sub-Clause</b> 14.9 [Payment of Retention Money].</p> <p>“<b>Statement</b>” means a statement submitted by the Contractor as part of an application, under <b>Sub-Clause</b> 14 [Contract Price and Payment], for a payment certificate.</p>
<p><b>1.1.5 Works and Goods</b></p>	<p>“<b>Contractor’s Equipment</b>” means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor’s Equipment excludes Temporary Works, Employer’s Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.</p> <p>“<b>Goods</b>” means Contractor’s Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.</p> <p>“<b>Materials</b>” means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.</p> <p>“<b>Permanent Works</b>” means the permanent works to be executed by the Contractor under the Contract.</p> <p>“<b>Plant</b>” means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works, including vehicles purchased for the Employer and relating to the construction or operation of the Works.</p> <p>“<b>Section</b>” means a part of the Works specified in the <b>SCC</b> as a Section (if any).</p> <p>“<b>Temporary Works</b>” means all temporary works of every kind (other than Contractor’s Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.</p> <p>“<b>Works</b>” mean the Permanent Works and the Temporary Works, or either of them as appropriate.</p>

<p><b>1.1.6 Other Definitions</b></p>	<p><b>“Contractor’s Documents”</b> means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.</p> <p><b>“Country”</b> means the country in which the Site (or most of it) is located, where the Permanent Works are to be executed.</p> <p><b>“Employer’s Equipment”</b> means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the Employer’s Requirement; but does not include Plant which has not been taken over by the Employer.</p> <p><b>“Force Majeure”</b> is defined in <b>Sub-Clause 19</b> [Force Majeure].</p> <p><b>“Laws”</b> means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.</p> <p><b>“Performance Security”</b> means the security (or securities, if any) under <b>Sub-Clause 4.2</b> [Performance Security].</p> <p><b>“Site”</b> means the places where the Permanent Works are to be executed, including storage and working area, and to which Plant and Materials are to be delivered, and any other places specified in the Contract as forming part of the Site</p> <p><b>“Unforeseeable”</b> means not reasonably foreseeable by an experienced contractor by the Base Date.</p> <p><b>“Variation”</b> means any change to the Works, which is instructed or approved as a variation under <b>Sub-Clause 13</b> [Variations and Adjustments].</p> <p><b>ES</b>” means Environmental and Social (including Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH)).</p> <p><b>“Sexual Exploitation and Abuse” “(SEA)”</b> means the following:</p> <p><b>Sexual Exploitation</b> is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;</p> <p><b>Sexual Abuse</b> is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions; and</p> <p><b>“Sexual Harassment” “(SH)”</b> is defined as unwelcome sexual advances, requests for sexual favours, and other verbal or physical conduct of a sexual nature by the Contractor’s Personnel with other Contractor’s or Employer’s Personnel.</p>
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<p><b>1.2 Interpretation</b></p>	<p>In the Contract, except where the context requires otherwise:</p> <ul style="list-style-type: none"> <li>(a) words indicating one gender include all genders;</li> <li>(b) words indicating the singular also include the plural and words indicating the plural also include the singular;</li> <li>(c) provisions including the word “agree,” “agreed” or “agreement” require the agreement to be record in writing;</li> <li>(d) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and</li> <li>(e) the word “tender” is synonymous with “bid”, and “tenderer” with “bidder” and the words “tender documents” with “bidding documents”</li> </ul> <p>The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.</p>
<p><b>1.3 Communications</b></p>	<p>Communications between parties that are referred to in the Conditions shall be effective <b>only</b> when in <b>writing</b>. A notice shall be effective only when it is received by the concerned party. The language for communications shall be <b>English</b></p>
<p><b>1.4 Governing Language and Law</b></p>	<p>The governing language of the Contract shall be <b>English</b>.</p> <p>The Contract shall be governed by the laws of <b>Tanzania</b>, unless otherwise stated in <b>the SCC</b>.</p>
<p><b>1.5 Priority of Documents</b></p>	<p>1.5.1 The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:</p> <ul style="list-style-type: none"> <li>(a) Form of Agreement;</li> <li>(b) Letter of Acceptance;</li> <li>(c) Minutes of negotiations</li> <li>(d) Form of Tender;</li> <li>(e) Special Conditions of Contract;</li> <li>(f) General Conditions of Contract;</li> <li>(g) Employer’s Requirements and Drawings (if any);</li> <li>(h) Schedules; and</li> <li>(i) any other documents listed <b>in the SCC</b> forming part of the Contract.</li> </ul>
	<p>1.5.2 If an ambiguity or discrepancy is found in the documents, the Project Manager shall issue any necessary clarification or instruction..</p>

<p><b>1.6 Assignment</b></p>	<p>1.6.1 The Contractor shall not assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, the contractor:</p> <ul style="list-style-type: none"> <li>(a) may assign the whole or any part with the prior consent in writing of the Employer; and</li> <li>(b) may, as security in favour of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.</li> </ul>
<p><b>1.7 Care and Supply of Documents</b></p>	<p>1.7.1 Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Project Manager number of copies of Contractor's Documents stated <b>in the SCC</b>.</p>
	<p>1.7.2 The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Employer's Requirements, the Contractor's Documents including Drawings and approved Variations and other communications given under the Contract. Authorized personnel of the Employer shall have the right to access to the aforementioned documents at all reasonable times.</p>
	<p>1.7.3 If a Party becomes aware of an error or defect of technical nature in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.</p>
<p><b>1.8 Error in the Employer's Requirements</b></p>	<p>1.8.1 If the Contractor suffers delay and/or incurs Cost as a result of an error in the Employer requirements, and experienced Contractor exercising due care would not have discovered the error when scrutinizing the employer's requirements under <b>Sub-Clause 5.1</b> (General Design Obligations), the contractor shall give notice to the Project Manager and may be entitled subject to <b>Sub-Clause 20.1</b> (contractor's claims) to an extension of time and associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause 8.4</b> [Extension of Time for Completion].</p>
	<p>1.8.2 After receiving this further notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.</p>

<p><b>1.9 Employer's Use of Contractor's Documents</b></p>	<p>1.9.1 The Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.</p>
	<p>1.9.2 The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:</p> <p>(a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,</p> <p>(b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and</p> <p>in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.</p>
	<p>1.9.3 The Contractor's Documents and other design documents made by the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Employer for purposes other than those permitted under this <b>Sub-Clause</b>.</p>
<p><b>1.10 Contractor's Use of Employer's Documents</b></p>	<p>1.10.1 The Employer shall retain the copyright and other intellectual property rights in the Employer's requirements including Drawings and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.</p>
<p><b>1.11 Confidential Details</b></p>	<p>1.11 The Contractor shall disclose all such confidential and other information as may be reasonably required by the Employer in order to verify the Contractor's compliance with the Contract and allow its proper implementation.</p>

<p><b>1.12 Compliance with Laws</b></p>	<p>1.12.1 The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the SCC:</p> <ul style="list-style-type: none"> <li>(a) the Employer shall have obtained (or shall obtain) the planning, zoning, or similar permission for the Permanent Works, and any other permissions described in the Employer's Requirement as having been (or to be) obtained by the Employer; and the Employer shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and</li> <li>(b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licenses and approvals, as required by the Laws in relation to the design, execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so.</li> </ul>
<p><b>1.13 Taxes and Duties</b></p>	<p>The Contractor, Sub-contractors and Personnel shall pay such taxes, duties, fees and other impositions as may be levied under the Applicable Law unless otherwise stated <b>in the SCC</b>.</p>
<p><b>1.14 Joint and Several Liability</b></p>	<p>1.14.1 If the Contractor constitutes a joint venture, consortium, association of firms or other unincorporated grouping of two or more persons:</p> <ul style="list-style-type: none"> <li>(a) these persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;</li> <li>(b) these persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and</li> <li>(c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.</li> </ul>
<p><b>1.15 Instructions, Inspections and Audits</b></p>	<p>1.15.1 The Employer's personnel shall at all reasonable times during construction of the Work be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of the construction.</p>
	<p>1.15.2 If the Project Manager instructs the contractor to carry out a test not specified in the Employer's Requirement to check whether any work has a defect and the test shows that it does, the</p>

	Contractor shall pay for the test and any samples. If there is no defect, the test shall be a Compensation Event.
	1.15.3 The Contractor shall permit the Funding Source named <b>in the SCC</b> 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 Funding Source, if so required by the Funding Source.
<b>2. The Employer</b>	
<b>2.1 Right of Access to the Site</b>	2.1.1 The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) <b>stated in the SCC</b> . The right and possession may not be exclusive to the Contractor. If, under the Contract, the Employer is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Employer shall do so in the time and manner stated in the Employer's requirements. However, the Employer may withhold any such right or possession until the Performance Security has been received.
	2.1.2 If no such time is stated in the SCC, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to proceed without disruption in accordance with the programme submitted under <b>Sub-Clause 8.3</b> [Programme].
	2.1.3 If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Project Manager and may be entitled subject to <b>Sub-Clause 20.1</b> [Contractor's Claims] to an extension of time and associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause 8.4</b> [Extension of Time for Completion].
	2.1.4 After receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.
	2.1.5 However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time and any associated costs.

<p><b>2.2 Permits, Licenses or Approvals</b></p>	<p>2.2.1 The Employer shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:</p> <ul style="list-style-type: none"> <li>(a) copies of the Laws of the Country which are relevant to the Contract but are not readily available, and</li> <li>(b) any permits, licences or approvals required by the Laws of the Country: <ul style="list-style-type: none"> <li>(i) which the Contractor is required to obtain under <b>Sub-Clause</b> 1.12 [Compliance with Laws],</li> <li>(ii) for the delivery of Goods, including clearance through customs, and</li> </ul> </li> </ul> <p>for the export of Contractor's Equipment when it is removed from the Site.</p>
<p><b>2.3 Employer's Personnel</b></p>	<p>2.3.1 The Employer shall be responsible for ensuring that the Employer's Personnel and the Employer's other contractors on the Site:</p> <ul style="list-style-type: none"> <li>(a) co-operate with the Contractor's efforts under <b>Sub-Clause</b> 4.6 [Co-operation], and</li> <li>(b) take actions similar to those which the Contractor is required to take under subparagraphs (a), (b) and (c) of <b>Sub-Clause</b> 4.8 [Safety Procedures] and under <b>Sub-Clause</b> 4.18 [Protection of the Environment].</li> </ul>
<p><b>2.4 Suspension of Financing</b></p>	<p>2.4.1 If the Government has notified the Employer that the Government has suspended funds, which finances in whole or in part the execution of the Works, the Employer shall give notice of such suspension to the Contractor with detailed particulars, including the date of such notification, with a copy to the Project Manager, within 7 days of the Employer having received the suspension notification from the Government.</p>
	<p>2.4.2 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 within fourteen (14) working days, the Parties shall mutually agree on the future events of the Contract.</p>
<p><b>2.5 Employer's Claims</b></p>	<p>2.5.1 If the Employer considers himself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Liability Period, the Employer or the Project Manager shall give notice and particulars to the</p>

		Contractor. However, notice is not required for payments due under <b>Sub-Clause</b> 4.19 [Electricity, Water and Gas], under <b>Sub-Clause</b> 4.20 [Employer's Equipment and Free-Issue Material], or for other services requested by the Contractor.
	2.5.2	The notice shall be given as soon as practicable and no longer than 28 days after the Employer became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Liability Period shall be given before the expiry of such period.
	2.5.3	The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the Employer considers himself to be entitled in connection with the Contract. The Project Manager shall then proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to agree or determine (i) the amount (if any) which the Employer is entitled to be paid by the Contractor, and/or (ii) the extension (if any) of the Defects Liability Period in accordance with <b>Sub-Clause</b> 11.3 [Extension of Defects Liability Period].
	2.5.4	This amount may be included as a deduction in the Contract Price and Payment Certificates. The Employer shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this <b>Sub-Clause</b> .
<b>2.6 Employer-Supplied Materials and Employer's Equipment</b>	2.6.1	<p>The Employer shall supply to the Contractor the Employer-Supplied Materials listed in the Employer's Requirements, at the time(s) stated in the Employer's Requirements (if not stated, within the times that shall be required to enable the Contractor to proceed with execution of the Works in accordance with the Programme).</p> <p>When made available by the Employer, the Contractor shall visually inspect the Employer-Supplied Materials and shall promptly give a Notice to the Project Manager of any shortage, defect or default in them. Thereafter, the Contractor shall rectify such shortage, defect or default to the extent instructed by the Project Manager. Such instruction shall be deemed to have been given under Sub-Clause 13.3.1 [Variation by Instruction].</p> <p>After this visual inspection, the Employer-Supplied Materials shall come under the care, custody and</p>

		control of the Contractor. The Contractor's obligations of inspection, care, custody, and control shall not relieve the Employer of liability of any shortage, defect or default not apparent from a visual inspection."
	2.6.2	<p>The Employer shall make the Employer's Equipment listed in the Employer's Requirements available to the Contractor at the time(s) stated in the Employer's Requirements (if not stated, within the times that shall be required to enable the Contractor to proceed with execution of the Works in accordance with the Programme).</p> <p>Unless expressly stated otherwise in the Employer's Requirements, the Employer's Equipment shall be provided for the exclusive use of the Contractor.</p> <p>When made available by the Employer, the Contractor shall visually inspect the Employer's Equipment and shall promptly give a Notice to the Project Manager of any shortage, defect or default in them. Thereafter, the Contractor shall rectify such shortage, defect or default to the extent instructed by the Project Manager. Such instruction shall be deemed to have been given under Sub-Clause 13.3.1 [Variation by Instruction].</p> <p>The Contractor shall be responsible for the Employer's Equipment while it is under the Contractor's control and/or any of the Contractor's Personnel is operating it, driving it, directing it, using it, or in control of it.</p> <p>The Contractor shall not remove from the Site any items of the Employer's Equipment without the consent of the Employer. However, consent shall not be required for vehicles transporting Goods or Contractor's personnel to or from the Site</p>
<b>3. The Project Manager</b>		
<b>3.1 Project Manager's Appointment, Duties and Authority</b>	3.1.1	The Employer shall appoint the Project Manager who shall carry out the duties assigned to him in the Contract. The Project Manager shall be an independent legal entity or firm duly registered by relevant professional bodies in Tanzania and contracted by the Employer. The Project Manager's staff shall include suitably qualified Architects/Project Managers and other professionals who are competent to carry out these duties.
	3.1.2	The Project Manager shall have no authority to amend the Contract without approval of the

	Employer.
3.1.3	The Project Manager may exercise the authority attributable to the Project Manager as specified in or necessarily to be implied from the Contract. Notwithstanding the provisions of this Contract, if the Project Manager is required to obtain the approval of the Employer before exercising a specified authority, the requirements shall be as <b>stated in the SCC</b> . The Employer shall promptly inform the Contractor of any change to the authority attributed to the Project Manager.
3.1.4	However, whenever the Project Manager exercises a specified authority for which the Employer's approval is required, then (for the purposes of the Contract) the Project Manager shall seek and obtain a written approval of the Employer.
3.1.5	<p>Except as otherwise stated in these Conditions:</p> <ul style="list-style-type: none"> <li>(a) whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Project Manager shall be deemed to act for the Employer;</li> <li>(b) the Project Manager has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract; and</li> <li>(c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Project Manager (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.</li> <li>(d) Any act by the Project Manager in response to a Contractor's request, except otherwise expressly specified, shall be notified in writing to the Contractor within the period stated <b>in the SCC</b>. Provided that such time shall not exceed 28 days from receipt of the request.</li> </ul>
3.1.6	<p>The following provisions shall apply:</p> <p>The Project Manager shall obtain the specific approval of the Employer before taking action under the following <b>Sub-Clauses</b> of these Conditions:</p>

	<p>(a) <b>Sub-Clause</b> 4.12 [Unforeseeable Physical Conditions]: Agreeing or determining an extension of time and/or additional cost.</p> <p>(b) <b>Sub-Clause</b> 13.1 [Right to Vary]: Instructing a Variation, except in an emergency situation as determined by the Project Manager.</p> <p>(c) <b>Sub-Clause</b> 13.3 [Variation Procedure]: Approving a proposal for Variation submitted by the Contractor in accordance with <b>Sub-Clause</b> 13.1 or 13.2.</p> <p>(d) <b>Sub-Clause</b> 13.4 [Payment in Applicable Currencies]: Specifying the amount payable in each of the applicable currencies.</p> <p>Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Project Manager, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Project Manager, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Project Manager. The Project Manager shall determine an addition to the Contract Price, in respect of such instruction, in accordance with <b>Clause</b> 13 [Variations and Adjustments] and shall notify the Contractor accordingly, with a copy to the Employer.</p>
<p><b>3.2 The Project Manager's Representative</b></p>	<p>3.2.1 The Project Manager may appoint a Project Manager's Representative and delegate to him/her in accordance with Sub-Clause 3.3 [Delegation by the Project Manager] the authority necessary to act on the Project Manager's behalf at the Site, except to replace the Project Manager's Representative.</p>
	<p>3.2.2 The Project Manager's Representative (if appointed) shall comply with sub-paragraphs (a) and (b) of Sub-Clause 3.1 [Project Manager's Appointment, Duties and Authority] and shall be based at the Site for the whole time that the Works are being executed at the Site. If the Project Manager's Representative is to be temporarily absent from the Site during the execution of the Works, an equivalently qualified, experienced and competent replacement shall be appointed by the Project Manager, and the Contractor shall be given a Notice of such</p>

		replacement
	3.2.3	The Project Manager shall obtain the consent of the Employer before appointing or replacing an Project Manager's Representative
<b>3.3 Delegation by the Project Manager</b>	3.3.1	The Project Manager may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident Architect/Project Manager and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties.
	3.3.2	However, unless otherwise agreed by both Parties, the Project Manager shall not delegate the authority to determine any matter in accordance with <b>Sub-Clause</b> 3.6 [Determinations].
	3.3.3	Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority, and who are fluent in the language for communications defined in <b>Sub-Clause</b> 1.4 [Law and Language]. If any assistants are not fluent in this language, the Project Manager shall make competent interpreters available during all working hours, in a number sufficient for those assistants to properly perform their assigned duties and/or exercise their delegated authority."
	3.3.4	Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorised to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Project Manager.
	3.3.5	However, any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Project Manager to reject the work, Plant or Materials; and if the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Project Manager, who shall promptly confirm, reverse or vary the determination or instruction.

<p><b>3.4 Instructions of the Project Manager</b></p>	<p>3.4.1 The Project Manager may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Project Manager, or from an assistant to whom the appropriate authority has been delegated under this Clause. If an instruction constitutes a Variation, <b>Sub-Clause 13</b> [Variations and Adjustments] shall apply.</p>
	<p>3.4.2 The Contractor shall comply with the instructions given by the Project Manager or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Project Manager or a delegated assistant:</p> <ul style="list-style-type: none"> <li>(a) gives an oral instruction,</li> <li>(b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and</li> <li>(c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation,</li> </ul> <p>then the confirmation shall constitute the written instruction of the Project Manager or delegated assistant (as the case may be).</p>
<p><b>3.5 Replacement of the Project Manager</b></p>	<p>3.5.1 Notwithstanding <b>Sub-Clause 3.1</b>, if the Employer intends to replace the Project Manager, the Employer shall, not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the intended replacement Project Manager. If the Contractor considers the intended replacement Project Manager to be unsuitable, he has the right to raise reasonable objection against him by notice to the Employer, with supporting particulars, and the Employer shall give consideration to this objection.</p>
<p><b>3.6. Determinations</b></p>	<p>3.6.1 Whenever these Conditions provide that the Project Manager shall proceed in accordance with this <b>Sub-Clause</b> to agree or determine any matter, the Project Manager shall consult with each Party in an endeavour to reach agreement. If agreement is not achieved, the Project Manager shall make a fair determination in accordance with the Contract, taking due regard of all relevant</p>

		circumstances.
	3.6.2	The Project Manager shall give notice to both Parties of each agreement or determination, with supporting particulars within 14 working days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under <b>Sub-Clause 20</b> [Claims, Disputes and Arbitration].
<b>4. The Contractor</b>		
<b>4.1 Contractor's General Obligations</b>	4.1.1	The Contractor shall design, execute and complete the Works in accordance with the Contract and with the Project Manager's instructions, and shall remedy any defects in the Works.
	4.1.2	The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.
	4.1.3	The works shall include any work which is necessary to satisfy the Employer's Requirements, contractor's Tender and Schedules, or is implied by the contract, and all works which (although not mentioned in the contract) are necessary for stability or for the completion, or safe and proper operation, of the works.
	4.1.4	The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction.
	4.1.5	The Contractor shall, whenever required by the Project Manager, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Project Manager.
	4.1.6	The Contractor shall not carry out mobilization to Site (e.g. limited clearance for haul roads, site accesses and work site establishment, geotechnical investigations or investigations to select ancillary features such as quarries and borrow pits) unless the Project Manager gives a Notice of No-objection to the Contractor, a

		Notice that shall not be unreasonably delayed, to the measures the Contractor proposes to manage the environmental and social risks and impacts, which at a minimum shall include applying the Management Strategies and Implementation Plans (MSIPs) and Code of Conduct for Contractor's Personnel submitted as part of the Tender and agreed as part of the Contract.
	4.1.7	The Contractor shall submit, to the Project Manager for Review and approval, any additional MSIPs as are necessary to manage the ES risks and impacts of ongoing Works (e.g. excavation, earth works, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). These MSIPs collectively comprise the Contractor's Environmental and Social Management Plan (C-ESMP). The Contractor shall review the C-ESMP, periodically (but not less than every six (6) months), and update it as required to ensure that it contains measures appropriate to the Works. The updated C-ESMP shall be submitted to the Project Manager for Review
<b>4.2 Performance Security and ES Performance Security</b>	4.2.1	The Contractor shall obtain (at its cost) a Performance Security for proper performance and, if applicable, an Environmental and Social (ES) Performance Security for compliance with the Contractor's ES obligations, in the amounts stated in the SCC and denominated in the currency(ies) of the Contract or in a freely convertible currency acceptable to the Employer. If amounts are not stated in the SCC, this Sub-Clause shall not apply."
	4.2.2	The Contractor shall deliver the Performance Security and, if applicable, an ES Performance Security to the Employer within 28 days after receiving the Letter of Acceptance and shall send a copy to the Project Manager. The Performance Security shall be issued by a reputable bank or financial institution selected by the Contractor and shall be in the form annexed to <b>the SCC</b> , as stipulated by the Employer in <b>the SCC</b> , or in another form approved by the Employer. The ES Performance Security shall be issued by a reputable bank selected by the Contractor and shall be in the form annexed to <b>the SCC</b> , as stipulated by the Employer in the <b>SCC</b> , or in another form approved by the Employer
	4.2.3	The Contractor shall ensure that the Performance Security and, if applicable, an ES Performance

	<p>Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security and, if applicable, an ES Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security and, if applicable, an ES Performance Security until the Works have been completed and any defects have been remedied.</p>
4.2.4	<p>The Employer shall not make a claim under the Performance Security, and, if applicable, an ES Performance Security, except for amounts to which the Employer is entitled under the Contract in the event of:</p> <ul style="list-style-type: none"> <li>a) failure by the Contractor to extend the validity of the performance security as described in the preceding paragraph, in which event the Employer may claim the full amount of the performance security;</li> <li>b) failure by the Contractor to pay the Employer an amount due, as either agreed by the Contractor or determined under <b>Sub-Clause 2.5 [Employer's Claims]</b> or <b>Sub-Clause 20 [Claims, Disputes and Arbitration]</b>, within 42 days after this agreement or determination,</li> <li>c) failure by the Contractor to remedy a default within 42 days after receiving the Employer's notice requiring the default to be remedied, or</li> <li>d) Circumstances which entitle the Employer to termination under <b>Sub-Clause 15.2 [Termination by Employer]</b>, irrespective of whether notice of termination has been given.</li> </ul>
4.2.5	<p>The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.</p>
4.2.6	<p>The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate.</p>
4.2.7	<p>Without limitation to the provisions of the rest of this Sub-Clause, whenever the Project Manager determines an addition or a reduction to the</p>

		Contract Price as a result of a change in cost and/or legislation or as a result of cumulative Variations amounting to more than 10 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Project Manager's request promptly increase, or may decrease, as the case may be, the value of the Performance Security and, if applicable, an ES Performance Security in that currency by an equal percentage.
<b>4.3 Contractor's Representative</b>	4.3.1	The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract.
	4.3.2	Unless the Contractor's Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the Project Manager for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of another suitable person for such appointment.
	4.3.3	The Contractor shall not, without the prior consent of the Project Manager, revoke the appointment of the Contractor's Representative or appoint a replacement.
	4.3.4	The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Project Manager's prior consent, and the Project Manager shall be notified accordingly
	4.3.5	The Contractor's Representative shall, on behalf of the Contractor, receive instructions under <b>Sub-Clause 3.4</b> [Instructions of the Project Manager].
	4.3.6	The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Project Manager has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being

		delegated or revoked.
	4.3.7	The Contractor's Representative shall be fluent in the language for communications defined in <b>Sub-Clause 1.4</b> [Law and Language].
<b>4.4. Subcontractors</b>	4.4.1	The Contractor shall not subcontract the whole of the Works.
	4.4.2	<p>The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise <b>stated in the SCC</b>:</p> <p>(a) the Contractor shall not be required to obtain consent to suppliers of Materials, or to a subcontract for which the Subcontractor is named in the Contract;</p> <p>(b) the prior consent of the Project Manager shall be obtained to other proposed Subcontractors;</p> <p>the Contractor shall give the Project Manager not less than 28 days notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site.</p>
	4.4.3	The Contractor shall require that its Subcontractors execute the Works in accordance with the Contract, including complying with the relevant ES requirements.
<b>4.5 Nominated Subcontractors</b>	4.5.1	In this <b>Sub-Clause</b> , "nominated Subcontractor" means a Subcontractor whom the <b>Project Manager</b> , under <b>Sub-Clause 13</b> [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor. The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Project Manager as soon as practicable, with supporting particulars.
<b>4.6. Co-operation</b>	4.6.1	<p>The Contractor shall, as specified in the Contract or as instructed by the Project Manager, allow appropriate opportunities for carrying out work to:</p> <p>(a) the Employer's Personnel,</p> <p>(b) any other contractors employed by the Employer, and</p> <p>(c) the personnel of any legally constituted public authorities,</p>

		who may be employed in the execution on or near the Site of any work not included in the Contract.
	4.6.2	Any such instruction may constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.
	4.6.3	The Contractor shall be responsible for his construction activities on the Site, and shall co-ordinate his own activities with those of other contractors to the extent (if any) specified in the Employer's Requirements.
	4.6.4	If, under the Contract, the Employer is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Project Manager in the time and manner stated in the Employer's Requirements
	4.6.5	The Contractor shall also, as stated in the Employer's Requirements or as instructed by the Project Manager, cooperate with and allow appropriate opportunities for the Employer's Personnel to conduct any environmental and social assessment."
<b>4.7 Setting Out</b>	4.7.1	The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Project Manager. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.
	4.7.2	The Employer shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.
	4.7.3	If the Contractor suffers delay and/or incurs cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or cost, the Contractor shall give notice to the Project Manager and shall be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to an extension of time and associated costs (if any) for

		such delay, if completion is or will be delayed, under <b>Sub-Clause</b> 8.4 [Extension of Time for Completion].
	4.7.4	After receiving this further notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine these matters.
<b>4.8 Safety Procedures</b>	4.8.1	The Contractor shall: <ul style="list-style-type: none"> <li>(a) comply with all applicable safety regulations,</li> <li>(b) take care for the safety of all persons entitled to be on the Site,</li> <li>(c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,</li> <li>(d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under <b>Sub-Clause</b> 10 [Employer's Taking Over], and</li> <li>(e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.</li> </ul>
<b>4.9 Quality Assurance</b>	4.9.1	The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Project Manager shall be entitled to audit any aspect of the system.
	4.9.2	Details of all procedures and compliance documents shall be submitted to the Project Manager for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Project Manager, evidence of the prior approval by the Contractor himself shall be apparent on the document itself.
	4.9.3	Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.
<b>4.10 Site Data</b>	4.10.1	The Employer shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Employer's

	possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.
	4.10.2 To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works.
	4.10.3 To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation): <ul style="list-style-type: none"> <li>(a) the form and nature of the Site, including sub-surface conditions,</li> <li>(b) the hydrological and climatic conditions,</li> <li>(c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,</li> <li>(d) the Laws, procedures and labour practices of the Country, and</li> <li>(e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.</li> </ul>
<b>4.11 Sufficiency of the Accepted Contract Amount</b>	4.11.1 The Contractor shall be deemed to: <ul style="list-style-type: none"> <li>(a) have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and</li> <li>(b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in <b>Sub-Clause</b> 4.10 [Site Data] and any further data relevant to the Contractor's design.</li> </ul>
	4.11.2 Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract

	(including those under Provisional Sums, if any) and all things necessary for the proper design, execution and completion of the Works and the remedying of any defects.
<b>4.12 Unforeseeable Physical Conditions</b>	4.12.1 In this <b>Sub-Clause</b> , “physical conditions” means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.
	4.12.2 If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Project Manager as soon as practicable.
	4.12.3 This notice shall describe the physical conditions, so that they can be inspected by the Project Manager, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Project Manager may give. If an instruction constitutes a Variation, <b>Clause</b> 13 [Variations and Adjustments] shall apply.
	4.12.4 If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor may be entitled subject to notice under <b>Sub-Clause</b> 20.1 [Contractor’s Claims] to an extension of time and associated costs (if any) for any such delay, if completion is or will be delayed, under <b>Sub-Clause</b> 8.4 [Extension of Time for Completion].
	4.12.5 After receiving this further notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine these matters.
	4.12.6 However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Project Manager may also review whether other physical conditions in similar parts of the Works (if any) were more favourable than could reasonably have been foreseen when the Contractor submitted the Tender. If and to the extent that these more favourable conditions were encountered, the Project Manager may proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations]

	<p>to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.</p>
	<p>4.12.7 The Project Manager may take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which may be made available by the Contractor, but shall not be bound by any such evidence.</p>
<p><b>4.13 Rights of Way and Facilities</b></p>	<p>4.13.1 The Contractor shall bear all costs and charges for special and/or temporary rights-of-way which he may require, including those for access to the Site. The Contractor shall also obtain, at his risk and cost, any additional facilities outside the Site which he may require for the purposes of the Works.</p>
<p><b>4.14 Avoidance of Interference</b></p>	<p>4.14.1 The Contractor shall not interfere unnecessarily or improperly with:</p> <ul style="list-style-type: none"> <li>(a) the convenience of the public, or</li> <li>(b) the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Employer or of others.</li> </ul>
	<p>4.14.2 The Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.</p>
<p><b>4.15 Access Route</b></p>	<p>4.15.1 The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.</p>
	<p>4.15.2 Except as otherwise stated in these Conditions:</p> <ul style="list-style-type: none"> <li>(a) the Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;</li> <li>(b) the Contractor shall provide all necessary signs or directions along access routes, and</li> </ul>

	<p>shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;</p> <p>(c) the Employer shall not be responsible for any claims which may arise from the use or otherwise of any access route;</p> <p>(d) the Employer does not guarantee the suitability or availability of particular access routes; and</p> <p>(e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.</p>
	<p>4.15.3 The Contractor shall take all necessary safety measures to avoid the occurrence of incidents and injuries to any third party associated with the use of, if any, Contractor's Equipment on public roads or other public infrastructure.</p> <p>The Contractor shall monitor and use road safety incidents and accidents reports to identify negative safety issues and establish and implement necessary measures to resolve them."</p>
4.16 Transport of Goods	<p>4.16.1 Unless otherwise stated <b>in the SCC</b>:</p> <p>(a) the Contractor shall give the Project Manager not less than 21 days notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;</p> <p>(b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and</p> <p>(c) the Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods, and shall negotiate and pay all claims arising from their transport.</p>
4.17 Contractor's Equipment	<p>4.17.1 The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works.</p>
	<p>4.17.2 The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Project Manager. However,</p>

	consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.
<b>4.18 Protection of the Environment</b>	4.18.1 The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.
	4.18.2 The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Employer's Requirement or prescribed by applicable Laws.
	4.18.3 In the event of damage to the environment, property and/or nuisance to people, on or off Site as a result of the Contractor's operations, the Contractor shall agree with the Project Manager the appropriate actions and time scale to remedy, as practicable, the damaged environment to its former condition. The Contractor shall implement such remedies at its cost to the satisfaction of the Project Manager.
<b>4.19 Electricity, Water and Gas</b>	4.19.1 The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Employer's Requirements, for the tests.
	4.19.2 The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Employer's Requirement. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.
	4.19.3 The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Project Manager in accordance with <b>Sub-Clause 2.5</b> [Employer's Claims] and <b>Sub-Clause 3.6</b> [Determinations]. The Contractor shall pay these amounts to the Employer.
<b>4.20 Employer's Equipment and Free-Issue Materials</b>	4.20.1 The Employer shall make the Employer's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Schedule of Prices.

	<p>4.20.2 Unless otherwise stated in the Employer's Requirement:</p> <p>(a) the Employer shall be responsible for the Employer's Equipment, except that</p> <p>(b) the Contractor shall be responsible for each item of Employer's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.</p>
	<p>4.20.3 The appropriate quantities and the amounts due (at such stated prices) for the use of Employer's Equipment shall be agreed or determined by the Project Manager in accordance with <b>Sub-Clause 2.5</b> [Employer's Claims] and <b>Sub-Clause 3.6</b> [Determinations]. The Contractor shall pay these amounts to the Employer.</p>
	<p>4.20.4 The Employer shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Employer's Requirement. The Employer shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them, and shall promptly give notice to the Project Manager of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Employer shall immediately rectify the notified shortage, defect or default.</p>
	<p>4.20.5 After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Employer of liability for any shortage, defect or default not apparent from a visual inspection.</p>
<p><b>4.21 Progress Reports</b></p>	<p>4.21.1 Unless otherwise stated <b>in the SCC</b>, monthly progress reports shall be prepared by the Contractor and submitted to the Project Manager. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 working days after the last day of the period to which it relates.</p>
	<p>4.21.2 Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.</p>

	<p>4.21.3 Each report shall include:</p> <ul style="list-style-type: none"> <li>(a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in <b>Sub-Clause 4.5</b> [Nominated Subcontractors]),</li> <li>(b) photographs showing the status of manufacture and of progress on the Site;</li> <li>(c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of: <ul style="list-style-type: none"> <li>(i) commencement of manufacture,</li> <li>(ii) Contractor's inspections,</li> <li>(iii) tests, and</li> <li>(iv) shipment and arrival at the Site;</li> </ul> </li> <li>(d) the details described in <b>Sub-Clause 6.9</b> [Records of Contractor's Personnel and Equipment];</li> <li>(e) copies of quality assurance documents, test results and certificates of Materials;</li> <li>(f) list of notices given under <b>Sub-Clause 2.5</b> [Employer's Claims] and notices given under <b>Sub-Clause 20.1</b> [Contractor's Claims];</li> <li>(g) the Environmental and Social (ES) metrics set out in <b>Appendix A</b>; and</li> <li>(h) comparisons of actual and planned progress, with details of any events or circumstances which may jeopardise the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.</li> </ul>
	<p>4.21.4 In addition to the reporting requirement of subparagraph (g) of Sub-Clause 4.21.3 the Contractor shall inform the Project Manager immediately of any allegation, incident or accident, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer's Personnel or Contractor's Personnel.</p>

	<p>This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; or any allegation of SEA and/or SH. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information.</p>
	<p>4.21.5 The Contractor, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Project Manager of any such incident or accident on the Subcontractors' or suppliers' premises relating to the Works which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer's Personnel or Contractor's, its Subcontractors' and suppliers' personnel. The notification shall provide sufficient detail regarding such incidents or accidents. The Contractor shall provide full details of such incidents or accidents to the Project Manager within the timeframe agreed with the Project Manager.</p> <p>The Contractor shall require its Subcontractors and suppliers (other than Subcontractors) to immediately notify the Contractor of any incidents or accidents referred to in this Sub-Clause</p>
<p><b>4.22 Security of the Site</b></p>	<p>4.22.1 Unless otherwise stated <b>in the SCC</b>:</p> <ul style="list-style-type: none"> <li>(a) The Contractor shall be responsible for security of the site;</li> <li>(b) the Contractor shall be responsible for keeping unauthorised persons off the Site; and</li> <li>(c) authorised persons shall be limited to the Contractor's Personnel and the Employer's Personnel; and to any other personnel notified to the Contractor, by the Employer or the Project Manager, as authorised personnel of the Employer's other contractors on the Site.</li> </ul>
	<p>4.22.2 Subject to Sub-Clause 4.1, the Contractor shall submit for the Project Manager's No-objection a security management plan that sets out the security arrangements for the Site.</p>
	<p>4.22.3 The Contractor shall (i) conduct appropriate background checks on any personnel retained to provide security; (ii) train the security personnel</p>

	adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct towards Contractor's Personnel, Employer's Personnel and affected communities; and (iii) require the security personnel to act within the applicable Laws and any requirements set out in the Specification.
	4.22.4 The Contractor shall not permit any use of force by security personnel in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.
	4.22.5 In making security arrangements, the Contractor shall also comply with any additional requirements stated in the Specification."
<b>4.23 Contractor's Operations on Site</b>	4.23.1 The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Project Manager as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.
	4.23.2 During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.
	4.23.3 Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Liability Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.
<b>4.24 Fossils</b>	4.24.1 All fossils, coins, articles of value or antiquity, structures, groups of structures, and other remains or items of geological, archaeological, paleontological, historical, architectural or religious interest found on the Site shall be placed under the care and custody of the Employer. The Contractor shall: <p style="margin-left: 40px;">(a) take all reasonable precautions, including fencing-off the area or site of the finding, to</p>

	<p>avoid further disturbance and prevent Contractor's Personnel or other persons from removing or damaging any of these findings;</p> <p>(b) train relevant Contractor's Personnel on appropriate actions to be taken in the event of such findings; and</p> <p>(c) implement any other action consistent with the requirements of the Employer's Requirements and relevant Laws.</p>
	<p>4.24.2 The Contractor shall, upon discovery of any such finding, promptly give notice to the Project Manager, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Project Manager and shall be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to an extension of time and any associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause</b> 8.4 [Extension of Time for Completion].</p>
	<p>4.24.3 After receiving this further notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine these matters.</p>
<p><b>4.25 Suppliers (other than Subcontractors)</b></p>	<p>4.25.1 <u>Forced Labour</u></p> <p>The Contractor shall take measures to require its suppliers (other than Subcontractors) not to employ or engage forced labour including trafficked persons as described in Sub-Clause 6.20 [Prohibition of Forced or Compulsory Labour]. If forced labour/trafficking cases are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.</p>
	<p>4.25.2 <u>Child labour</u></p> <p>The Contractor shall take measures to require its suppliers (other than Subcontractors) not to employ or engage child labour as described in Sub-Clause 6.21 [Prohibition of Harmful Child Labour]. If child labour cases are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that</p>

		is able to manage such risks.
	4.25.3	<p><u>Serious Safety Issues</u></p> <p>The Contractor, including its Subcontractors, shall comply with all applicable safety obligations, including as stated in Sub-Clauses 4.4, 4.8 and 6.7. The Contractor shall also take measures to require its suppliers (other than Subcontractors) to adopt procedures and mitigation measures adequate to address safety issues related to their personnel. If serious safety issues are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.</p>
	4.25.4	<p><u>Obtaining natural resource materials in relation to supplier</u></p> <p>The Contractor shall obtain natural resource materials from suppliers that can demonstrate, through compliance with the applicable verification and/ or certification requirements that obtaining such materials is not contributing to the risk of significant conversion or significant degradation of natural or critical habitats such as unsustainably harvested wood products, gravel or sand extraction from river beds or beaches.</p> <p>If a supplier cannot continue to demonstrate that obtaining such materials is not contributing to the risk of significant conversion or significant degradation of natural or critical habitats, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to demonstrate that they are not significantly adversely impacting the habitats</p>
<b>4.26 Code of Conduct</b>	4.26.1	<p>The Contractor shall have a Code of Conduct for the Contractor's Personnel.</p> <p>The Contractor shall take all necessary measures to ensure that each Contractor's Personnel is made aware of the Code of Conduct including specific behaviors that are prohibited, and understands the consequences of engaging in such prohibited behaviors.</p> <p>These measures include providing instructions and documentation that can be understood by the Contractor's Personnel and seeking to obtain that person's signature acknowledging receipt of such instructions and/or documentation, as appropriate.</p>
	4.26.2	The Contractor shall also ensure that the Code of Conduct is visibly displayed in multiple locations

	<p>on the Site and any other place where the Works will be carried out, as well as in areas outside the Site accessible to the local community and project affected people. The posted Code of Conduct shall be provided in languages comprehensible to Contractor's Personnel, Employer's Personnel and the local community.</p>
	<p>The Contractor's Management Strategy and Implementation Plans shall include appropriate processes for the Contractor to verify compliance with these obligations.</p>
<b>4.27 Milestones</b>	<p>4.27.1 If no Milestones are specified in <b>the SCC</b>, this Sub-Clause shall not apply.</p>
	<p>4.27.2 The Contractor shall complete the works of each Milestone (including the all work which is stated in the Employer's Requirements as being required for the Milestone to be considered complete) within the time for completion of the milestone, as stated in the Contract Data, calculated from the Commencement Date.</p>
	<p>4.27.3 The Contractor shall include, in the initial programme and each revised programme, under subparagraph (a) of Sub-Clause 8.3 [Programme], the time for completion of each Milestone. Sub-paragraph 9d) of Sub-Clause 8.4 [Advance Warning] and Sub-Clause 8.4 [Extension of the Time for Completion] shall apply to each Milestone, such that "Time for Completion" under Sub-Clause 8.5 shall be read as the time for completion of a Milestone under this Sub-Clause.</p>
	<p>4.27.4 The Contractor may apply, by Notice to the Project Manager, for a Milestone certificate not earlier than 14 days before the works of a Milestone will, in the Contractor's opinion, be complete. The Project Manager shall, within 28 days after receiving the Contractor's Notice:</p> <ul style="list-style-type: none"> <li>(a) issue the Milestone Certificate to the Contractor, stating the date on which the works of a Milestone were completed in accordance with the Contract, except for any minor outstanding work and defects (as shall be listed in the Milestone Certificate); or</li> <li>(b) reject the application, giving reasons and specifying the work required to be done and defects required to be remedied by the Contractor to enable the Milestone Certificate to be issued.</li> </ul>

	<p>4.27.5 The Contractor shall then complete the work referred to in subparagraph (b) of this Sub-Clause before issuing a further Notice of application under this Sub-Clause.</p> <p>If the Project Manager fails either to issue the Milestone Certificate or to reject the Contractor's application within the above period of 28 days, and if the works of a Milestone are completed in accordance with the Contract, the Milestone Certificate shall be deemed to have been issued on the date which is 14 days after the date stated in the Contractor's Notice of application.</p>
	<p>4.27.6 If delay damages for a Milestone are stated in the Contract Data, and if the Contractor fails to complete the works of the Milestone within the time for completion of the Milestone (with any extension under this Sub-Clause):</p> <ul style="list-style-type: none"> <li>(i) the Contractor shall, subject to Sub-Clause 20.1 [<i>Claims</i>], pay delay damages to the Employer for this default;</li> <li>(ii) such delay damages shall be the amount stated in the Contract Data, for every day which shall elapse between the time for completion for the Milestone (with any extension under this Sub-Clause) and the date stated in the Milestone Certificate;</li> <li>(iii) the total amount of delay damages for all Milestones shall not exceed the maximum amount stated in the Contract Data (this shall not limit the Contractor's liability for delay damages in any case of fraud, gross negligence, deliberate default or reckless misconduct by the Contractor).</li> </ul>
<p><b>5. Design</b></p>	
<p><b>5.1 General Design Obligations</b></p>	<p>5.1.1 The Contractor shall carry out, and be responsible for, the design of the Works. Design shall be prepared by qualified designers who are Architects/engineers or other professionals who comply with the criteria (if any) stated in the Employer's Requirements. Unless otherwise stated in the Contract, the Contractor shall submit to the Project Manager for consent the name and particulars of each proposed designer and design Subcontractor.</p>
	<p>5.1.2 The Contractor warrants that he, his designers and design Subcontractors have the experience and capability necessary for the design. The Contractor undertakes that the designers shall be available to attend discussions with the Project Manager at all reasonable times, until the expiry</p>

		date of the relevant Defects Liability Period.
	5.1.3	Upon receiving notice under <b>Sub-Clause</b> 8.1 [Commencement of Works], the Contractor shall scrutinise the Employer's Requirements (including design criteria and calculations, if any) and the items of reference mentioned in <b>Sub-Clause</b> 4.7 [Setting Out]. Within the period stated in the Appendix to Tender, calculated from the Commencement Date, the Contractor shall give notice to the Project Manager of any error, fault or other defect found in the Employer's Requirements or these items of reference.
	5.1.4	After receiving this notice, the Project Manager shall determine whether <b>Sub-Clause</b> 13 [Variations and Adjustments] shall be applied, and shall give notice to the Contractor accordingly. If and to the extent that (taking account of cost and time) an experienced contractor exercising due care would have discovered the error, fault or other defect when examining the Site and the Employer's Requirements before submitting the Tender, the Time for Completion shall not be extended and the Contract Price shall not be adjusted.
<b>5.2 Contractor's Documents</b>	5.2.1	The Contractor's Documents shall comprise the technical documents specified in the Employer's Requirements, documents required to satisfy all regulatory approvals, and the documents described in <b>Sub-Clause</b> 5.6 [As-Built Documents] and <b>Sub-Clause</b> 5.7 [Operation and Maintenance Manuals]. Unless otherwise stated in the Employer's Requirements, the Contractor's Documents shall be written in the language for communications defined in <b>Sub-Clause</b> 1.4 [Law and Language].
	5.2.2	The Contractor shall prepare all Contractors' Documents, and shall also prepare any other documents necessary to instruct the Contractor's Personnel. The Employer's Personnel shall have the right to inspect the preparation of all these documents, wherever they are being prepared.
	5.2.3	If the Employer's Requirements describe the Contractor's Documents which are to be submitted to the Project Manager for review and/or for approval, they shall be submitted accordingly, together with a notice as described below. In the following provisions of this <b>Sub-Clause</b> , (i) "review period" means the period required by the Project Manager for review and (if so specified) for approval, and (ii) "Contractor's

	Documents" exclude any documents which are not specified as being required to be submitted for review and/or for approval.
	Unless otherwise stated in the Employer's Requirements, each review period shall not exceed 21 days, calculated from the date on which the Project Manager receives a Contractor's Document and the Contractor's notice. This notice shall state that the Contractor's Document is considered ready, both for review (and approval, if so specified) in accordance with this <b>Sub-Clause</b> and for use. The notice shall also state that the Contractor's Document complies with the Contract, or the extent to which it does not comply.
5.2.4	The Project Manager may, within the review period, give notice to the Contractor that a Contractor's Document fails (to the extent stated) to comply with the Contract. If a Contractor's Document so fails to comply, it shall be rectified, resubmitted and reviewed (and, if specified, approved) in accordance with this <b>Sub-Clause</b> , at the Contractor's cost.
5.2.5	<p>For each part of the Works, and except to the extent that the prior approval or consent of the Project Manager shall have been obtained:</p> <p>(a) in the case of a Contractor's Document which has (as specified) been submitted for the Project Manager's approval:</p> <p>(i) the Project Manager shall give notice to the Contractor that the Contractor's Document is approved, with or without comments, or that it fails (to the extent stated) to comply with the Contract;</p> <p>(ii) execution of such part of the Works shall not commence until the Project Manager has approved the Contractor's Document; and</p> <p>(iii) the Project Manager shall be deemed to have approved the Contractor's Document upon the expiry of the review periods for all the Contractor's Documents which are relevant to the design and execution of such part, unless the Project Manager has previously notified otherwise in</p>

		<p>accordance with sub-paragraph (i);</p> <p>(b) execution of such part of the Works shall not commence prior to the expiry of the review periods for all the Contractor's Documents which are relevant to its design and execution;</p> <p>(c) execution of such part of the Works shall be in accordance with these reviewed (and, if specified, approved) Contractor's Documents; and</p> <p>(d) if the Contractor wishes to modify any design or document which has previously been submitted for review (and, if specified, approval), the Contractor shall immediately give notice to the Project Manager. Thereafter, the Contractor shall submit revised documents to the Project Manager in accordance with the above procedure.</p>
	5.2.6	If the Project Manager instructs that further Contractor's Documents are required, the Contractor shall prepare them promptly.
	5.2.7	Any such approval or consent, or any review (under this <b>Sub-Clause</b> or otherwise), shall not relieve the Contractor from any obligation or responsibility.
<b>5.3 Contractor's Undertakings</b>	5.3.1	<p>The Contractor undertakes that the design, the Contractor's Documents, the execution and the completed Works will be in accordance with:</p> <p>(a) the Laws of Tanzania, and</p> <p>(b) the documents forming the Contract, as altered or modified by Variations.</p>
<b>5.4 Technical Standards and Regulations</b>	5.4.1	The design, the Contractor's Documents, the execution and the completed Works shall comply with the Country's technical standards, building, construction and environmental Laws, Laws applicable to the product being produced from the Works, and other standards specified in the Employer's Requirements, applicable to the Works, or defined by the applicable Laws.
	5.4.2	All these Laws shall, in respect of the Works and each Section, be those prevailing when the Works or Section are taken over by the Employer under <b>Sub-Clause</b> 10 [Employer's Taking Over]. References in the Contract to published standards shall be understood to be references to the edition

		applicable on the Base Date, unless stated otherwise.
	5.4.3	<p>If changed or new applicable standards come into force in the Country after the Base Date, the Contractor shall give notice to the Project Manager and (if appropriate) submit proposals for compliance. In the event that:</p> <p>(a) the Project Manager determines that compliance is required, and</p> <p>(b) the proposals for compliance constitute a variation, then the Project Manager may initiate a Variation in accordance with <b>Sub-Clause 13</b> [Variations and Adjustments].</p>
	5.4.4	<p>If so stated in the Employer's Requirements, the Contractor shall:</p> <p>(a) take into account climate change considerations in the design of structural elements of the Works and new buildings if any; and</p> <p>(b) apply the concept of universal access to the design and construction of structures and new buildings if any (the concept of universal access means unimpeded access for people of all ages and abilities in different situations and under various circumstances.)"</p>
<b>5.5 Training</b>	5.5.1	<p>The Contractor shall carry out the training of Employer's Personnel in the operation and maintenance of the Works to the extent specified in the Employer's Requirements. If the Contract specifies training which is to be carried out before taking-over, the Works shall not be considered to be completed for the purposes of taking-over under <b>Sub-Clause 10.1</b> [Taking Over of the Works and Sections] until this training has been completed.</p>
<b>5.6 As-Built Documents</b>	5.6.1	<p>The Contractor shall prepare, and keep up-to-date, a complete set of "as-built" records of the execution of the Works, showing the exact as-built locations, sizes and details of the work as executed. These records shall be kept on the Site and shall be used exclusively for the purposes of this <b>Sub-Clause</b>. Two copies shall be supplied to the Project Manager prior to the commencement of the Tests on Completion.</p>
	5.6.2	<p>In addition, the Contractor shall supply to the Project Manager as-built drawings of the Works,</p>

		showing all Works as executed, and submit them to the Project Manager for review under <b>Sub-Clause</b> 5.2 [Contractor's Documents]. The Contractor shall obtain the consent of the Project Manager as to their size, the referencing system, and other relevant details.
	5.6.3	Prior to the issue of any Taking-Over Certificate, the Contractor shall supply to the Project Manager the specified numbers and types of copies of the relevant as-built drawings, in accordance with the Employer's Requirements. The Works shall not be considered to be completed for the purposes of taking-over under <b>Sub-Clause</b> 10.1 [Taking Over of the Works and Section s] until the Project Manager has received these documents.
<b>5.7 Operation and Maintenance Manuals</b>	5.7.1	Prior to commencement of the Tests on Completion, the Contractor shall supply to the Project Manager provisional operation and maintenance manuals in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair the Plant.
	5.7.2	The Works shall not be considered to be completed for the purposes of taking-over under <b>Sub-Clause</b> 10.1 [Taking Over of the Works and Section s] until the Project Manager has received final operation and maintenance manuals in such detail, and any other manuals specified in the Employer's Requirements for these purposes.
<b>5.8 Design Error</b>	5.8.1	If errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the Contractor's Documents, they and the Works shall be corrected at the Contractor's cost, notwithstanding any consent or approval under this Clause
<b>6. Staff and Labour</b>		
<b>6.1 Engagement of Staff and Labour</b>	6.1.1	Except as otherwise stated in the Employer's Requirement, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, feeding, transport, and, when appropriate, housing.
	6.1.2	The Contractor shall be obliged, to the extent practicable and reasonable, to employ staff and labour in compliance with Laws of Tanzania. And the Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and

		experience from within Tanzania.
	6.1.3	The Contractor shall provide the Contractor's Personnel information and documentation that are clear and understandable regarding their terms and conditions of employment. The information and documentation shall set out their rights under relevant labour Laws applicable to the Contractor's Personnel (which will include any applicable collective agreements), including their rights related to hours of work, wages, overtime, compensation and benefits, as well as those arising from any requirements in the Employer's Requirements. The Contractor's Personnel shall be informed when any material changes to their terms or conditions of employment occur.
<b>6.2 Rates of Wages and Conditions of Labour</b>	6.2.1	The Contractor shall pay rates of wages, and observe conditions of labour, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by Employers whose trade or industry is similar to that of the Contractor.
	6.2.2.	<p>The Contractor shall inform the Contractor's Personnel about:</p> <ul style="list-style-type: none"> <li>(a) any deduction to their payment and the conditions of such deductions in accordance with the applicable Laws or as stated in the Employer's Requirements; and</li> <li>(b) their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of the Country for the time being in force.</li> </ul> <p>The Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.</p>
	6.2.3	Where required by applicable Laws or as stated in the Employer's Requirements, the Contractor shall provide the Contractor's Personnel written notice of termination of employment and details of severance payments in a timely manner. The Contractor shall have paid the Contractor's Personnel (either directly or where appropriate for their benefit) all due wages and entitlements including, as applicable, social security benefits

		and pension contributions, on or before the end of their engagement/ employment.”
<b>6.3 Persons in the Service of Employer</b>	6.3.1	The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Employer’s Personnel.
<b>6.4 Labour Laws</b>	6.4.1	The Contractor shall comply with all the relevant labour Laws applicable to the Contractor’s Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.
	6.4.2	The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.
	6.4.3	The Contractor shall provide the Contractor’s Personnel annual holiday and sick, maternity and family leave, as required by applicable Laws or as stated in the Employer’s Requirements
<b>6.5 Facilities for Staff and Labour</b>	6.5.1	Except as otherwise stated in the Employer’s Requirement, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor’s Personnel. The Contractor shall also provide facilities for the Employer’s Personnel as stated in the Employer’s Requirement.
	6.5.2	The Contractor shall not permit any of the Contractor’s Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.
	6.5.3	“If stated in the Employer’s Requirements, the Contractor shall give access to or provide services that accommodate the physical, social and cultural needs of the Contractor’s Personnel. The Contractor shall also provide similar facilities for the Employer’s Personnel as stated in the Employer’s Requirements
<b>6.6 Health and Safety of Personnel</b>	6.6.1	The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor’s Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor’s and Employer’s Personnel, and that suitable arrangements are

	made for all necessary welfare and hygiene requirements and for the prevention of epidemics.
6.6.2	Subject to Sub-Clause 6.7.1, the Contractor shall submit to the Project Manager for Review a health and safety manual which has been specifically prepared for the Works, the Site and other places (if any) where the Contractor intends to execute the Works
6.6.3	<p>The health and safety manual shall be in addition to any other similar document required under applicable health and safety regulations and Laws. The health and safety manual shall set out all the health and safety requirements under the Contract, which shall include at a minimum:</p> <ul style="list-style-type: none"> <li>a) the procedures to establish and maintain a safe working environment without risk to health at all workplaces, machinery, equipment and processes under the control of the Contractor, including control measures for chemical, physical and biological substances and agents;</li> <li>b) details of the training to be provided, records to be kept;</li> <li>c) the procedures for prevention, preparedness and response activities to be implemented in the case of an emergency event (i.e. an unanticipated incident, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, which may occur for a variety of different reasons including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather or lack of early warning);</li> <li>d) the measures to be taken to avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases,</li> <li>e) the measures to be implemented to avoid or minimize the spread of communicable diseases (including transfer of Sexually Transmitted Diseases or Infections (STDs), such as HIV virus) and non-communicable diseases associated with the execution of the Works, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. This includes taking measures to avoid or</li> </ul>

	<p>minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent Contract-related labour;</p> <p>f) the policies and procedures on the management and quality of accommodation and welfare facilities if such accommodation and welfare facilities are provided by the Contractor in accordance with Sub-Clause 6.6.1; and</p> <p>g) any other requirements stated in the Specification.</p>
	<p>6.6.4 The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and</p>
	<p>6.6.5 The Contractor shall send, to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Project Manager may reasonably require.</p>
	<p>6.6.6 The Contractor shall conduct a COVID-19 and an HIV-AIDS awareness programme via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the COVID-19 and HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.</p>
	<p>6.6.7 The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to, of Sexually Transmitted Diseases</p>

		(STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.
	6.6.8	The Contractor shall include in the program to be submitted for the execution of the Works under Sub-Clause 8.3 an alleviation program for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose
<b>6.7 Contractor's Superintendence</b>	6.7.1	Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the work.
	6.7.2	Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in <b>Sub-Clause 1.4 [Law and Language]</b> ) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.
<b>6.8 Contractor's Personnel</b>	6.8.1	The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Project Manager may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:  (a) persists in any misconduct or lack of care;

	<ul style="list-style-type: none"> <li>(b) carries out duties incompetently or negligently;</li> <li>(c) fails to comply with any provision of the Contract;</li> <li>(d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment;</li> <li>(e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works;</li> <li>(f) has been recruited from the Employer's Personnel in breach of Sub-Clause 6.3 [Persons in the Service of Employer];</li> <li>(g) undertakes behavior which breaches the Code of Conduct for Contractor's Personnel (ES).t.</li> </ul>
	<p>6.8.2 If appropriate, the Contractor shall then promptly appoint (or cause to be appointed) a suitable replacement with equivalent skills and experience. In the case of replacement of the Contractor's Representative, Sub-Clause 4.3 [Contractor's Representative] shall apply. In the case of replacement of Key Personnel (if any), Sub- Clause 6.11 [Key Personnel] shall apply.</p>
	<p>6.8.3 Subject to the requirements in Sub-Clause 4.3 [Contractor's Representative] and 6.11 [Key Personnel], and notwithstanding any requirement from the Engineer to remove or cause to remove any person, the Contractor shall take immediate action as appropriate in response to any violation of (a) through (g) above. Such immediate action shall include removing (or causing to be removed) from the Site or other places where the Works are being carried out, any Contractor's Personnel who engages in (a), (b), (c), (d),( e) or (g) above or has been recruited as stated in (f) above."</p>
<p><b>6.9 Records of Contractor's Personnel and Equipment</b></p>	<p>6.9.1 The Contractor shall submit, to the Project Manager, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Project Manager, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.</p>

<p><b>6.10 Disorderly Conduct</b></p>	<p>6.10.1 The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.</p>
<p><b>6.11 Key Personnel</b></p>	<p>6.11.1 The Contractor shall, if specified in the Employer's Requirements, appoint the natural persons named in the Tender to the positions of Key Personnel, If not so named, or if an appointed person fails to act in the relevant position of Key Personnel, the Contractor shall submit to the Project Manager for consent the name and particulars of another person the Contractor proposes to appoint to such position. If consent is withheld or If the Project Manager does not respond within 14 days after receiving any such submission, by giving a Notice stating his/her objection to the appointment of such person (or replacement) with reasons, the Project Manager shall be deemed to have given his/her consent.</p>
	<p>6.11.2 The Contractor shall not, without the Project Manager's prior consent, revoke the appointment of any of the Key Personnel or appoint a replacement (unless the person is unable to act as a result of death, illness, disability or resignation, in which case the appointment shall be deemed to have been revoked with immediate effect and the appointment of a replacement shall be treated as a temporary appointment until the Project Manager gives his/her consent to this replacement, or another replacement is appointed, under this Sub-Clause).</p>
	<p>6.11.3 All Key Personnel shall be based at the Site (or, where Works are being executed off the Site, at the location of the Works) for the whole time that the Works are being executed. If any of the Key Personnel is to be temporarily absent during execution of the Works, a suitable replacement shall be temporarily appointed, subject to the Project Manager's prior consent.</p>
	<p>6.11.4 All Key Personnel shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If any of the Key Personnel are not fluent in this language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Project Manager.</p>

<p><b>6.12 Foreign Personnel</b></p>	<p>6.12.1 The Contractor may bring in to the country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel.</p>
	<p>6.12.2 The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.</p>
<p><b>6.13 Supply of Foodstuffs and Water</b></p>	<p>6.13.1 The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.</p>
	<p>6.13.2 The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.</p>
<p><b>6.14 Measures against Insect and Pest Nuisance</b></p>	<p>6.14.1 The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.</p>
<p><b>6.15 Alcoholic Liquor or Drugs</b></p>	<p>6.15.1 The Contractor shall not, otherwise than in accordance with the Laws of Tanzania, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal thereto by Contractor's Personnel.</p>
<p><b>6.16 Arms and Ammunition</b></p>	<p>6.16.1 The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.</p>

<b>6.17 Festivals and Religious Customs</b>	6.17.1 The Contractor shall respect Tanzania's recognized festivals, days of rest and religious or other customs.
<b>6.18 Funeral Arrangements</b>	6.18.1 The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of his local employees who may die while engaged upon the Works.
<b>6.19 Prohibition of Forced or Compulsory Labour</b>	6.19.1 The contractor shall not employ "forced or compulsory labour" in any form. "Forced or compulsory labour" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.
	6.19.2 The Contractor, including its Subcontractors, shall not employ or engage forced labour. Forced labour consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.
	6.19.3 No persons shall be employed or engaged who have been subject to trafficking. Trafficking in persons is defined as the recruitment, transportation, transfer, harboring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation.
<b>6.20 Prohibition of Harmful Child Labour</b>	6.20.1 The Contractor, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the Laws of Tanzania specifies a higher age (the minimum age). The Contractor, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
	6.20.2 The Contractor including its Subcontractors, shall only employ or engage children between the minimum age and the age of 18 after an appropriate risk assessment has been conducted by the Contractor with the Project Manager's consent. The Contractor shall be subject to

	regular monitoring by the Project Manager that includes monitoring of health, working conditions and hours of work.
	<p>6.20.3 Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:</p> <ul style="list-style-type: none"> <li>(a) with exposure to physical, psychological or sexual abuse;</li> <li>(b) underground, underwater, working at heights or in confined spaces;</li> <li>(c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads;</li> <li>(d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or</li> </ul> <p>under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer.</p>
<b>6.21 Employment Records of Workers</b>	<p>6.21.1 The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Project Manager, and these records shall be available for inspection by Auditors during normal working hours. These records shall be included in the details to be submitted by the Contractor under <b>Sub-Clause</b> 6.10 [Records of Contractor's Personnel and Equipment].</p>
<b>6.22 Workers' Organisations</b>	<p>6.22.1 In accordance with Tanzania's labour laws which recognise workers' rights to form and to join workers' organizations of their choosing and to bargain collectively without interference, the Contractor shall comply with such laws. In such circumstances, the role of legally established workers' organizations and legitimate workers' representatives will be respected, and they will be provided with information needed for meaningful negotiation in a timely manner.</p>
	<p>6.22.2 Where the relevant labour laws substantially restrict workers' organizations, the Contractor shall enable alternative means for the Contractor's Personnel to express their grievances and protect</p>

	<p>their rights regarding working conditions and terms of employment. The Contractor shall not seek to influence or control these alternative means. The Contractor shall not discriminate or retaliate against the Contractor's Personnel who participate, or seek to participate, in such organizations and collective bargaining or alternative mechanisms. Workers' organizations are expected to fairly represent the workers in the workforce.</p>
<p><b>6.23 Non-Discrimination and Equal Opportunity</b></p>	<p>6.23.1 The Contractor shall not make decisions relating to the employment or treatment of Contractor's Personnel on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment of Contractor's Personnel on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to any aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices.</p>
	<p>6.23.2 Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination. The Contractor shall provide protection and assistance as necessary to ensure nondiscrimination and equal opportunity, including for specific groups such as women, people with disabilities, migrant workers and children (of working age in accordance with GCC 6.21).</p>
<p><b>6.24 Contractor's Personnel Grievance Mechanism</b></p>	<p>6.24.1 The Contractor shall have a grievance mechanism for Contractor's Personnel, and where relevant the workers' organizations stated in GCC 6.23, to raise workplace concerns. The grievance mechanism shall be proportionate to the nature, scale, risks and impacts of the Contract. The mechanism shall address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned in a language they understand, without any retribution, and shall operate in an independent and objective manner.</p>
	<p>6.24.2 The Contractor's Personnel shall be informed of the grievance mechanism at the time of engagement for the Contract, and the measures put in place to protect them against any reprisal</p>

		for its use. Measures will be put in place to make the grievance mechanism easily accessible to all Contractor's Personnel.
	6.24.3	The grievance mechanism shall not impede access to other judicial or administrative remedies that might be available, or substitute for grievance mechanisms provided through collective agreements.
	6.24.4	The grievance mechanism may utilize existing grievance mechanisms, providing that they are properly designed and implemented, address concerns promptly, and are readily accessible to such project workers. Existing grievance mechanisms may be supplemented as needed with Contract-specific arrangements
<b>6.25 Training of Contractor's Personnel</b>	6.25.1	<p>The Contractor shall provide appropriate training to relevant Contractor's Personnel on ES aspects of the Contract, including appropriate sensitization on prohibition of SEA and SH, and health and safety training.</p> <p>As stated in the Specification or as instructed by the Project Manager, the Contractor shall also allow appropriate opportunities for the relevant Contractor's Personnel to be trained on ES aspects of the Contract by the Employer's Personnel.</p> <p>The Contractor shall provide training on SEA and SH, including its prevention, to any of its personnel who has a role to supervise other Contractor's Personnel.</p>
<b>7. Plant, Materials and Workmanship</b>		
<b>7.1 Manner of Execution</b>	7.1.1	<p>The Contractor shall carry out the manufacture of Plant, the production and manufacture of Materials, and all other execution of the Works:</p> <ul style="list-style-type: none"> <li>(a) in the manner (if any) specified in the Contract,</li> <li>(b) in a proper workmanlike and careful manner, in accordance with recognised good practice, and</li> <li>(c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.</li> </ul>
<b>7.2 Samples</b>	7.2.1	The Contractor shall submit the following samples of Materials, and relevant information, to the Project Manager for consent prior to using the

		<p>Materials in or for the Works:</p> <p>(a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and</p> <p>(b) additional samples instructed by the Project Manager as a Variation.</p> <p>Each sample shall be labelled as to origin and intended use in the Works.</p>
<b>7.3</b>	<b>Inspection</b>	<p>7.3.1 The Authorized Employer's Personnel shall at all reasonable times:</p> <p>(a) have full access to all parts of the Site and to all places from which natural Materials are being obtained, and</p> <p>(b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.</p>
		<p>7.3.2 The Contractor shall give the Employer's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.</p>
		<p>7.3.3 The Contractor shall give notice to the Project Manager whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Project Manager shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Project Manager does not require to do so.</p>
		<p>7.3.4 If the Contractor fails to give the notice, he shall, if and when required by the Project Manager, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.</p>
<b>7.4</b>	<b>Testing</b>	<p>7.4.1 This <b>Sub-Clause</b> shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).</p>
		<p>7.4.2 Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments,</p>

		labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Project Manager, the time and place for the specified testing of any Plant, Materials and other parts of the Works.
	7.4.3	The Project Manager may, under <b>Sub-Clause 13</b> [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.
	7.4.4	The Project Manager shall give the Contractor not less than 24 hours' notice of the Project Manager's intention to attend the tests. If the Project Manager does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Project Manager, and the tests shall then be deemed to have been made in the Project Manager's presence.
	7.4.5	If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as a result of a delay for which the Employer is responsible, the Contractor shall give notice to the Project Manager and shall be entitled subject to <b>Sub-Clause 20.1</b> [Contractor's Claims] to an extension of time and associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause 8.4</b> [Extension of Time for Completion].
	7.4.6	After receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.
	7.4.7	The Contractor shall promptly forward to the Project Manager duly certified reports of the tests. When the specified tests have been passed, the Project Manager shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Project Manager has not attended the tests, he shall be deemed to have accepted the readings as accurate.
<b>7.5</b>	<b>Rejection</b>	7.5.1 If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Project

		Manager may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.
	7.5.2	If the Project Manager requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Employer to incur additional costs, the Contractor shall subject to <b>Sub-Clause 2.5</b> [Employer's Claims] pay these costs to the Employer.
<b>7.6 Remedial Work</b>	7.6.1	Notwithstanding any previous test or certification, the Project Manager may instruct the Contractor to: <ul style="list-style-type: none"> <li>(a) remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,</li> <li>(b) remove and re-execute any other work which is not in accordance with the Contract, and</li> <li>(c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.</li> </ul>
	7.6.2	The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).
	7.6.3	If the Contractor fails to comply with the instruction, the Employer shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to <b>Sub-Clause 2.5</b> [Employer's Claims] pay to the Employer all costs arising from this failure.
<b>7.7 Ownership of Plant and Materials</b>	7.7.1	Except otherwise specified in the Contract, each item of Plant and Materials shall, to the extent consistent with the Laws of the Country, become the property of the Employer at whichever is the earlier of the following times, free from liens and other encumbrances: <ul style="list-style-type: none"> <li>(a) when it is incorporated in the Works;</li> <li>(b) when the Contractor is paid the corresponding value of the Plant and</li> </ul>

		Materials under <b>Sub-Clause</b> 8.9 [Payment for Plant and Materials in Event of Suspension].
<b>7.8 Royalties</b>	7.8.1	<p>Unless otherwise stated in the Employer's Requirements, the Contractor shall pay all royalties, rents and other payments for:</p> <ul style="list-style-type: none"> <li>(a) natural Materials obtained from outside the Site, and</li> <li>(b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.</li> </ul>
<b>8. Commencement, Delays and Suspension</b>		
<b>8.1 Commencement of Works</b>	8.1.1	<p>Except otherwise specified in the <b>SCC</b>, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Project Manager's instruction recording the agreement of both Parties on such fulfilment and instructing to commence the Works is received by the Contractor:</p> <ul style="list-style-type: none"> <li>(a) except if otherwise specified in the <b>SCC</b>, possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.12.1 [Compliance with Laws] as required for the commencement of the Works; and</li> <li>(b) receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.</li> </ul> <p>If the above said Project Manager's instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 16.2 [Termination by Contractor].</p>
	8.1.2	<p>Subject to Sub-Clause 4.1.7 on the Management Strategies and Implementation Plans and the C-ESMP, Sub-Clause 6.7.2 on the health and safety manual and Sub-Clause 4.22.2 on the security management plan, the Contractor, shall commence the execution of the Works as soon as is reasonably practicable after the</p>

		Commencement Date, and shall then proceed with the Works with due expedition and without delay
<b>8.2 Time for Completion</b>	8.2.1	<p>The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:</p> <ul style="list-style-type: none"> <li>(a) achieving the passing of the Tests on Completion, and</li> <li>(b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under <b>Sub-Clause</b> 10.1 [Taking Over of the works and sections]</li> </ul>
<b>8.3 Programme</b>	8.3.1	<p>The Contractor shall submit a detailed time programme to the Project Manager within 14 working days after receiving the notice under <b>Sub-Clause</b> 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:</p> <ul style="list-style-type: none"> <li>(a) the order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design, Contractor's Documents, procurement, manufacture, inspection, delivery to Site, construction, erection, testing, commissioning and trial operation,</li> <li>(b) the periods for reviews under <b>Sub-Clause</b> 5.2 [Contractor's Documents] and for any other submissions, approvals and consents specified in the Employer's Requirements,</li> <li>(c) the sequence and timing of inspections and tests specified in the Contract, and</li> <li>(d) a supporting report which includes: <ul style="list-style-type: none"> <li>i). a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and</li> <li>ii). details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of</li> </ul> </li> </ul>

		Contractor's Equipment, required on the Site for each major stage.
	8.3.2	Unless the Project Manager, within 14 working days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.
	8.3.3	The Contractor shall promptly give notice to the Project Manager of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Project Manager may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under <b>Sub-Clause</b> 13.3 [Variation Procedure].
	8.3.4	If, at any time, the Project Manager gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Project Manager in accordance with this <b>Sub-Clause</b> .
<b>8.4 Extension of Time for Completion</b>	8.4.1	The Employer may 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.
	8.4.2	The Contractor shall be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of <b>Sub-Clause</b> 10.1 [Taking Over of the Works and Section s] is or will be delayed by any of the following causes: <ul style="list-style-type: none"> <li>(a) a Variation (unless an adjustment to the Time for Completion has been agreed under <b>Sub-Clause</b> 13.3 [Variation Procedure]),</li> <li>(b) a cause of delay giving an entitlement to extension of time under a <b>Sub-Clause</b> of these Conditions,</li> <li>(c) exceptionally adverse climatic conditions,</li> <li>(d) Unforeseeable shortages in the availability</li> </ul>

	<p>of personnel or Goods caused by epidemic or governmental actions, or</p> <p>(e) any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors on the Site.</p>
	<p>8.4.3 If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Project Manager in accordance with <b>Sub-Clause</b> 20.1 [Contractor's Claims]. When determining each extension of time under <b>Sub-Clause</b> 20.1, the Employer shall review previous determinations and may increase, but shall not decrease, the total extension of time.</p>
	<p>8.4.4 The Employer shall, within twenty one (21) days of receipt of application for extension of the Intended Completion Date by the Contractor, decide whether or not to grant the extension. The application by the Contractor shall be granted only when supported by full information of a compensation event(s) or variation.</p>
	<p>8.4.5 In the event the Contractor has not issued an early warning notice of a delay or has failed to cooperate in dealing with a delay, such a delay or failure may be a ground for not granting the extension of the Intended Completion Date.</p>
<b>8.5 Rate of Progress</b>	<p>8.5.1 If, at any time:</p> <p>(a) actual progress is too slow to complete within the Time for Completion, and/or</p> <p>(b) progress has fallen (or will fall) behind the current programme under <b>Sub-Clause</b> 8.3 [Programme],</p> <p>other than as a result of a cause listed in <b>Sub-Clause</b> 8.4 [Extension of Time for Completion], then the Project Manager may, upon written approval of the Employer, instruct the Contractor to submit, under <b>Sub-Clause</b> 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.</p>
	<p>8.5.1 Unless the Project Manager notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel</p>

		and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Employer to incur additional costs, the Contractor shall subject to <b>Sub-Clause</b> 2.5 [Employer's Claims] pay these costs to the Employer, in addition to delay damages (if any) under <b>Sub-Clause</b> 8.6 below.
<b>8.6 Liquidated Damages</b>	8.6.1	The Contractor shall pay liquidated damages to the Employer at the rate per day <b>stated in the SCC</b> for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the maximum amount of performance security <b>stated in the SCC</b> . The Employer may deduct liquidated damages from payments due to the Contractor.
	8.6.2	Where the Project Manager, after assessment of work progress, upon satisfaction that the Contractor will not complete the works within the contract period, may issue a notice to the Contractor requiring the payment of liquidated damages.
	8.6.3	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 <b>Sub-Clause</b> 14.8 [Delayed Payment]
<b>8.7 Suspension of Work</b>	8.7.1	The Project Manager may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.
	8.7.2	The Project Manager may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following <b>Sub-Clauses</b> 8.8, 8.9 and 8.10 shall not apply.
<b>8.8 Consequences of Suspension</b>	8.8.1	If the Contractor suffers delay and/or incurs Cost from complying with the Project Manager's instructions under <b>Sub-Clause</b> 8.7 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Project Manager and shall be entitled subject to <b>Sub-</b>

	<p><b>Clause 20.1</b> [Contractor's Claims] to an extension of time and associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause 8.4</b> [Extension of Time for Completion ], and after receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.</p>
	<p>8.8.2 The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with <b>Sub-Clause 8.7</b> [Suspension of Work].</p>
<p><b>8.9 Payment for Plant and Materials in Event of Suspension</b></p>	<p>8.9.1 The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/or Materials which have not been delivered to Site if:</p> <ul style="list-style-type: none"> <li>(a) the work on Plant or delivery of Plant and/or Materials has been suspended for more than 28 days, and</li> <li>(b) the Contractor has marked the Plant and/or Materials as the Employer's property in accordance with the Project Manager's instructions.</li> </ul>
<p><b>8.10 Prolonged Suspension</b></p>	<p>8.10.1 If the suspension under <b>Sub-Clause 8.7</b> [Suspension of Work] has continued for more than 84 days, the Contractor may request the Project Manager's permission to proceed.</p>
	<p>8.10.2 If the Project Manager does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Project Manager, treat the suspension as an omission under <b>Sub-Clause 13</b> [Variations and Adjustments] of the affected part of the Works.</p>
	<p>8.10.3 If the suspension affects the whole of the Works, the Contractor may give notice of termination under <b>Sub-Clause 16.2</b> [Termination by Contractor].</p>
<p><b>8.11 Resumption of Work</b></p>	<p>8.11.1 After the permission or instruction to proceed is given, the Contractor and the Project Manager shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the</p>

		suspension.
<b>9. Tests on Completion</b>		
<b>9.1 Contractor's Obligations</b>	9.1.1	The Contractor shall carry out the Tests on Completion in accordance with this Clause and <b>Sub-Clause</b> 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of <b>Sub-Clause</b> 4.1 [Contractor's General Obligations].
	9.1.2	The Contractor shall give to the Project Manager not less than 21 days notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 working days after this date, on such day or days as the Project Manager may instruct.
	9.1.3	Unless otherwise stated <b>in the SCC</b> , the Tests on Completion shall be carried out in the following sequence: <ul style="list-style-type: none"> <li>(a) pre-commissioning tests, which shall include the appropriate inspections and ("dry" or "cold") functional tests to demonstrate that each item of Plant can safely undertake the next stage;</li> <li>(b) commissioning tests, which shall include the specified operational tests to demonstrate that the Works or Section can be operated safely and as specified, under all available operating conditions; and</li> <li>(c) trial operation, which shall demonstrate that the Works or Section perform reliably and in accordance with the Contract.</li> </ul>
	9.1.4	During trial operation, when the Works are operating under stable conditions, the Contractor shall give notice to the Project Manager that the Works are ready for any other Tests on Completion, including performance tests to demonstrate whether the Works conform with criteria specified in the Employer's Requirements and with the Schedule of Guarantees.
	9.1.5	Trial operation shall not constitute a taking-over under <b>Sub-Clause</b> 10 [Employer's Taking Over]. Any product produced by the Works during trial operation shall be the property of the Employer.

	9.1.6	In considering the results of the Tests on Completion, the Project Manager shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Project Manager.
<b>9.2 Delayed Tests</b>	9.2.1	If the Tests on Completion are being unduly delayed by the Employer, <b>Sub-Clause 7.4</b> [Testing] (fifth paragraph) and/or <b>Sub-Clause 10.3</b> [Delay of Tests on Completion] shall be applicable.
	9.2.2	If the Tests on Completion are being unduly delayed by the Contractor, the Project Manager may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Project Manager.
	9.2.3	If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Employer's Personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.
<b>9.3 Retesting</b>	9.3.1	If the Works, or a Section, fail to pass the Tests on Completion, <b>Sub-Clause 7.5</b> [Rejection] shall apply, and the Project Manager or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.
<b>9.4 Failure to Pass Tests on Completion</b>	9.4.1	If the Works, or a Section, fail to pass the Tests on Completion repeated under <b>Sub-Clause 9.3</b> [Retesting], the Project Manager may: <ul style="list-style-type: none"> <li>(a) order further repetition of Tests on Completion under <b>Sub-Clause 9.3</b>;</li> <li>(b) if the failure deprives the Employer of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Employer shall have the same remedies as are provided in sub-paragraph (c) of <b>Sub-Clause 11.4</b> [Failure to Remedy Defects]; or</li> </ul>

		(c) issue a Taking-Over Certificate, if the Employer so requests.
	9.4.2	In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Employer as a result of this failure.
	9.4.3	<p>Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Employer may require the reduction to be:</p> <p>(a) agreed by both Parties (in full satisfaction of this failure only) and paid before this Taking-Over Certificate is issued, or</p> <p>(b) determined and paid under <b>Sub-Clause 2.5 [Employer's Claims]</b> and <b>Sub-Clause 3.6 [Determinations]</b>.</p>
<b>10. Employer's Taking Over</b>		
<b>10.1 Taking Over of the Works and Sections</b>	10.1.1	<p>Except as stated in <b>Sub-Clause 9.4 [Failure to Pass Tests on Completion]</b>, the Works shall be taken over by the Employer when</p> <p>(a) the Works have been completed in accordance with the Contract, including the matters described in <b>Sub-Clause 8.2 [Time for Completion]</b> and except as allowed in sub-paragraph (a) below, and</p> <p>(b) Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this <b>Sub-Clause</b>.</p>
	10.1.2	The Contractor may apply by notice to the Project Manager for a Taking-Over Certificate not earlier than 14 working days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.
	10.1.3	<p>The Project Manager shall, within 28 days after receiving the Contractor's application:</p> <p>(a) issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which</p>

	<p>will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or</p> <p>(b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this <b>Sub-Clause</b>.</p>
	<p>10.1.3 If the Project Manager fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.</p>
<b>10.2 Taking Over of Parts of the Works</b>	<p>10.2.1 The Project Manager may, at the sole discretion and written approval of the Employer, issue a Taking-Over Certificate for any part of the Permanent Works.</p>
	<p>10.2.2 The Employer shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Project Manager has issued a Taking-Over Certificate for this part.</p>
	<p>10.2.3 However, unless otherwise agreed by the Parties, if the Employer does use any part of the Works before the Taking-Over Certificate is issued:</p> <p>(a) the part which is used shall be deemed to have been taken over as from the date on which it is used,</p> <p>(b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Employer, and</p> <p>(c) if requested by the Contractor, the Project Manager shall issue a Taking-Over Certificate for this part.</p>
	<p>10.2.4 After the Project Manager has issued a Taking- Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the</p>

	expiry date of the relevant Defects Liability Period.
	<p>10.2.5 If the Contractor incurs cost as a result of the Employer taking over and/or using a part of the Works, other than such use as is specified in the Contract or agreed by the Contractor, the Contractor shall</p> <p>(a) give notice to the Project Manager and</p> <p>(b) be entitled subject to <b>Sub-Clause 20.1</b> [Contractor's Claims] to payment of any such Cost plus profit, which shall be included in the Contract Price. After receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine the matter.</p>
	<p>10.2.6 If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the Liquidated damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the Liquidated damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole.</p>
	<p>10.2.7 The Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of Liquidated damages under <b>Sub-Clause 8.6</b> [Liquidated Damages], and shall not affect the maximum amount of these damages.</p>
<b>10.3 Delay of Tests on Completion</b>	<p>10.3.1 If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Employer is responsible and the suffers a delay, the Contractor shall give notice to the Project Manager and may be entitled subject to <b>Sub-Clause 20.1</b> [Contractor's Claims], to an extension of time and any associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause 8.4</b> [Extension of Time for Completion], and after receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.</p>

<p><b>10.4 Surfaces Requiring Reinstatement</b></p>	<p>10.4.1 Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.</p>
<p style="text-align: center;"><b>11. Defects Liability</b></p>	
<p><b>11.1 Completion of Outstanding Work and Remedying Defects</b></p>	<p>11.1.1 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Liability Period or as soon as practicable thereafter, the Contractor shall:</p> <ul style="list-style-type: none"> <li>(a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Project Manager, and</li> <li>(b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Employer on or before the expiry date of the Defects Liability Period for the Works or Section (as the case may be).</li> </ul>
	<p>11.1.2 If a defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Employer.</p>
<p><b>11.2 Cost of Remedying Defects</b></p>	<p>11.2.1 All work referred to in sub-paragraph (b) of <b>Sub-Clause 11.1</b> [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:</p> <ul style="list-style-type: none"> <li>(a) any design for which the Contractor is responsible,</li> <li>(b) Plant, Materials or workmanship not being in accordance with the Contract, or</li> <li>(c) failure by the Contractor to comply with any other obligation.</li> </ul>
	<p>11.2.2 If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Employer and <b>Sub-Clause 13.3</b> [Variation Procedure] shall apply.</p>
<p><b>11.3 Extension of Defects Liability Period</b></p>	<p>11.3.1 The Employer shall be entitled subject to <b>Sub-Clause 2.5</b> [Employer's Claims] to an extension of the Defects Liability Period for the Works or a Section if and to the extent that the Works,</p>

	<p>Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of a damage attributable to the Contractor. However, that extension shall not exceed two years.</p>
	<p>11.3.2 If delivery and/or erection of Plant and/or Materials was suspended under <b>Sub-Clause</b> 8.7 [Suspension of Work] or <b>Sub-Clause</b> 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Liability Period for the Plant and/or Materials would otherwise have expired.</p>
<p><b>11.4 Failure to Remedy Defects</b></p>	<p>11.4.1 If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by (or on behalf of) the Employer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.</p>
	<p>11.4.2 If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under <b>Sub-Clause</b> 11.2 [Cost of Remedying Defects], the Employer may (at his option):</p> <ul style="list-style-type: none"> <li>(a) carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to <b>Sub-Clause</b> 2.5 [Employer's Claims] pay to the Employer the costs reasonably incurred by the Employer in remedying the defect or damage;</li> <li>(b) require the Project Manager to determine a reasonable reduction in the Contract Price in accordance with <b>Sub-Clause</b> 3.6 [Determinations]; or</li> <li>(c) if the defect or damage deprives the Employer of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, the Employer shall then be entitled to recover all sums paid for the Works or for such part (as the case may be),</li> </ul>

	plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.
<b>11.5 Removal of Defective Work</b>	11.5.1 If the defect or damage cannot be remedied expeditiously on the Site and the Employer gives written consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.
<b>11.6 Further Tests</b>	11.6.1 If the work of remedying of any defect or damage may affect the performance of the Works, the Project Manager may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 14 working days after the defect or damage is remedied.
	11.6.2 These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under <b>Sub-Clause 11.2 [Cost of Remedying Defects]</b> , for the cost of the remedial work.
<b>11.7 Right of Access</b>	11.7.1 Until the Performance Certificate has been issued, the Contractor shall have the right of access to all parts of the Works and to records of the operation and performance of the Works, except as may be inconsistent with the Employer's security restrictions.
<b>11.8 Contractor to Search</b>	11.8.1 The Contractor shall, if required by the Project Manager, search for the cause of any defect, under the direction of the Project Manager. Unless the defect is to be remedied at the cost of the Contractor under <b>Sub-Clause 11.2 [Cost of Remedying Defects]</b> , the Cost of the search plus profit shall be agreed or determined by the Project Manager in accordance with <b>Sub-Clause 3.6 [Determinations]</b> and shall be included in the Contract Price.
<b>11.9 Performance Certificate</b>	11.9.1 Performance of the Contractor's obligations shall not be considered to have been completed until the Project Manager has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

	11.9.2 The Project Manager shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defects Liability Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. A copy of the Performance Certificate shall be issued to the Employer.
	11.9.3 Only the Performance Certificate shall be deemed to constitute acceptance of the Works.
<b>11.10 Unfulfilled Obligations</b>	11.10.1 After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.
<b>11.11 Clearance of Site</b>	11.11.1 Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.
	11.11.2 If all these items have not been removed within 28 days after receipt by the Contractor of the Performance Certificate, the Employer may sell or otherwise dispose of any remaining items. The Employer shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.
	11.11.3 Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Employer's costs, the Contractor shall pay the outstanding balance to the Employer.
<b>12. Tests after Completion</b>	
<b>12.1 Procedure for Tests after Completion</b>	12.1.1 If Tests after Completion are specified <b>in the SCC</b> , this Clause shall apply. Unless otherwise stated <b>in the SCC</b> , the Employer shall: <ul style="list-style-type: none"> <li>(a) provide all electricity, equipment, fuel, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the Tests after Completion efficiently, and</li> <li>(b) carry out the Tests after Completion in accordance with the manuals supplied by the Contractor under <b>Sub-Clause 5.7</b></li> </ul>

	<p>[Operation and Maintenance Manuals] and such guidance as the Contractor may be required to give during the course of these Tests; and in the presence of such Contractor's Personnel as either Party may reasonably request.</p>
	<p>12.1.2 The Tests after Completion shall be carried out as soon as is reasonably practicable after the Works or Section have been taken over by the Employer. The Employer shall give to the Contractor 21 days' notice of the date after which the Tests after Completion will be carried out. Unless otherwise agreed, these Tests shall be carried out within 14 working days after this date, on the day or days determined by the Employer.</p>
	<p>12.1.3 If the Contractor does not attend at the time and place agreed, the Employer may proceed with the Tests after Completion, which shall be deemed to have been made in the Contractor's presence, and the Contractor shall accept the readings as accurate.</p>
	<p>12.1.4 The results of the Tests after Completion shall be compiled and evaluated by both Parties. Appropriate account shall be taken of the effect of the Employer's prior use of the Works.</p>
<b>12.2 Delayed Test</b>	<p>12.2.1 If the Contractor incurs Cost as a result of any unreasonable delay by the Employer to the Tests after Completion, the Contractor shall</p> <ul style="list-style-type: none"> <li>(a) give notice to the Project Manager; and</li> <li>(b) be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to payment of any such Cost plus reasonable profit, which shall be included in the Contract Price.</li> </ul>
	<p>12.2.2 After receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine this Cost and profit.</p>
	<p>12.2.3 If, for reasons not attributable to the Contractor, a Tests after Completion on the Works or any Section cannot be completed during the Defects Liability Period (or any other period agreed upon by both Parties), then the Parties to agree on the final date of completing the test.</p>
<b>12.3 Retesting</b>	<p>12.3.1 If the Works, or a Section, fail to pass the Tests after Completion:</p> <ul style="list-style-type: none"> <li>(a) sub-paragraph (b) of <b>Sub-Clause</b> 11.1</li> </ul>

	<p>[Completion of Outstanding Work and Remedying Defects] shall apply; and</p> <p>(b) either Party may then require the failed Tests, and the Tests after Completion on any related work, to be repeated under the same terms and conditions.</p>
	<p>12.3.2 If and to the extent that this failure and retesting are attributable to any of the matters listed in subparagraphs (a) to (d) of <b>Sub-Clause 11.2</b> [Cost of Remedying Defects] and cause the Employer to incur additional costs, the Contractor shall subject to <b>Sub-Clause 2.5</b> [Employer's Claims] pay these costs to the Employer.</p>
<p><b>12.4 Failure to Pass Tests after Completion</b></p>	<p>12.4.1 If the following conditions apply, namely:</p> <p>(a) the Works, or a Section, fail to pass any or all of the Tests after Completion,</p> <p>(b) the relevant sum payable as non-performance damages for this failure is stated (or its method of calculation is defined) in the Contract, and</p> <p>(c) the Contractor pays this relevant sum to the Employer during the Defects Liability Period, then the Works or Section shall be deemed to have passed these Tests after Completion.</p>
	<p>12.4.2 If the Works, or a Section, fail to pass a Test after Completion and the Contractor proposes to make adjustments or modifications to the Works or such Section, the Contractor may be instructed by (or on behalf of) the Employer that right of access to the Works or Section cannot be given until a time that is convenient to the Employer. The Contractor shall then remain liable to carry out the adjustments or modifications and to satisfy this Test, within a reasonable period of receiving notice by (or on behalf of) the Employer of the time that is convenient to the Employer. However, if the Contractor does not receive this notice during the relevant Defects Liability Period, the Contractor shall be relieved of this obligation.</p>
	<p>12.4.3 If the Contractor incurs additional Cost as a result of any unreasonable delay by the Employer in permitting access to the Works or Plant by the Contractor, either to investigate the causes of a failure to pass a Tests after Completion or to carry out any adjustments or modifications, the</p>

	<p>Contractor may:</p> <ul style="list-style-type: none"> <li>(a) give notice to the Project Manager; and</li> <li>(b) be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to payment of any such Cost plus reasonable profit, which shall be included in the Contract Price.</li> </ul>
	<p>12.4.4 After receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine the matter.</p>
<p><b>13. Variations and Adjustments</b></p>	
<p><b>13.1 Right to Vary</b></p>	<p>13.1.1 Variations may be initiated by the Project Manager at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal.</p>
	<p>13.1.2 The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Project Manager stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Project Manager shall cancel, confirm or vary the instruction.</p>
	<p>13.1.3 Variation may be in the form of:</p> <ul style="list-style-type: none"> <li>(a) changes to the quantities of any item of work included in the Contract;</li> <li>(a) changes to the quality and other characteristics of any item of work;</li> <li>(b) changes to the levels, positions and/or dimensions of any part of the Works;</li> <li>(a) omission of any Work unless it is to be carried out by others;</li> <li>(b) any additional Work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work; or</li> <li>(c) changes to the sequence or timing of the execution of the Works.</li> </ul>

	<p>13.1.4 The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Project Manager, with prior written approval of the Employer, instructs a Variation.</p>
<p><b>13.2 Value Engineering</b></p>	<p>13.2.1 The Contractor may, at any time, submit to the Project Manager a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer.</p>
	<p>13.2.2 The proposal shall be prepared at the cost of the Contractor and shall include the items listed in <b>Sub-Clause</b> 13.3 [Variation Procedure].</p>
	<p>13.2.3 If a proposal, which is approved by the Project Manager, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:</p> <ul style="list-style-type: none"> <li>(a) the Contractor shall design this part,</li> <li>(b) sub-paragraphs (a) to (d) of <b>Sub-Clause</b> 4.1 [Contractor's General Obligations] shall apply, and</li> <li>(c) if this change results in a reduction in the contract value of this part, the Project Manager shall upon Employer's approval proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts: <ul style="list-style-type: none"> <li>(i) such reduction in contract value, resulting from the change, excluding adjustments under <b>Sub-Clause</b> 13.7 [Adjustments for Changes in Legislation] and <b>Sub-Clause</b> 13.8 [Adjustments for Changes in Cost],and</li> <li>(ii) the reduction (if any) in the value to the Employer of the varied works, taking account of any reductions in quality, anticipated life or operational efficiencies.</li> </ul> <p>However, if amount (i) is less than amount (ii), there shall not be a fee.</p> </li> </ul>

<p><b>13.3 Variation Procedure</b></p>	<p>13.3.1 If the Project Manager requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:</p> <ul style="list-style-type: none"> <li>(a) a description of the varied work performed or to be performed, including details of the resources and methods adopted or to be adopted by the Contractor, and sufficient ES information to enable an evaluation of ES risks and impacts;</li> <li>(b) the Contractor's proposal for any necessary modifications to the programme according to <b>Sub-Clause 8.3</b> [Programme] and to the Time for Completion, and</li> <li>(c) the Contractor's proposal for evaluation of the Variation.</li> </ul>
	<p>13.3.2 The Project Manager shall, as soon as practicable after receiving such proposal (under <b>Sub-Clause 13.2</b> [Value Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.</p>
	<p>13.3.3 Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Project Manager to the Contractor, who shall acknowledge receipt.</p>
	<p>13.3.4 Upon instructing or approving a Variation, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to agree or determine adjustments to the Contract Price and the Schedule of Payments. These adjustments shall include reasonable profit, and shall take account of the Contractor's submissions under <b>Sub-Clause 13.2</b> [Value Engineering] if applicable.</p>
<p><b>1.4 Payment in Applicable Currencies</b></p>	<p>13.4.1 If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.</p>

<p><b>13.5 Provisional Sums</b></p>	<p>13.5.1 Each Provisional Sum shall only be used, in whole or in part, in accordance with the Project Manager's instructions and the Contract Price shall be adjusted accordingly.</p>
	<p>13.5.2 The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Project Manager shall have instructed. For each Provisional Sum, the Project Manager may instruct:</p> <ul style="list-style-type: none"> <li>(a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under <b>Sub-Clause 13.3</b> [Variation Procedure]; and/or</li> <li>(b) Plant, Materials or services to be purchased by the Contractor, for which there shall be included in the Contract Price: <ul style="list-style-type: none"> <li>(i) the actual amounts paid (or due to be paid) by the Contractor, and</li> <li>(ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in the Appendix to Tender shall be applied.</li> </ul> </li> </ul>
	<p>13.5.3 The Contractor shall, when required by the Project Manager, produce quotations, invoices, vouchers and accounts or receipts in substantiation.</p>
	<p>13.5.4 The Provisional Sum shall be used to cover the Employer's share of the DAAB members' fees and expenses, in accordance with Clause 21. No prior instruction of the Project Manager shall be required with respect to the work of the DARB. The Contractor shall submit the DARB members' invoices and satisfactory evidence of having paid 100% of such invoices as part of the substantiation of those Statements submitted under Sub-Clause 14.3</p>
<p><b>13.6 Daywork</b></p>	<p>13.6.1 For work of a minor or incidental nature, the Project Manager may instruct that such work be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this <b>Sub-</b></p>

	<b>Clause</b> shall not apply.
	13.6.2 Before ordering Goods for the work, the Contractor shall submit quotations to the Project Manager. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.
	13.6.3 Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Project Manager accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work: <ul style="list-style-type: none"> <li>(a) the names, occupations and time of Contractor's Personnel,</li> <li>(b) the identification, type and time of Contractor's Equipment and Temporary Works, and</li> <li>(c) the quantities and types of Plant and Materials used.</li> </ul>
	13.6.4 One copy of each statement will, if correct, or when agreed, be signed by the Project Manager and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Project Manager, prior to their inclusion in the next Statement under <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates].
<b>13.7 Adjustments for Changes in Legislation</b>	13.7.1 The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of Tanzania (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.
	13.7.2 If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Project Manager and shall be entitled subject to <b>Sub- Clause</b> 20.1 [Contractor's Claims] to an extension of time and associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause</b> 8.4 [Extension of Time for Completion], and after receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine

	these matters.
	13.7.3 Notwithstanding the foregoing, the Contractor shall not be entitled to such an extension of time if the same shall already have been taken into account in determining an extension and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of <b>Sub- Clause 13.8.</b>
<b>13.8 Adjustments for Changes in Cost</b>	13.8.1 In this <b>Sub-Clause</b> , “table of adjustment data” means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this <b>Sub-Clause</b> shall not apply.
	13.8.2 If this <b>Sub-Clause</b> applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labour, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this <b>Sub-Clause</b> . To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.
	13.8.3 The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:  $P_n = a + b \frac{L_n}{L_o} + c \frac{E_n}{E_o} + d \frac{M_n}{M_o} + \dots$ <p>where:</p> <p>“P<sub>n</sub>” is the adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in period “n”, this period being a month unless otherwise stated <b>in the SCC</b> ;</p> <p>“a” is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;</p>

	<p>“b”, “c”, “d”, ... are coefficients representing the estimated proportion of each cost element related to the execution of the Works, as stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;</p> <p>“Ln”, “En”, “Mn”, ... are the current cost indices or reference prices for period “n”, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 49 days prior to the last day of the period (to which the particular Payment Certificate relates); and</p> <p>“Lo”, “Eo”, “Mo”, ... are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.</p>
	<p>13.8.4 The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Project Manager. For this purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.</p>
	<p>13.8.5 In cases where the “currency of index” (stated in the table) is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the central bank of the Country, of this relevant currency on the above date for which the index is required to be applicable.</p>
	<p>13.8.6 Until such time as each current cost index is available, the Project Manager shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.</p>
	<p>13.8.7 If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price: whichever is more favourable to the Employer.</p>

	<p>13.8.8 The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.</p>
<p><b>14. Contract Price and Payment</b></p>	
<p><b>14.1 The Contract Price</b></p>	<p>14.1.1 Unless otherwise stated <b>in the SCC</b>:</p> <ul style="list-style-type: none"> <li>(a) the Contract Price shall be the lumpsum accepted contract amount and subject to adjustments in accordance with the Contract;</li> <li>(b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in <b>Sub-Clause 13.7</b> [Adjustments for Changes in Legislation];</li> <li>(c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities: <ul style="list-style-type: none"> <li>(i) of the Works which the Contractor is required to execute, or</li> <li>(ii) for the purposes of valuation of the works; and</li> </ul> </li> </ul> <p>the Contractor shall submit to the Project Manager, within 28 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Project Manager may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.</p>
<p><b>14.2 Advance Payment</b></p>	<p>14.2.1 If stated in the SCC the Employer shall make advance payment to the Contractor of the amounts stated <b>in the SCC</b> by the manner stated <b>in the SCC</b>, 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.</p>

	<p>14.2.2 The Contractor shall use the advance payment to pay for mobilization and design expenses required specifically for design and 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.</p>
	<p>14.2.3 Unless and until the Employer receives this guarantee, or if the total advance payment is not stated in the <b>SCC</b>, this <b>Sub-Clause</b> shall not apply.</p>
	<p>14.2.4 The Project Manager shall deliver to the Employer and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates]) and after the Employer receives</p> <ul style="list-style-type: none"> <li>(a) the Performance Security in accordance with <b>Sub-Clause</b> 4.2 [Performance Security]; and</li> <li>(b) a guarantee in amounts and currencies equal to the advance payment. This guarantee shall be issued by an entity and from within a country (or other jurisdiction) approved by the Employer, and shall be in the form annexed to the SCC or in another form approved by the Employer.</li> </ul>
	<p>14.2.5 The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.</p>
	<p>14.2.6 Unless otherwise stated <b>in the SCC</b>, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Project Manager in accordance with <b>Sub-Clause</b> 14.6 [Issue of Interim Payment Certificates], as follows:</p> <ul style="list-style-type: none"> <li>(a) deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention)</li> </ul>

	<p>exceeds 30 percent of the Accepted Contract Amount less Provisional Sums; and</p> <p>(b) deductions shall be made at the amortisation rate stated <b>in the SCC</b> of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when eighty per cent (80%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.</p>
	<p>14.2.7 If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under <b>Sub-Clause 15</b> [Termination by Employer], <b>Sub-Clause 16</b> [Suspension and Termination by Contractor] or <b>Sub-Clause 19</b> [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under <b>Sub-Clause 15</b> [Termination by Employer] and <b>Sub-Clause 19.6</b> [Optional Termination, Payment and Release], payable by the Contractor to the Employer.</p>
<p><b>14.3 Application for Interim Payment Certificates</b></p>	<p>14.3.1 The Contractor shall submit a Statement in six copies to the Project Manager after the end of each month, in a form approved by the Project Manager, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the report on the progress during this month in accordance with <b>Sub-Clause 4.21</b> [Progress Reports].</p>
	<p>14.3.2 The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:</p> <p>(a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);</p> <p>(b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with <b>Sub-Clause 13.7</b></p>

	<p>[Adjustments for Changes in Legislation] and <b>Sub-Clause</b> 13.8 [Adjustments for Changes in Cost];</p> <ul style="list-style-type: none"> <li>(c) any amount to be deducted for retention, calculated by applying the percentage of retention stated <b>in the SCC</b> to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated <b>in the SCC</b>;</li> <li>(d) any amounts to be added for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with <b>Sub-Clause</b> 14.2 [Advance Payment];</li> <li>(e) any amounts to be added and deducted for Plant and Materials in accordance with <b>Sub-Clause</b> 14.5 [Plant and Materials intended for the Works];</li> <li>(f) any other additions or deductions which may have become due under the Contract or otherwise, including those under <b>Sub-Clause</b> 20 [Claims, Disputes and Arbitration]; and</li> <li>(g) the deduction of amounts certified in all previous Payment Certificates.</li> </ul>
<p><b>14.4 Schedule of Payments</b></p>	<p>14.4.1 If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:</p> <ul style="list-style-type: none"> <li>(a) the instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates];</li> <li>(b) <b>Sub-Clause</b> 14.5 [Plant and Materials intended for the Works] shall not apply; and</li> <li>(c) if these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Project Manager may proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less than that on which the instalments were</li> </ul>

	previously based.
	<p>14.4.2 If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.</p>
	<p>14.4.3 “If the Schedule of Payments specifies payments to be made to the Contractor based on Milestones, payments shall be made upon completion of such Milestones.”</p>
<p><b>14.5 Plant and Materials intended for the Works</b></p>	<p>14.5.1 If this <b>Sub-Clause</b> applies, Interim Payment Certificates shall include, under sub-paragraph (e) of <b>Sub-Clause</b> 14.3,</p> <ul style="list-style-type: none"> <li>(a) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and</li> <li>(b) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates].</li> </ul> <p>If the lists referred to in sub-paragraphs (b) (i) or (c) (i) below are not included <b>in the SCC</b>, this <b>Sub-Clause</b> shall not apply.</p>
	<p>14.5.2 The Project Manager shall determine and certify each addition if the following conditions are satisfied:</p> <ul style="list-style-type: none"> <li>(a) the Contractor has: <ul style="list-style-type: none"> <li>(i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and</li> <li>(ii) submitted a statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;</li> </ul> </li> </ul> <p>and either:</p> <ul style="list-style-type: none"> <li>(b) the relevant Plant and Materials: <ul style="list-style-type: none"> <li>(i) are those listed in the Schedules for payment when shipped,</li> <li>(ii) have been shipped to the Country, en route to the Site, in accordance with the</li> </ul> </li> </ul>

	<p>Contract; and</p> <p>(iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Project Manager together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Employer in amounts and currencies equal to the amount due under this <b>Sub-Clause</b>: this guarantee may be in a similar form to the form referred to in <b>Sub-Clause</b> 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration;</p> <p>or</p> <p>(c) the relevant Plant and Materials:</p> <p>(i) are those listed in the Schedules for payment when delivered to the Site, and</p> <p>(ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration, and appear to be in accordance with the Contract.</p>
	<p>14.5.3 The additional amount to be certified shall be the equivalent of eighty percent of the Project Manager's determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this <b>Sub-Clause</b> and of the contract value of the Plant and Materials.</p>
	<p>14.5.4 The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under subparagraph (a) of <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.</p>
<p><b>14.6 Issue of Interim Payment Certificates</b></p>	<p>14.6.1 No amount will be certified or paid until the Employer has received and approved the Performance Security. Thereafter, the Project Manager shall, within 28 days after receiving a Statement and supporting documents, deliver to</p>

	<p>the Employer and to the Contractor an Interim Payment Certificate which shall state the amount which the Project Manager fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Project Manager on the Statement.</p>
	<p>14.6.2 However, prior to issuing the Taking-Over Certificate for the Works, the Project Manager shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) <b>pursuant to Sub-Clause 14.3</b>. In this event, the Project Manager shall give notice to the Contractor accordingly.</p>
	<p>14.6.3 An Interim Payment Certificate shall not be withheld for any other reason, although:</p> <ul style="list-style-type: none"> <li>(a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or</li> <li>(b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Project Manager, the value of this work or obligation may be withheld until the work or obligation has been performed.</li> <li>(c) if the Contractor was, or is, failing to perform any ES obligations or work under the Contract, the value of this work or obligation, as determined by the Engineer, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Project Manager, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following: <ul style="list-style-type: none"> <li>(i) failure to comply with any ES obligations or work described in the Works' Requirements which may include: working outside site boundaries, excessive dust, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archaeology</li> </ul> </li> </ul>

	<p>or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion;</p> <ul style="list-style-type: none"> <li>(ii) failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ES issues, or anticipated risks or impacts;</li> <li>(iii) failure to implement the C-ESMP e.g. failure to provide required training or sensitization;</li> <li>(iv) failing to have appropriate consents/permits prior to undertaking Works or related activities;</li> <li>(v) failure to submit ES report/s, or failure to submit such reports in a timely manner;</li> </ul> <p>(d) failure to implement remediation as instructed by the Project Manager within the specified timeframe (e.g. remediation addressing non-compliance/s).”</p>
	<p>14.6.4 The Project Manager may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Project Manager’s acceptance, approval, consent or satisfaction.</p>
<p><b>14.7 Payment and Currency</b></p>	<p>14.7.1 The Employer shall pay to the Contractor:</p> <ul style="list-style-type: none"> <li>(a) the amount certified in each Interim Payment Certificate within 56 days after the Project Manager receives the Statement and supporting documents or, at a time when the funds or credit (from which part of the payments to the Contractor is being made) is suspended, the amount shown on any statement submitted by the Contractor, within 14 days after such statement is submitted. Any discrepancy shall be rectified in the next payment to the Contractor; and</li> <li>(b) the amount certified in the Final Payment Certificate within 56 days after the Employer receives this Payment Certificate or, at a time when the Government’s fund (from which part of the payments to the Contractor is being made) is suspended, the undisputed amount shown in the Final Statement, within 56 days after the date of notification of the suspension in accordance with <b>Sub-Clause 16.2</b>.</li> </ul>

	14.7.2	Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (for this currency) specified in the Contract.
	14.7.3	The currency of payment shall be stated <b>in the SCC</b> . Where payments are to be made in currencies other than the Tanzania Shillings, the exchange rates to be used for calculating such amounts shall be the Bank of Tanzania exchange rate prevailing on the date of signing the Contract.
<b>14.8 Delayed Payment</b>	14.8.1	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 issued by the Bank of Tanzania on the date of signing the Contract for each of the currencies in which payments are made.
<b>14.9 Payment of Retention Money</b>	14.9.1	When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Project Manager for payment to the Contractor.
	14.9.2	If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.
	14.9.3	Promptly after the latest of the expiry dates of the Defects Liability Periods, the outstanding balance of the Retention Money shall be certified by the Project Manager for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Liability Period for the Section. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.
	14.9.4	However, if any work remains to be executed under <b>Sub-Clause 11</b> [Defects Liability], the Project Manager shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

	14.9.5	When calculating these proportions, no account shall be taken of any adjustments under <b>Sub-Clause</b> 13.7 [Adjustments for Changes in Legislation] and <b>Sub-Clause</b> 13.8 [Adjustments for Changes in Cost].
	14.9.6	Unless otherwise stated in the <b>SCC</b> , when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a guarantee, in the form annexed to the Particular Conditions or in another form approved by the Employer and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money. The Contractor shall ensure that the guarantee is in the amounts and currencies of the second half of the Retention Money and is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security and, if applicable, an ES Performance Security in Sub-Clause 4.2. On receipt by the Employer of the required guarantee, the Engineer shall certify and the Employer shall pay the second half of the Retention Money. The release of the second half of the Retention Money against a guarantee shall then be in lieu of the release after the latest of the expiry dates of the Defects Notification Periods. The Employer shall return the guarantee to the Contractor within 21 days after receiving a copy of the Performance Certificate.
	14.9.7	If the Performance Security and, if applicable, an ES Performance Security required under Sub-Clause 4.2 is in the form of a demand guarantee, and the amount guaranteed under them when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required. If the amount guaranteed under the Performance Security and, if applicable, an ES Performance Security, when the Taking-Over Certificate is issued is less than half of the Retention Money, the Retention Money guarantee will only be required for the difference between half of the Retention Money and the amount guaranteed under the Performance Security and, if applicable, an ES Performance Security
<b>14.10 Statement at Completion</b>	14.10.1	Within 84 days after receiving the Taking-Over Certificate for the Works, unless otherwise stated <b>in the SCC</b> , the Contractor shall submit to the Project Manager six copies of a Statement at

		<p>completion with supporting documents, in accordance with <b>Sub-Clause</b> 14.3 [Application for Interim Payment Certificates], showing:</p> <ul style="list-style-type: none"> <li>(a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,</li> <li>(b) any further sums which the Contractor considers to be due, and</li> <li>(c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.</li> </ul>
	14.10.2	The Project Manager shall then certify in accordance with <b>Sub-Clause</b> 14.6 [Issue of Interim Payment Certificates].
<b>14.11 Application for Final Payment Certificate</b>	14.11.1	<p>Within 56 days after receiving the Performance Certificate, unless otherwise stated <b>in the SCC</b>, the Contractor shall submit to the Project Manager, six copies of a final statement with supporting documents showing in detail in a form approved by the Project Manager:</p> <ul style="list-style-type: none"> <li>(a) the value of all work done in accordance with the Contract, and</li> <li>(b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.</li> </ul>
	14.11.2	If the Project Manager disagrees with or cannot verify any part of the final statement, the Contractor shall submit such further information as the Project Manager may reasonably require within 28 days from receipt of the said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Project Manager the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".
	14.11.3	However if, following discussions between the Project Manager and the Contractor and any changes to the final statement which are agreed, it becomes evident that a dispute exists, the Project Manager shall deliver to the Employer (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under <b>Sub-Clause</b> 20.4 [Obtaining <b>Dispute Avoidance</b>

		<b>and Resolution Board's Decision]</b> or <b>Sub-Clause 20.5 [Amicable Settlement]</b> , the Contractor shall then prepare and submit to the Employer (with a copy to the Project Manager) a Final Statement.
<b>14.12 Discharge</b>	14.12.1	When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.
<b>14.13 Issue of Final Payment Certificate</b>	14.13.1	<p>Within 28 days after receiving the Final Statement and a written discharge in accordance with <b>Sub-Clause 14.11 [Application for Final Payment Certificate]</b> and <b>Sub-Clause 14.12 [Discharge]</b>, the Project Manager shall deliver to the Employer and to the Contractor, the Final Payment Certificate which shall state:</p> <ul style="list-style-type: none"> <li>(a) the amount which he fairly determines is finally due, and</li> <li>(b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled, the balance (if any) due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.</li> </ul>
	14.13.2	If the Contractor has not applied for a Final Payment Certificate in accordance with <b>Sub-Clause 14.11 [Application for Final Payment Certificate]</b> and <b>Sub-Clause 14.12 [Discharge]</b> , the Project Manager shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 28 days, the Project Manager shall issue the Final Payment Certificate for such amount based on his determination of final Statement submitted by the Contractor.
<b>14.14 Cessation of Employer's Liability</b>	14.14.1	<p>The Employer shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:</p> <ul style="list-style-type: none"> <li>(a) in the Final Statement and also</li> <li>(b) (except for matters or things arising after the issue of the Taking-Over Certificate for the</li> </ul>

	Works) in the Statement at completion described in <b>Sub-Clause</b> 14.10 [Statement at Completion].
	14.14.2 However, this <b>Sub-Clause</b> shall not limit the Employer's liability under his indemnification obligations, or the Employer's liability in any case of fraud, deliberate default or reckless misconduct by the Employer.
<b>15. Termination by Employer</b>	
<b>15.1 Notice to Correct</b>	15.1.1 If the Contractor fails to carry out any obligation under the Contract, the Project Manager may by notice require the Contractor to make good the failure and to remedy it within a specified reasonable time.
<b>15.2 Termination by Employer</b>	<p>15.2.1 The Employer may terminate the Contract if the Contractor:</p> <ul style="list-style-type: none"> <li>(a) fails to comply with <b>Sub-Clause</b> 4.2 [Performance Security] or with a notice under <b>Sub-Clause</b> 15.1 [Notice to Correct],</li> <li>(b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,</li> <li>(c) without reasonable excuse fails: <ul style="list-style-type: none"> <li>(i) to proceed with the Works in accordance with <b>Sub-Clause</b> 8 [Commencement, Delays and Suspension], or</li> <li>(ii) to comply with a notice issued under <b>Sub-Clause</b> 7.5 [Rejection] or <b>Sub-Clause</b> 7.6 [Remedial Work], within 28 days after receiving it,</li> </ul> </li> <li>(d) subcontracts the whole of the Works or assigns the Contract without the required agreement,</li> <li>(e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or</li> </ul>

	<p>(f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:</p> <p>(i) for doing or forbearing to do any action in relation to the Contract, or</p> <p>(ii) for showing or for bearing to show favour or disfavour to any person in relation to the Contract,</p> <p>or if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination.</p>
	<p>15.2.2 In any of these events or circumstances, the Employer may, upon giving 14 working days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f), the Employer may by notice terminate the Contract immediately.</p>
	<p>15.2.3 The Employer's choice to terminate the Contract shall not prejudice any other rights of the Employer, under the Contract or otherwise.</p>
	<p>15.2.4 The Contractor shall then leave the Site and deliver any required Goods, all Contractors' Documents, and other design documents made by or for him, to the Project Manager. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice</p> <p>(a) for the assignment of any subcontract, and</p> <p>(b) for the protection of life or property or for the safety of the Works.</p>
	<p>15.2.5 After termination, the Employer may complete the Works and/or arrange for any other entities to do so. The Employer and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.</p>
	<p>15.2.6 The Employer shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor.</p>

		However, if by this time the Contractor has failed to make a payment due to the Employer, these items may be sold by the Employer in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.
<b>15.3 Valuation at Date of Termination</b>	15.3.1	As soon as practicable after a notice of termination under <b>Sub-Clause</b> 15.2 [Termination by Employer] has taken effect, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.
<b>15.4 Payment after Termination</b>	15.4.1	After a notice of termination under <b>Sub-Clause</b> 15.2 [Termination by Employer] has taken effect, the Employer may: <ul style="list-style-type: none"> <li>(a) proceed in accordance with <b>Sub-Clause</b> 2.5 [Employer's Claims],</li> <li>(b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Employer, have been established, and/or</li> <li>(c) recover from the Contractor any losses and damages incurred by the Employer and any extra costs of completing the Works, after allowing for any sum due to the Contractor under <b>Sub-Clause</b> 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Employer shall pay any balance to the Contractor.</li> </ul>
<b>15.5 Employer's Entitlement to Termination for Convenience</b>	15.5.1	The Employer shall be entitled to terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the later of the dates on which the Contractor receives this notice or the Employer returns the Performance Security. The Employer shall not terminate the Contract under this <b>Sub-Clause</b> in order to execute the Works himself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under <b>Sub-Clause</b> 16.4 [Payment on Termination].
	15.5.2	After this termination, the Contractor shall proceed in accordance with <b>Sub-Clause</b> 16.3 [Cessation of

		Work and Removal of Contractor's Equipment] and shall be paid in accordance with <b>Sub-Clause 19.6</b> [Optional Termination, Payment and Release].
<b>15.6 Corrupt or Fraudulent Practices</b>	15.6.1	If the Contractor is determined by Competent Authority that he has engaged in corrupt, fraudulent or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of <b>Sub-Clause 15</b> shall apply as if such expulsion had been made under <b>Sub-Clause 6.8.3</b> [Contractor's Personnel].
	15.6.2	For the purposes of this <b>Sub-Clause</b> :  (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;  (ii) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;  (iii) "coercive practices" means harming or threatening to harm, directly or indirectly, persons, or their property to influence their participation in a procurement process, or affect the execution of a contract.
<b>16. Suspension and Termination by the Contractor</b>		
<b>16.1 Contractor's Entitlement to Suspend Work</b>	16.1.1	If the Project Manager fails to certify in accordance with <b>Sub-Clause 14.6</b> [Issue of Interim Payment Certificates] or the Employer fails to comply with <b>Sub-Clause 2.4</b> [Suspension of Financing] or <b>Sub-Clause 14.7</b> [Payment], the Contractor may, after giving not less than 28 days' notice to the Employer, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.
	16.1.2	Notwithstanding the above, if the Government has suspended disbursements, which finances in whole or in part the execution of the Works, and no agreement has been reached by the parties pursuant to <b>Sub-Clause 2.4.2</b> [Suspension of Financing], the Contractor may by notice suspend work or reduce the rate of work at any time, but

	not less than 14 working days after the Employer having received the suspension notification from the Government.
	16.1.3 The Contractor's action shall not prejudice his entitlements to interest under <b>Sub-Clause</b> 14.8 [Delayed Payment] and to termination under <b>Sub-Clause</b> 16.2 [Termination by Contractor].
	16.1.4 If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant <b>Sub-Clause</b> and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.
	16.1.5 If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this <b>Sub-Clause</b> , the Contractor shall give notice to the Project Manager and shall be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to an extension of time and associated costs (if any) for such delay, if completion is or will be delayed, under <b>Sub-Clause</b> 8.4 [Extension of Time for Completion], and after receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause</b> 3.6 [Determinations] to determine these matters.
<b>16.2 Termination by Contractor</b>	<p>16.2.1 The Contractor may terminate the Contract if:</p> <ul style="list-style-type: none"> <li>(a) the Contractor does not receive the reasonable evidence within 42 days after giving notice under <b>Sub-Clause</b> 16.1 [Contractor's Entitlement to Suspend Work] in respect of a failure to comply with <b>Sub-Clause</b> 2.4 [failure to reach agreement upon Government suspension of financing]</li> <li>(b) the Employer substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the execution of the Contract;</li> <li>(c) the Employer fails to comply with <b>Sub-Clause</b> 1.6 [Contract];</li> <li>(d) a prolonged suspension affects the whole of the Works as described in <b>Sub-Clause</b> 8.10 [Prolonged Suspension], or</li> <li>(e) the Employer becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made</li> </ul>

	<p>against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.</p> <p>(f) In the event the Government suspends the funds from which part of the payments to the Contractor are being made and the time agreed for future event pursuant to <b>Sub-Clause</b> 2.4 has expired.</p> <p>(g) the Contractor does not receive the Project Manager's instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under <b>Sub-Clause</b> 8.1 [Commencement of Works].</p>
	<p>16.2.2 In any of these events or circumstances, the Contractor may, upon giving 14 working days notice to the Employer, terminate the Contract. However, in the case of sub-paragraph (g), the Contractor may by notice terminate the Contract immediately.</p>
	<p>16.2.3 The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.</p>
<p><b>16.3 Cessation of Work and Removal of Contractor's Equipment</b></p>	<p>16.3.1 After a notice of termination under <b>Sub-Clause</b> 15.5 [Employer's Entitlement to Termination for Convenience], <b>Sub-Clause</b> 16.2 [Termination by Contractor] or <b>Sub-Clause</b> 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:</p> <p>(a) cease all further work, except for such work as may have been instructed by the Project Manager for the protection of life or property or for the safety of the Works,</p> <p>(b) hand over Contractor's Documents, Plant, Materials and other work; and</p> <p>remove all other Goods which are property of the Contractor from the Site, except as necessary for safety, and leave the Site. After a notice of termination under <b>Sub-Clause</b> 15.5 [Employer's Entitlement to Termination for Convenience], <b>Sub-Clause</b> 16.2 [Termination by Contractor] or <b>Sub-Clause</b> 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall</p>

		promptly:
		<ul style="list-style-type: none"> <li>(c) cease all further work, except for such work as may have been instructed by the Project Manager for the protection of life or property or for the safety of the Works,</li> <li>(d) hand over Contractor's Documents, Plant, Materials and other work; and</li> <li>(e) remove all other Goods which are property of the Contractor from the Site, except as necessary for safety, and leave the Site.</li> </ul>
<b>16.4 Payment on Termination</b>	16.4.1	<p>After a notice of termination under <b>Sub-Clause 16.2</b> [Termination by Contractor] has taken effect, the Employer shall promptly:</p> <ul style="list-style-type: none"> <li>(a) pay the Contractor in accordance with <b>Sub-Clause 19.6</b> [Optional Termination, Payment and Release], and</li> <li>(b) return the Performance Security to the Contractor provided that all performance obligation of the Contractor have been fulfilled.</li> </ul>
<b>17. Risk and Responsibility</b>		
<b>17.1 Indemnities</b>	17.1.1	<p>The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:</p> <ul style="list-style-type: none"> <li>(a) bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and</li> <li>(b) damage to or loss of any property, real or personal (including works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design, the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, Fraud, wilful act or omissions by</li> </ul>

	the Employer, the Employer's Personnel, their respective agents.
	17.1.2 The Employer shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, fraud, wilful act or omission by the Employer, the Employer's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in subparagraphs (d)(i), (ii) and (iii) of <b>Sub-Clause</b> 18.3 [Insurance Against Injury to Persons and Damage to Property].
<b>17.2 Contractor's Care of the Works</b>	17.2.1 Notwithstanding <b>Sub-Clause</b> 11 [Defects Liability], the Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking- Over Certificate is issued (or is deemed to be issued under <b>Sub-Clause</b> 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Employer. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Employer.
	17.2.2 After responsibility has accordingly passed to the Employer, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.
	17.2.3 If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in <b>Sub-Clause</b> 17.3 [Employer's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.
	17.2.4 The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and

		which arose from a previous event for which the Contractor was liable.
<b>17.3 Employer's Risks</b>	17.3.1	<p>The risks referred to in Sub-Clause 17.4 below, insofar as they directly affect the execution of the Works in the Country, are:</p> <ul style="list-style-type: none"> <li>(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,</li> <li>(b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country,</li> <li>(c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel,</li> <li>(d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,</li> <li>(e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,</li> <li>(f) use or occupation by the Employer of any part of the Permanent Works, except as may be specified in the Contract,</li> <li>(g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible, and</li> <li>(h) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.</li> </ul>
<b>17.4 Consequences of Employer's Risks</b>	17.4.1	If and to the extent that any of the risks listed in <b>Sub-Clause 17.3</b> above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Project Manager and shall rectify this loss or damage to the extent required by the Project Manager.
	17.4.2	If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Project Manager and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

	<p>(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and</p> <p>(b) payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (f) and (g) of Sub-Clause 17.3 [Employer's Risks], Cost plus profit shall be payable.</p>
	<p>17.4.3 After receiving this further notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.</p>
<p><b>17.5 Intellectual and Industrial Property Rights</b></p>	<p>17.5.1 In this <b>Sub-Clause</b>, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.</p>
	<p>17.5.2 Whenever a Party does not give notice to the other Party of any claim within 90 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this <b>Sub-Clause</b>.</p>
	<p>17.5.3 The Employer shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:</p> <p>(a) an unavoidable result of the Contractor's compliance with the Contract, or</p> <p>(b) a result of any Works being used by the Employer:</p> <p>(i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or</p> <p>(ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.</p>
	<p>17.5.4 The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.</p>

	<p>17.5.5 If a Party is entitled to be indemnified under this <b>Sub-Clause</b>, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim.</p>
<p><b>17.6 Limitation of Liability</b></p>	<p>17.6.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8. [Liquidated Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4 (b) [Consequences of Employer's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].</p>
	<p>17.6.2 The total liability of the Contractor to the Employer, under or in connection with the Contract other than under <b>Sub-Clause</b> 4.19 [Electricity, Water and Gas], <b>Sub-Clause</b> 4.20 [Employer's Equipment and Free-Issue Material], <b>Sub-Clause</b> 17.1 [Indemnities] and <b>Sub-Clause</b> 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (greater than one) to the Accepted Contract Amount, as stated in the <b>SCC</b>, or (if such multiplier or other sum is not so stated), the Contract Price.</p>
	<p>17.6.3 This Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.</p>
<p><b>17.7 Use of Employer's Accommodation/ Facilities</b></p>	<p>17.7.1 The Contractor shall take full responsibility for the care of the Employer provided accommodation and facilities, if any, as detailed in the Employer's Requirement, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).</p>
	<p>17.7.2 If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Employer is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Employer.</p>

<b>18. Insurance</b>	
<b>18.1 General Requirements for Insurances</b>	18.1.1 In this Clause, “insuring Party” means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant <b>Sub-Clause</b> .
	18.1.2 Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Employer. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.
	18.1.3 Wherever the Employer is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms provided in the tendering documents except as otherwise agreed by both Parties as stipulated in the <b>SCC</b> . This agreement of terms shall take precedence over the provisions of this Clause.
	18.1.4 If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured.
	18.1.5 Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.
	18.1.6 The relevant insuring Party shall, within the respective periods stated <b>in the SCC</b> (calculated from the Commencement Date), submit to the other Party: <ul style="list-style-type: none"> <li>(a) evidence that the insurances described in this Clause have been effected, and</li> <li>(b) copies of the policies for the insurances described in <b>Sub-Clause 18.2</b> [Insurance for Works and Contractor’s Equipment] and <b>Sub-Clause 18.3</b> [Insurance against Injury to Persons and Damage to Property].</li> </ul>
	18.1.7 When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice

	to the Project Manager.
	18.1.8 Each Party shall comply with the conditions stipulated in its respective insurance policy. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.
	18.1.9 Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party.
	18.1.10 If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this <b>Sub-Clause</b> , the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.
	18.1.11 Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Employer, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Employer in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.
	18.1.12 Payments by one Party to the other Party shall be subject to <b>Sub-Clause</b> 2.5 [Employer's Claims] or <b>Sub-Clause</b> 20.1 [Contractor's Claims], as applicable.
	18.1.13 The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to <b>Sub- Clause</b> 18) with insurers from any eligible source country specified <b>in the SCC</b> .
<b>18.2 Insurance for Works and Contractor's</b>	18.2.1 The Contractor shall insure the Works, Plant, Materials and Contractor's Documents for not less than the full reinstatement cost including the costs

<p><b>Equipment</b></p>	<p>of demolition, removal of debris and professional fees and profit. The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Commencement Date to the end of the Defects Liability Period.</p>
	<p>18.2.2 The Contractor shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under <b>Sub-Clause</b> 11 [Defects Liability]).</p>
	<p>18.2.3 The Contractor shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.</p>
	<p>18.2.4 Unless otherwise stated <b>in the SCC</b>, insurances under this <b>Sub-Clause</b>:</p> <ul style="list-style-type: none"> <li>(a) shall be effected and maintained by the Contractor as insuring Party,</li> <li>(b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage;</li> <li>(c) shall cover all loss and damage from any cause not specifically stated under the contract to be Employer's Risks;</li> <li>(d) shall also cover, to the extent specifically specified in <b>the SCC</b>, loss or damage to a part of the Works which is attributable to the use or occupation by the Employer of another part of the Works, and loss or damage from the risks listed in <b>Sub-Clause</b> 19 [Force Majeure], excluding (in each case) risks which are not insurable at commercially reasonable terms; and</li> <li>(e) may however exclude loss of, damage to, and reinstatement of: <ul style="list-style-type: none"> <li>(i) a part of the Works which is in a defective condition due to a defect in its</li> </ul> </li> </ul>

	<p>design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),</p> <p>(ii) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship</p>
<p><b>18.3 Insurance against Injury to Persons and Damage to Property</b></p>	<p>18.3.1 The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under <b>Sub- Clause 18.2</b> [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under <b>Sub-Clause 18.4</b> [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.</p>
	<p>18.3.2 Unless otherwise stated <b>in the SCC</b>, the insurances specified in this <b>Sub-Clause</b>:</p> <p>(a) shall be effected and maintained by the Contractor as insuring Party,</p> <p>(b) shall be in the joint names of the Parties,</p> <p>(c) shall be extended to cover liability for all loss and damage to the Employer's property (except things insured under <b>Sub-Clause 18.2</b>) arising out of the Contractor's performance of the Contract, and</p> <p>(d) may however exclude liability to the extent that it arises from:</p> <p>(i) the Employer's right to have the Permanent Works executed on, over, under, in or through any land, and to occupy this land for the Permanent Works,</p> <p>(ii) damage which is an unavoidable result of the Contractor's obligations to execute the Works and remedy any defects, and</p> <p>(iii) a cause listed in <b>Sub-Clause 19</b> [Force Majeure], except to the extent that cover is available at commercially reasonable terms.</p>

<p><b>18.4 Insurance for Contractor's Personnel</b></p>	<p>18.4.1 The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.</p>
	<p>18.4.2 The insurance shall cover the Employer and the Project Manager against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from wilful acts and omissions, neglect of the Employer or of the Employer's Personnel.</p>
	<p>18.4.3 The insurance shall be maintained and be in effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.</p>
<p><b>19. Force Majeure</b></p>	
<p><b>19.1 Definition of Force Majeure</b></p>	<p>19.1.1 In this Clause, "Force Majeure" means an exceptional event or circumstance:</p> <ul style="list-style-type: none"> <li>(a) which is beyond a Party's control;</li> <li>(b) which such Party could not reasonably have provided against before entering into the Contract;</li> <li>(c) which, having arisen, such Party could not reasonably have avoided or overcome, and</li> <li>(d) which is not substantially attributable to the other Party.</li> </ul>
	<p>19.1.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:</p> <ul style="list-style-type: none"> <li>(a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,</li> <li>(b) rebellion, by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,</li> </ul>

		<ul style="list-style-type: none"> <li>(c) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,</li> <li>(d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and</li> <li>(e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.</li> </ul>
<b>19.2 Notice of Force Majeure</b>	19.2.1	If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 working days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.
	19.2.2	The Party shall, having given notice, be excused from performance of its obligations for so long as such Force Majeure prevents it from performing them.
	19.2.3	Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.
<b>19.3 Duty to Minimize Delay</b>	19.3.1	Each Party shall at all times use all reasonable endeavours to minimise any delay in the performance of the Contract as a result of Force Majeure.
	19.3.2	A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.
<b>19.4 Consequences of Force Majeure</b>	19.4.1	<p>If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under <b>Sub-Clause</b> 19.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor may be entitled subject to <b>Sub-Clause</b> 20.1 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> <li>(a) an extension of time for any such delay, if completion is or will be delayed, under <b>Sub-Clause</b> 8.4 [Extension of Time for Completion], and</li> </ul>

	<p>(b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of <b>Sub-Clause 19.1</b> [Definition of Force Majeure] and, in the case of sub-paragraphs (ii) to (iv), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in <b>Sub-Clause 18.2</b> [Insurance for Works and Contractor's Equipment].</p>
	<p>19.4.2 After receiving this notice, the Project Manager shall proceed in accordance with <b>Sub-Clause 3.6</b> [Determinations] to determine these matters.</p>
<p><b>19.5 Force Majeure Affecting Subcontractor</b></p>	<p>19.5.1 If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.</p>
<p><b>19.6 Optional Termination, Payment and Release</b></p>	<p>19.6.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under <b>Sub-Clause 19.2</b> [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 14 working days after the notice is given, and the Contractor shall proceed in accordance with <b>Sub-Clause 16.3</b> [Cessation of Work and Removal of Contractor's Equipment].</p>
	<p>19.6.2 Upon such termination, the Project Manager upon written approval of the Employer shall, determine the value of the work done and issue a Payment Certificate which shall include:</p> <ul style="list-style-type: none"> <li>(a) the amounts payable for any work carried out for which a price is stated in the Contract;</li> <li>(b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Employer when paid for</li> </ul>

	<p>by the Employer, and the Contractor shall place the same at the Employer's disposal;</p> <p>(c) other Costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;</p> <p>(d) the Cost of removal of Temporary Works; and</p> <p>(e) the Cost of repatriation of the Contractor's staff and labour employed wholly in connection with the Works at the date of termination.</p>
<p><b>19.7 Release from Performance</b></p>	<p>19.7.1 Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:</p> <p>(a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and</p> <p>(b) the sum payable by the Employer to the Contractor shall be the same as would have been payable under <b>Sub-Clause</b> 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under <b>Sub-Clause</b> 19.6.</p>
<p><b>20. Claims, Disputes and Arbitration</b></p>	
<p><b>20.1 Contractor's Claims</b></p>	<p>20.1.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.</p>

	<p>20.1.2 If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.</p>
	<p>20.1.3 The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.</p>
	<p>20.1.4 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.</p>
	<p>20.1.5 Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:</p> <ul style="list-style-type: none"> <li>(a) this fully detailed claim shall be considered as interim;</li> <li>(b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and</li> </ul> <p>the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.</p>
	<p>20.1.6 Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by</p>

	<p>the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period.</p>
	<p>20.1.7 Within the above defined period of 42 days, the Project Manager shall proceed in accordance with Sub-Clause 3.6 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.</p>
	<p>20.1.8 Each Payment Certificate shall include such additional payment for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.</p>
	<p>20.1.9 If the Project Manager does not respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Project Manager and any of the Parties may refer it to the Dispute Avoidance and Resolution Board in accordance with Sub-Clause 20.4 [Obtaining Dispute Avoidance and Resolution Board's Decision].</p>
	<p>20.1.10 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.</p>
<p><b>20.2 Appointment of the Dispute Avoidance and Resolution Board</b></p>	<p>20.2.1 Disputes shall be referred to a DARB for decision in accordance with Sub-Clause 20.4 [Obtaining Dispute Avoidance and Resolution Board's Decision]. The Parties shall appoint a DARB by the date stated in the <b>SCC</b>.</p>
	<p>20.2.2 The DARB shall comprise, as stated in the <b>SCC</b>, either one or three suitably qualified persons ("the</p>

	<p>members”), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of construction involved in the Works and with the interpretation of contractual documents. If the number is not so stated and the Parties do not agree otherwise, the DARB shall comprise three persons, one of whom shall serve as chairman.</p>
	<p>20.2.3 If the Parties have not jointly appointed the DARB 21 days before the date stated in the <b>SCC</b> and the DARB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.</p>
	<p>20.2.4 The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the General Conditions of Dispute Avoidance and Resolution Board Agreement contained in the <b>Appendix B</b> to these General Conditions, with such amendments as are agreed between them.</p>
	<p>20.2.5 The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DARB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one- half of this remuneration.</p>
	<p>20.2.6 If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.</p>
	<p>20.2.7 The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DARB (including each member) shall expire when the discharge referred to in Sub-Clause 14.12 [Discharge] shall have become effective.</p>
<p><b>20.3 Failure to Agree on the Composition of the Dispute Avoidance and Resolution Board</b></p>	<p>20.3.1 If any of the following conditions apply, namely:</p> <p>(a) the Parties fail to agree upon the appointment of the sole member of the DARB by the date stated in the first paragraph of Sub-Clause 20.2, [Appointment of the Dispute Avoidance and</p>

	<p>Resolution Board],</p> <ul style="list-style-type: none"> <li>(b) either Party fails to nominate a member (for approval by the other Party) or fails to approve a member nominated by the other Party, of a DARB of three persons by such date,</li> <li>(c) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DARB by such date, or</li> <li>(d) the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,</li> </ul> <p>then the Appointing Entity or official named in the <b>SCC</b> shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DARB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.</p>
<p><b>20.4 Obtaining Dispute Avoidance and Resolution Board's Decision</b></p>	<p>20.4.1 If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Project Manager, either Party may refer the dispute in writing to the DARB for its decision, with copies to the other Party and the Project Manager. Such reference shall state that it is given under this Sub-Clause.</p>
	<p>20.4.2 For a DARB of three persons, the DARB shall be deemed to have received such reference on the date when it is received by the chairman of the DARB.</p>
	<p>20.4.3 Both Parties shall promptly make available to the DARB all such additional information, further access to the Site, and appropriate facilities, as the DARB may require for the purposes of making a decision on such dispute. The DARB shall be deemed to be not acting as arbitrator(s).</p>
	<p>20.4.4 Within 84 days after receiving such reference, or within such other period as may be proposed by the DARB and approved by both Parties, the DARB shall give its decision, which shall be reasoned and shall state that it is given under this</p>

	<p>Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue to proceed with the Works in accordance with the Contract.</p>
	<p>20.4.5 If either Party is dissatisfied with the DARB's decision, then either Party may, within 28 days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DARB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give notice to the other Party of its dissatisfaction and intention to commence arbitration.</p>
	<p>20.4.6 In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in Sub-Clause 20.7 [Failure to Comply with Dispute Avoidance and Resolution Board's Decision] and Sub-Clause 20.8 [Expiry of Dispute Avoidance and Resolution Board's Appointment], neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.</p>
	<p>20.4.7 If the DARB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within 28 days after it received the DARB's decision, then the decision shall become final and binding upon both Parties.</p>
<p><b>20.5 Amicable Settlement</b></p>	<p>20.5.1 Where notice of dissatisfaction has been given under Sub-Clause 20.4 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth day after the day on which a notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.</p>
<p><b>20.6 Arbitration</b></p>	<p>20.6.1 Unless indicated otherwise in the <b>SCC</b>, any dispute not settled amicably and in respect of which the DARB's decision (if any) has not become final and binding shall be finally settled by</p>

	arbitration with proceedings conducted in accordance with the laws of the Employer's country.
	20.6.2 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager, and any decision of the DARB, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Project Manager from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.
	20.6.3 Neither Party shall be limited in the proceedings before the arbitrators to the evidence or arguments previously put before the DARB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DARB shall be admissible in evidence in the arbitration.
	20.6.4 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Project Manager and the DARB shall not be altered by reason of any arbitration being conducted during the progress of the Works.
<b>20.7 Failure to Comply with Dispute Avoidance and Resolution Board's Decision</b>	20.7.1 In the event that a Party fails to comply with a DARB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 20.6 [Arbitration]. Sub-Clause 20.4 [Obtaining Dispute Avoidance and Resolution Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply to this reference.
<b>20.8 Expiry of Dispute Avoidance and Resolution Board's Appointment</b>	20.8.1 If a dispute arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works and there is no DARB in place, whether by reason of the expiry of the DARB's appointment or otherwise: <ul style="list-style-type: none"> <li>(a) Sub-Clause 20.4 [Obtaining Dispute Avoidance and Resolution Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply, and</li> <li>(b) the dispute may be referred directly to arbitration under Sub-Clause 20.6 [Arbitration].</li> </ul>

## APPENDIX A

### Environmental, Social, Health and Safety (ESHS)

#### Metrics for Progress Reports

*[Note to Employer: the following metrics may be amended to reflect the specifics of the Contract. The Employer shall ensure that the metrics provided are appropriate for the Works and impacts/key issues identified in the environmental and social assessment]*

*Metrics for regular reporting:*

- a) environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;
- b) health and safety incidents, accidents, injuries that require treatment and all fatalities;
- c) interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);
- d) status of all permits and agreements:
  - i). work permits: number required, number received, actions taken for those not received;
  - ii). status of permits and consents:
    - *list areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);*
    - *list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);*
    - *identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);*
    - *for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).*
- e) health and safety supervision:
  - i). safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;
  - ii). number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);
- f) worker accommodations:
  - i). number of expats housed in accommodations, number of locals;
  - ii). date of last inspection, and highlights of inspection including status of accommodations' compliance with national and local law and good practice, including sanitation, space, etc.;

- iii). actions taken to recommend/require improved conditions, or to improve conditions.
- g) Health services: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);
- h) gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);
- i) training:
  - i). number of new workers, number receiving induction training, dates of induction training;
  - ii). number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;
  - iii). number and dates of communicable diseases (including STDs) sensitization and/or training, no. workers receiving training (in the reporting period and in the past); same questions for gender sensitization, flag person training.
  - iv). number and date of SEA and SH prevention sensitization and/or training events, including number of workers receiving training on Code of Conduct for Contractor's Personnel (in the reporting period and in the past), etc.
- j) environmental and social supervision:
  - i) environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;
  - ii) sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and
  - iii) community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.
- k) *Grievances*: list new grievances (e.g. number of allegations of SEA and SH) received in the reporting period and number of unresolved past grievances by date received, complainant's age and sex, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed).
  - i. Worker grievances;
  - ii. Community grievances
- l) Traffic, road safety and vehicles/equipment:
  - i) traffic and road safety incidents and accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;

- ii) traffic and road safety incidents and accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;
  - iii) overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).
- m) Environmental mitigations and issues (what has been done):
- i) dust: number of working bowsers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/spoil lorries with covers, actions taken for uncovered vehicles;
  - ii) erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;
  - iii) quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;
  - iv) blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);
  - v) spill cleanups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination);
  - vi) waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;
  - vii) details of tree plantings and other mitigations required undertaken in the reporting period;
  - viii) details of water and swamp protection mitigations required undertaken in the reporting period.
- n) compliance:
- i) compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;
  - ii) compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
  - iii) compliance status of SEA and SH prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
  - iv) compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance
  - v) other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

## APPENDIX B

### A General Conditions of Dispute Avoidance and Resolution Board Agreement

- 1. Definitions** Each "Dispute Avoidance and Resolution Board Agreement" is a tripartite agreement by and between:
- (a) the "Employer";
  - (b) the "Contractor"; and
  - (c) the "Member" who is defined in the Dispute Avoidance and Resolution Board Agreement as being
    - i). the sole member of "Dispute Avoidance and Resolution Board" and, where this is the case, all references to the "Other Members" do not apply, or
    - ii). one of the three persons who are jointly called the "DARB" (or "Dispute Avoidance and Resolution Board") and, where this is the case, the other two persons are called the "Other Members."

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Avoidance and Resolution Board Agreement, which incorporates this Appendix. In the DARB Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

- 2. General Provisions** Unless otherwise stated in the DARB Agreement, it shall take effect on the latest of the following dates:
- (a) the Commencement Date defined in the Contract,
  - (b) when the Employer, the Contractor and the Member have each signed the DARB Agreement, or
  - (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a Dispute Avoidance and Resolution Board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Agreement shall terminate upon the expiry of this period.

- 3. Warranties** The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Project Manager. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor

relied upon the Member's representations that he/she is:

- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

**4. General Obligations of the Member**

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or Project Manager, nor any financial interest in the Contract except for payment under the DARB Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the DARB Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the DARB Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Project Manager, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the DARB Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with Sub-Clause 20.4 of the Conditions of Contract;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Project Manager regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the DARB Agreement;
- (h) ensure his/her availability for all site visits and hearings as are necessary;
- (i) become conversant with the Contract and with the progress of the Works (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;

- (j) treat the details of the Contract and all the DARB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

**5. General Obligations of the Employer and the Contractor**

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DARB's activities under the Contract and the DARB Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DARB under Sub-Clause 20.4 of the Conditions of Contract, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

**6. Payment**

The Member shall be paid as follows, in the currency named in the DARB Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
  - (i) being available on 28 days' notice for all site visits and hearings;

- (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
- (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
- (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Adjudication Panel Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the DARB Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
  - (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members (if any);
  - (ii) each working day on Site visits, hearings or preparing decisions; and
  - (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the DARB Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the DARB Agreement became effective.

If the parties fail to agree on the retainer fee or the daily fee, the appointing entity or official named in the **SCC** shall determine the

amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the DARB Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DARB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in Sub-Clause 14.8 of the Conditions of Contract.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

## **7. Termination**

At any time: (i) the Employer and the Contractor may jointly terminate the DARB Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the DARB Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the DARB Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

## **8. Default of the Member**

If the Member fails to comply with any of his obligations under Clause 4 (a) - (d) above, he shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other

rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DARB which are rendered void or ineffective by the said failure to comply.

If the Member fails to comply with any of his obligations under Clause 4 (e) - (k) above, he shall not be entitled to any fees or expenses hereunder from the date and to the extent of the non-compliance and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses already received by the Member, for proceedings or decisions (if any) of the DARB which are rendered void or ineffective by the said failure to comply.

## **9. Disputes**

Any dispute or claim arising out of or in connection with this DARB Agreement, or the breach, termination or invalidity thereof, shall be finally settled by Arbitration.

## PROCEDURAL RULES

Unless otherwise agreed by the Employer and the Contractor, the DARB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DARB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.

The timing of and agenda for each site visit shall be as agreed jointly by the DARB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DARB. The purpose of site visits is to enable the DARB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to endeavour to prevent potential problems or claims from becoming disputes.

Site visits shall be attended by the Employer, the Contractor and the Project Manager and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DARB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.

The Employer and the Contractor shall furnish to the DARB one copy of all documents which the DARB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DARB and the Employer or the Contractor shall be copied to the other Party. If the DARB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.

If any dispute is referred to the DARB in accordance with Sub-Clause 20.4 of the Conditions of Contract, the DARB shall proceed in accordance with Sub-Clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DARB shall:

- (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
- (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.

The DARB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.

Except as otherwise agreed in writing by the Employer and the Contractor, the DARB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Project Manager, and to proceed in the absence of any party who the DARB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.

The Employer and the Contractor empower the DARB, among other things, to:

- (a) establish the procedure to be applied in deciding a dispute,

- (b) decide upon the DARB's own jurisdiction, and as to the scope of any dispute referred to it,
- (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Rules,
- (d) take the initiative in ascertaining the facts and matters required for a decision,
- (e) make use of its own specialist knowledge, if any,
- (f) decide upon the payment of financing charges in accordance with the Contract,
- (g) decide upon any provisional relief such as interim or conservatory measures, and
- (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Project Manager, relevant to the dispute.

The DARB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DARB shall make and give its decision in accordance with Sub-Clause 20.4, or as otherwise agreed by the Employer and the Contractor in writing. If the DARB comprises three persons:

- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
- (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
- (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
  - (i) either the Employer or the Contractor does not agree that they do so, or
  - (ii) the absent Member is the chairman and he/she instructs the other Members not to make a decision.



## **TECHNICAL SPECIFICATIONS**

**QATAR CHARITY TANZANIA  
HOUSE NO. 22 "A" & "B" OYSTERBAY  
MSASANI PENINSULA AREA  
PO BOX 8504  
DAR ES SALAAM, TANZANIA**

## **1.0 EXCAVATION AND EARTHWORK**

### **1.1 Nature of excavation**

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

### **1.2 Excavations generally**

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

### **1.3 Site clearance**

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

### **1.4 Over-site excavation**

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

### **1.5 Excavation for foundations and structures**

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

Generally formwork must not be measured for plain concrete foundations or column bases and, therefore, excavations for these have been measured, net. Formwork has to be measured to reinforced concrete foundation and column bases and all faces of columns and walls and working space excavation has to be

measured and included accordingly. Adjustments to excavations widths as measured will therefore be made only in the case of the Project Engineer/Structural Engineer ordering the addition of formwork to plain concrete foundations etc., or the omission of formwork to reinforced concrete foundations or column bases. Ordinary use of planking and strutting along foundations to prevent earth falls and to save concrete will not be considered as formwork.

### **1.6 Inspection**

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

### **1.7 Excavation below required depths**

Should any excavation be made below the levels or lines shown on the drawings or otherwise required by the Project Engineer/Structural Engineer, the contractor must fill up the resultant over-excavation to the proper levels or lines with concrete nominal mix (1:4:8) at his own expense (see "concrete work").

### **1.8 Filling**

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

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

At each area (control area) of 500m<sup>2</sup>-compacted fill, three field density tests (e.g. by the sand-replacement method) should be taken randomly.

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

### **1.9 Return, fill in and ram**

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

Regardless of the means of back filling and compaction adopted, the contractor is

responsible not only for the standard of the work but also for any possible damage of the permanent work or adjacent structure.

### **1.10 Levelling**

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

### **1.11 Soil sterilisation**

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

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

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

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

The chemicals used shall be one of the following: -

- i) Gamalin 0.5% applied in oil solution or water emulsion.
- ii) Benzene hexachloride, 0.8% of gamma isomer applied in oil solution or water emulsion.
- iii) Chlordane 1.0% applied in solution or water emulsion.
- iv) Dieldrin 0.5% applied in oil solution or water emulsion.
- v) Lindane; 0.8% in oil solution or water emulsion
- vi) Pentachlorophenol; 5% in oil solution.
- vii) Trichlorobenzene; 1 part to 3 parts oil.

Some of the chemicals listed above are toxic to animal and plant life and must therefore, be applied only with caution by an experienced person. Where individual water supply systems are proposed precautions must be taken to prevent in filtering and endangering the water supply. Treatment shall not be made when a soil of fill is excessively wet or immediately after heavy rain.

Precautions must also be taken to prevent disturbance of the treatment by animals or human contact with the treated soil. The treated area is to be covered as quickly as possible after treatment.

The rate of application is to be 5 litres per square metre and the areas measured include those under floor and round wall and column foundations.

The contractor shall notify the Project Engineer/structural engineer in sufficient time before the filling of foundation trenches and laying of concrete floor bed in order that

the Architect/Engineer may nominate a specialist firm to execute the soil sterilisation. Any additional costs caused by the contractor not rendering sufficient prior notice to the Architect/Engineer will be borne entirely by the Contractor.

#### **1.12 Disposal of surplus excavated material**

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

#### **1.13 Disposal of water**

The contractor shall keep the excavations free from standing water and silt (or excavated material softened by water) and he shall include for the cost of pumping, construction of temporary drains; soak-way pits, etc., as deemed necessary to achieve this. An item has to be 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 Project Engineer/Structural Engineer will be paid for in accordance with the Day works schedule.

#### **1.14 Planking and strutting**

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

#### **1.15 Hardcore**

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

## **2.0 CONCRETE WORK**

### **2.1 Materials and workmanship generally**

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

### **2.2. Materials generally**

All materials to be used in the works shall conform as to quality and description as specified hereunder and shall be equal to approved samples. In particular no materials shall be used until approved samples shall be supplied to the Project Engineer/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 Project Engineer/Structural Engineer shall be the Contractor's liability. All materials shall be transported, handled and stored on site so as to preclude damage deterioration or contamination. All condemned materials are to be removed from the site within 24 hours.

### **2.3 Cement**

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

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

### **2.4 Aggregate generally**

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

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

### **2.5 Fine Aggregate**

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

### **2.6 Coarse aggregate**

Coarse aggregate shall be clean, well-graded crushed granite stone or other equal and approved stone from an approved quarry and washed if required by the Project Engineer/Structural Engineer. The pieces shall be angular or rounded in shape and shall have granular or crystalline or smooth (but not glassy) non-powdery surface. Flakey and laminated pieces, mica and shale shall only be present in such quantities as not to affect adversely the strength and durability of the concrete.

The four nominal aggregate sizes shall be 40mm (1½"); 20mm (¾"); 10mm (3/8"); 6mm (¼"); and the grading when analysed as described in BS. 812 shall be within the limits given in BS. 882. Project Engineer/Structural Engineer will specify sizes of aggregates to be used in specific areas. For most work 20 mm maximum size aggregates will be used. The nominal maximum size of coarse aggregates should be not greater than ¼ of the minimum thickness of concrete section or element.

### **2.7 Water**

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

### **2.8 Admixtures**

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

### **2.9 Steel reinforcement**

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

- i) Mild steel rod reinforcement shall comply with BS. 4449.
- ii) High tensile steel reinforcement shall be either cold worked deformed steel bars of circular octagonal section complying with BS. 4461 or hot rolled deformed high

tensile bars having a guaranteed minimum yield stress of 460 N/mm<sup>2</sup> and other physical qualities in accordance with BS. 4449.

iii) Welded steel fabric reinforcement shall comply with BS. 4483

iv) BS. 8110, the structural use of reinforced concrete in buildings

All steel reinforcement shall be supplied by an approved manufacturer; and the contractor may be required to obtain a manufacturer's test certificate in respect of steel reinforcement supplied. In the absence of such a test certificate, the contractor may be required to submit samples to be tested at the contractor's expense in such manner as to comply with BS 8110 requirements.

The steel shall be stored so that it is kept clean and reasonably free from rust. The placing of all reinforcement shall be checked by the Engineer and in no circumstances is concrete to be deposited around any steel that has not been passed. At least twenty-four hours notice shall be given to the Engineer that reinforcement will be ready for inspection.

#### **2.10 Bending and fixing of reinforcement**

All bending, cutting and fixing to be in compliance with the British Standard code of Practice, BS 8110 and BS 4466 Bending schedules are incorporated in the contract drawings.

The number, size, form and position of all reinforcement shall unless otherwise directed or permitted by the Architect/Engineer, be strictly in accordance with the drawings. Bars shall be of the required lengths, and lapping, except where indicated on the drawings, is not permitted unless approved by the Engineer.

Overall dimensions shall not be exceeded and shall not be less than 6mm below the required dimensions. The sizes of links and the like shall be within tolerance of 3mm under or over the specified dimensions. Any tolerance in the total length of the bar as cut shall be taken up in the end hooks or other approved portions of the bar. The internal radius of the bends at corners of links and the like shall equal half the diameter of the bar embraced by the link.

Laps in bars of random lengths shall be staggered in such a way that no more than 1/3 of bars having same number are to be lapped in the same section. The steel reinforcement shall be assembled and fixed in the form of a rigid cage.

To prevent displacement before or during concreting the bars shall be secured to each other with approved wire. Concrete distance blocks shall, unless otherwise directed, be used between the reinforcement and the bottom and sides of the forms to ensure correct concrete cover to the bars, as specified on the drawings. The specified cover shall be provided and maintained within the specified tolerance.

The minimum clear distance between adjacent bars shall be 25mm horizontally and 25mm vertically. Spacer bars shall be inserted at such intervals that the bars do not perceptibly sag.

Great care must be taken to ensure the correct positioning of beam and column starter bars and to secure projecting bars against displacement both during and after concreting.

At the time of fixing and when concrete is being placed, all reinforcement shall be free from oil, paint, grease excessive dust and scale or any other coating, which would destroy its bond with the concrete.

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

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

### **2.12 Construction and Movement joints**

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

### **2.13 Concrete grades**

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

GRADE	NOMINAL MIX	MAX SIZE OF COURSE AGGREGATE	MAX WATER CEMENT RATIO BY WEIGHT	MINIMUM CRUSHING STRENGTH OF WORKS TEST CUBES (N/mm <sup>2</sup> )	
				7 DAYS	28 DAYS
30	1:1:2	20mm	0.50	20	30
25	1:1½:3	20mm	0.55	17	25.5
20	1:2:4	20mm	0.60	14	20
15	1:3:6	25mm	0.60	8	14
10	1:4:8	30mm	0.60	0	10

### **2.14 Concrete Production, Supervision and Tests**

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

working in hot weather.

Concrete should meet appropriate requirements specified in BS 5328 for

- a) Characteristic compressive strength
- b) Specified mix proportions
- c) Maximum and minimum cement content
- d) Maximum free water/cement ratio
- e) Workability
- f) Air content of concrete
- g) Temperature of fresh concrete
- h) Density of fully compacted concrete.

### **2.15 Preliminary cube tests**

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

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

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

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

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

## **2.16 Work cube tests**

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

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

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

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

- i) Not more than 2 individual results of the 40-cube test should fall below the specified work cube strength.
- ii) No value of the range in any set should exceed 4 times the designed standard deviation.
- iii) Not more than one set should have an average, which is less than the specified strength plus  $1.1/3$  times the designed standard deviations.
- iv) No value of the average for any set should be less than the specified strength plus the designed standard deviation.

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

## **2.17 Quality control requirements**

### **2.17.1 Supervision**

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

### **2.17.2 Batching and mixing plant**

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

## **2.18 Workmanship**

### **2.18.1 Placing of reinforcement**

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

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

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

Columns	-	40mm minimum to main bars
Base	-	50mm minimum to main bars
Beams	-	25mm minimum to main bars
Slab	-	15mm minimum to main bars
Wall	-	25mm minimum to main bars
Raft slab	-	100mm minimum to main bars

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

### **2.18.2 Formwork generally**

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

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

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

Dimensions less than 3m	+ 3mm
Dimensions between 3m & 15m	+ 6mm
Dimensions over 15m	+ 10mm

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

Formwork connections and joints shall be constructed so as to permit easy removal of the formwork, but shall be so secured as to retain correct shape under pressure exerted by the wet concrete during placing, vibration, setting and hardening. If any wire ties passing through the concrete or bolts are used, measures shall be taken to prevent rust, stains on the finished work and any holes left by the removal of such ties shall be made good. Formwork shall be provided for top faces of sloping work and anchored to prevent floatation, but this shall apply only where the slope exceeds 15 degrees. The formwork for beams and slabs shall be erected so that the sides of the beams and

soffits of the slabs can be removed without disturbing the beam bottoms. Props for an upper storey shall be placed directly over these in the storey immediately below and the lowest prop shall bear upon work sufficiently strong to carry this load.

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

### **2.18.3 Mixing of Concrete**

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

Mixing of each shall be approved by the Engineer. Mixing of each batch shall continue until the concrete is uniform in colour and, in any case, for not less than two minutes after all the materials and the water is used in the drum. The entire contents of the drum shall be discharged before the materials for the succeeding batch are fed into the drum. Upon completion of the day's mixing, the drum shall be thoroughly cleaned free of adhering concrete.

### **2.18.4 Distribution of Concrete**

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

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

### **2.18.5 Placing of Concrete**

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

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

#### **2.18.6 Vibration**

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

#### **2.18.7 Working joints**

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

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

#### **2.18.8 Protection of Concrete**

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

#### **2.18.9 Concrete in Excavation.**

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

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

**2.18.10 Removal of formwork.**

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

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

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

**2.18.11 Surface finishes**

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

Concrete surfaces, which are to be plastered or rendered, are to be hacked or roughened by an approved means to form a key.

Sawn formwork is measured for all surfaces requiring support and subsequently concealed or plastered.

### **2.19. Precast Concrete**

Where precast concrete members are specified, these shall be constructed in moulds of approved design and samples from the moulds shall be approved before quality production of the member is commenced to requirement of BS 8110. Large precast members shall be lifted only at points, which will not damage the member, and if necessary temporary bracing of timber shall be used to case the member until it is in position. Small lintels and other small members may be cast in-situ at no extra cost at the contractor's option. Allowance must in all cases be made for any extra reinforcement to counteract temporary stresses whilst handling, transporting and hoisting precast concrete members. Moulds for precast units described as finished fair on exposed surfaces shall be lined with plywood or hardboard to leave a fair finish on the exposed concrete face when the mould is removed.

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

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

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

### **2.20 Sub-contractors work Incorporated in the Structure**

It shall be the contractor's 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/Engineer before the work is put in hand and shall have the Architect/Engineer's approval of the layout. No holes or chases shall be cut on concrete without the approval of the Architect/Engineer.

### **2.21 General**

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

### **2.22 Movements and Separation Joints**

Movement joints shall comprise of Bitumen impregnated soft board or similar approved.

Joints topping are to be 'Plastic' or similar approved hot poured rubber bitumen compound. Pointing to vertical joints is to be 'Plastic joint' or similar approved

bituminous putty applied with a gun. Joints are to be at least 12mm deep and the gap is to be formed either by raking cut (in the case of expanded polystyrene) or by temporary wooden battens of the required width and 12mm deep.

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

### **2.23 Mortise and Pockets**

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

Rates for mortises shall include for all necessary templates and raking out and the complete removal of the polystyrene when the concrete has set. No deduction from concrete quantities have been made for any mortise, pocket or any other void in the concrete of 0.05 cubic metre or less and the Contractor may take this into account when pricing. Grouting up has been measured separately.

## **3.0 WALLING**

### **3.1 Water**

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

### **3.2 Cement**

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

### **3.3. Fine Aggregate**

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

### **3.4 Coarse Aggregate**

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

### **3.5 Lime**

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

### **3.6 Bricks and Clay blocks**

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

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

### **3.7 Joints**

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

- i) With a flush joint as the work proceeds this joint being formed of the actual mortar used in bedding the bricks.
- ii) Struck or recessed joint formed in the mortar as the work proceeds when it has gone some way towards setting. Recessed pointing must be even and not vary in depth where not recommended otherwise the recess shall be 6mm deep.
- iii) Joints raked out while mortar is soft and cleaned down and pointed at completion.
- iv) When the joints are raked out and pointed later the pointing mortar should be of a composition similar to that of the bedding mortar.
- v) Joints raked out and left as key for plaster or roughcast.

### **3.8 Concrete Blocks**

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

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

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

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

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

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

### **3.9 Fair face work**

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

### **3.10 Mortar**

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

### **3.11 Workmanship**

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

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

### **3.12 Damp proof course**

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

## **4.0 ASPHALT WORK**

### **4.1 Generally**

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

### **4.2 Asphalt for tanking**

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

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

- i) Immediately upon completion the horizontal asphalt must be protected by covering it with a fine concrete screed of not less than 50mm thickness, in order to avoid damage by dumping of steel reinforcement rods, spillage of oil etc.
- ii) The vertical asphalt, the angle fillets and the offsets (if any) must be protected as quickly as possible by the erection of the skin walls or of main structural walls as the case may be.

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

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

#### **4.3 Asphalt for paving**

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

#### **4.4. Asphalt for roofing**

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

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

#### **4.5 Preparation of surfaces**

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

#### **4.6 Melting asphalt on site**

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

#### **4.7 Dusting of buckets**

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

#### **4.8 Laying of asphalt**

Asphalt shall be laid in bays generally not exceeding 2 metres wide and succeeding coats shall be laid breaking joint. Junctions between bays and

fillets shall be properly married, the laid asphalt being heated by the application of the hot material, the whole being worked so that the joints are neatly made. Air pockets and stains on the asphalt will not be permitted and the finished asphalt work shall be not ring hollow over any parts of its surfaces.

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

## **5.0 ROOFING**

### **5.1 Vermiculite lightweight screed**

Vermiculite lightweight screed shall be mixed in the proportions of 6 parts by volume of vermiculite Grade 5 to 1 part of Ordinary Portland Cement with approximately 2 parts of clean potable water to give a density of 700 kg. per m<sup>3</sup>.

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

### **5.2 Roof waterproofing**

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

### **5.3 Bitumen felt roofing**

#### **5.3.1 Generally**

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

#### **5.3.2 Materials**

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

#### **5.3.3. Fixing**

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

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

## **5.4. Aluminium roofing**

### **5.4.1 Materials**

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

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

### **5.4.2 Fixing**

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

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

## **5.5 Galvanised sheet roofing**

### **5.5.1 Materials**

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

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

### **5.5.2 Fixing**

The sheets shall be fixed to steel angle or timber purlins with roofing nails, bolts and nuts or any other accessory to be approved by the Architect/Engineer.

Fixing of the sheet must conform strictly to the printed instructions or otherwise to the requirements of CP 143 part 2 BS. 2855:1962.

NOTE: ASPHALT FOR ROOFING SEE UNDER TRADE "ASPHALT WORK"

## **6.0 CARPENTRY**

### **6.1 Timber generally**

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

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

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

Timber shall be free from live borer beetle or other insect attack when brought to the site. The Contractor shall be responsible to the end of the Defects Liability Period for executing any work necessary to eradicate insect attack at his own expense including the replacement of timber attacked or suspected of being attacked notwithstanding that the timber may have been inspected already and passed fit for use.

## **6.2 Moisture content**

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

## **6.3 Samples and testing**

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

## **6.4 Protection**

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

## **6.5 Softwood**

Timber for structural use, including rafters, purlins etc. shall be of Grade II strength and Grade 1 appearance. The softwood shall be a seasoned cypress, cedar pine or podo-carpus, which shall be pressure impregnated with the full cell process as described below, but the contractor's attention is drawn to the Dayworks Schedule where the basic price of various timber requires pricing, in the event of one of these timbers being selected as an alternative then these basic rates will be used in calculating new rates for the item of carpentry concerned.

## **6.6. Pressure impregnation**

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

Solution concentration - 2 %

Absorption of preservative - 520 litres per cubic metre

Net dry salt retention -10.4 kg. per cubic metre

After treatment the timber shall be seasoned to the specified moisture content.

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

Approved preservatives are:-

Atlas A. Brunophen Nr. 2, Cuprinol Clear or Water Repellent Clear Enscle Woodtreat 55.

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

### **6.8 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 BS. 144 or other equal and approved applied either by brush or by spraying in accordance with the manufacturer's instructions.

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

### **6.9 Nails**

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

### **6.10 Workmanship**

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

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

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

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

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

## **7.0 JOINERY**

### **7.1 General**

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

### **7.2 Hardwood**

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

### **7.3 Workmanship**

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

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

The joinery shall be worked strictly in accordance with the details drawings and is to be framed up and put together as soon as possible, and is to be stored for as long as possible before being wedged up . All joints and angles are to be glued and where necessary cross-tongued with hardwood tongues, and surfaces finished clean and smooth with machine marks sand papered out before fixing.

Should any of the joinery work shrink, wind or fly unduly before the end of the maintenance period of the contract, the work is to be taken down, and new work fixed in its place, together with any other works, which may thereby be affected at the Contractor's sole expense.

Where joinery is described as screwed, this is deemed to include sinking the head of the screws and pelleting with similar timber and grain in with finished joinery. Screws unless otherwise specified, shall be brass. In pricing the items, the contractor will allow for nails and screws and fixing, all labours, cuttings, notching, havling, mortising, tenoning and welding except where otherwise provided. Rates are also to include for one coat approved priming paint on all concealed surfaces.

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

#### **7.4 Flush doors**

Flush doors shall consist of hardwood core or framing covered with 6mm plywood both sides and complying where applicable with the requirements of BS. 459, Part 2 and 2A. Doors described as skeleton framed shall consist of framing 75mm wide to all stiles, top and bottom rails, with suitable blocks to receive mortise locks on each long edge. Doors described as solid core shall comprise a solid core of vertical laminations. All flush doors shall be edged all round with 25mm thick hardwood lipping tongued and glued in. Doors described as external shall be covered both sides with 6mm 'exterior' quality plywood as described below. All flush doors shall be perfectly plain on both faces and free from all waves, ripples or distortions of any kind. Any door, which, after the application of paint or polish shows any defects of this nature, shall be removed and replaced at the Contractor's expense. Samples of flush doors, which the contractor intends to use, must be first submitted to the Architect/Engineer for his approval.

#### **7.5 Plywood**

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

#### **7.6 Blockboard**

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

#### **7.7. Chipboard**

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

#### **7.8 Plugging**

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

#### **7.9 Protection**

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

#### **7.10 Ironmongery**

All ironmongery will be fixed with matching screws to be supplied by the contractor/Client and the contractor must allow for adjusting locks and striking plates and handling over all keys on completion of the contract with identifying tags attached.

The contractor must also allow for oiling locks and hinges and leaving them in perfect working order

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

S.C.P. - Satin Chrome Plate

C.P. - Chrome Plate (polished)

S.A.A. - Silver Anodised Aluminium

## **8.0 STRUCTURAL STEEL WORKS**

### **8.1 Generally**

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

### **8.2 Welding**

Electrodes for welding are to be in accordance with current British Standard in application

All welds are to be fillet welds of 5mm by size unless otherwise indicated.

### **8.3 Bolts**

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

### **8.4 Painting**

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

## **9.0 METALWORK**

### **9.1 Mild steel**

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

### **9.2 Galvanised work**

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

### **9.3 Aluminium**

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

#### **9.4 Smithing, welding and cutting**

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

#### **9.5 Bolts**

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

#### **9.6 Anchor bolts**

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

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

Rates are to include for fixing complete with washer.

#### **9.7 Louvre windows**

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

#### **9.8 Metal doors**

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

#### **9.9 Burglar bars**

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

#### **9.10 Structural hollow sections**

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

#### **9.11 Mild steel tubing**

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

#### **9.12 Shop inspection**

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

### **9.13 Marking**

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

### **9.14 Storage**

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

### **9.15 Erection**

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

## **10.0 PLUMBING AND ENGINEERING INSTALLATION**

### **10.1 PART ONE: GENERAL REQUIREMENT**

#### **10.1.1 SCOPE OF WORK**

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

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

#### **10.1.2.0 GENERAL CONDITIONS**

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

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

#### **10.1.3.0 MATERIALS**

##### **10.1.3.1 Submission of Samples**

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

### **10.1.3.2 Rejected materials**

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

### **10.1.4.0 SAFETY**

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

## **10.2.0 PART TWO: GENERAL SPECIFICATION**

### **10.2.1 EXECUTION OF THE WORK**

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

### **10.2.2**

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

- “British Standard Specification for Design, Installation, Testing and Maintenance of Services Supplying Water for Domestic use within Buildings and their Cartilage” **BS 6700: 1987.**
- “British Standard Sanitary Installation: Part1: Code of Practice for Scale of Provision, Selection and Installation of Sanitary Appliances” **BS 6465: Part 1: 1994.**
- “British Standard Sanitary Installation: Part2: Code of Practice for Space Requirements for Sanitary Appliances” **BS 6465: Part 2: 1996.**
- “British Standard Drain and Sewer Systems Outside Buildings: Part 4: Hydraulic Design and Environmental Considerations” **BS EN 752-4: 1998.**
- “British Standard Code of Practice for Drainage of Roofs and Paved areas” **BS 6367: 1983.**
- “British Standard Code of Practice for Sanitary Pipe work” **BS 5572: 1978.**
- “British Standard Fire Extinguishing Installations and Equipment on Premises: Part 0: Guide for the selection of installed systems and other fire equipment” **BS 5306: Part 0: 1986.**
- “British Standard for Eaves, Gutters and Fittings” **BS EN 607: 1996.**
- “British Standard for Gutter Brackets” **BS EN 1462: 1997.**
- “British Standard Fire Extinguishing Installations and Equipment on Premises: Part 3: Code of practice for selection, installation and

maintenance of portable fire extinguishers” **BS 5306: Part 3: 1985.**

- Gas Safety (Installation and Use). Regulations, 1998. Statutory Instrument 1998/2451. London: The Stationary Office, 1998.

ISBN 0 11 07 9655 1.

- By-laws of the Local Authority.
- The working drawings

#### **10.2.2.0 EXTENT OF WORK**

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

Water supply shall be from Borehole, rainwater harvesting system from roof with plastic storage tank, cold water pipes and associated fittings, valves, sanitary appliances including all necessary taps, overflows and discharge fittings, fire fighting installations and equipment, and all labour, materials, tools and instruments necessary to execute the work in a first class manner, even such labour or materials which are not specifically mentioned herein but necessary for completion of the work.

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

#### **10.2.3.0 EXTENT OF CONTRACTOR’S DUTIES**

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

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

Contractor shall be responsible for verifying all dimensions relative to his work by actual measurements taken on the site.

### **10.2.3.3 As built drawings**

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

## **10.2.4.0 QUALITY OF MATERIALS AND WORKMANSHIP**

### **10.2.4.1 Materials and workmanship**

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

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

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

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

### **10.2.4.2 Pipes and Pipe Fittings**

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

woodwork, suitable clips shall be used.

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

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

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

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

#### **10.2.5.0 TAPS AND VALVES.**

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

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

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

10.2.5.3 All valves, cocks and taps shall be of the correct pressure rating according to the recommendations of the relevant British Standards or the local

authority. At commencement of the contract, the Contractor shall, if necessary, ask the Architect/Engineer for guidance on this point.

#### **10.2.6.0 SANITARY AND OTHER APPLIANCES**

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

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

#### **10.2.7.0 FIRE FIGHTING EQUIPMENT**

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

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

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

#### **10.2.8.0 GAS INSTALLATION SPECIFICATION**

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

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

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

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

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

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

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

#### **10.2.9.0 INSPECTION AND TESTING OF COMPLETED INSTALLATIONS**

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

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

#### **10.2.10.0 INSPECTION AND TESTING OF WATER SUPPLY PIPE WORK**

##### **10.2.10.1 Testing for underground pipelines**

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

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

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

10.2.10.1.4 The test pressure shall be at least twice the working pressure of the pipeline. Precautions shall be taken to ensure that the required test pressure is not exceeded. Pressure gauges shall be checked and re-calibrated, where

necessary, before the test. To avoid the risk of contamination, water used for testing shall be obtained from a potable supply.

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

#### **10.2.11.0 INSPECTION AND TESTING OF SANITARY PIPE WORK**

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

10.2.11.2 The completion of the discharge system should be meticulously inspected to ensure that the recommendations of the code have been observed and that no cement droppings, rubble or other objects are left in the pipes and that no jointing material projects into the pipe bore. When this has been done, tests for soundness of the pipe work and for performance should be made.

#### **10.2.12.0 INSPECTION AND TESTING OF FIRE EXTINGUISHING INSTALLATIONS**

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

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

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

#### **10.2.13.0 INSPECTION AND TESTING OF GAS INSTALLATIONS**

10.2.13.1 All drop gas tap assemblies shall be tested to 5psi before leaving the factory.

All gas installations incorporating Vultex Labline drop lever gas tap assemblies shall not exceed 75 Mbar test pressure to ensure that the sealing and lubricating media is not displaced.

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

### **10.3.0 PART THREE: PARTICULAR SPECIFICATION**

#### **10.3.1.0 PLUMBING**

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

#### **10.3.2.0 STORAGE TANKS**

Overhead water storage simtanks with specified capacity in litres, number and concrete structure tower to be provided as per the drawings.

#### **10.3.3.0 FIRE FIGHTING**

12 kg ABC dry powder portable fire extinguishers shall be provided. 12kg E Wet chemical portable fire extinguisher shall be provided to all the kitchen areas.

#### **10.3.4.0 WASTE WATER DISPOSAL**

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

#### **10.3.5.0 CHEMICAL WASTE DISPOSAL**

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

#### **10.3.6.0 SOLID WASTE DISPOSAL**

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

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

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

### **11.0 FLOOR, WALL AND CEILING FINISHINGS.**

#### **11.1 Sand**

Sand for backings, floor and wall finishes is to comply with B.S.1199, Table1.

#### **11.2 Aggregate**

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

#### **11.3 Cement**

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

#### **11.4 Lime**

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

#### **11.5 Workmanship**

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

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

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

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

#### **11.6 In situ pavings generally**

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

##### **11.6.1 Cement and sand paving**

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

##### **11.6.2 Concrete paving**

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

##### **11.6.3 Terrazzo paving**

The in-situ terrazzo shall consist of white or coloured cement and marble aggregate; the colours of the cement and aggregate shall be selected by the Architect/Engineer. The mix shall comprise three parts of 6mm nominal aggregate to one part coloured cement by volume. The aggregate shall be clean and granular and shall not contain flakey particles or duct. The underbed shall be cement and sand 1:4 by volume.

The terrazzo topping shall be laid to a minimum of 12mm thickness in a plastic condition while the underbed is still green and this should be watered to minimise absorption from the topping. The terrazzo must be well tamped into position and rolled with a suitable hand roller. The topping should be allowed to take an initial set and then any surface voids must be grouted up with neat cement of the same colour used in the mix. The sacking for at least 72 hours. When dry and hard, the surface shall be machine polished by grinding with carborundum or other stone discs of suitable grade and with rotary polishing pads.

#### **11.6.4 Tyrolean rendering**

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

#### **11.6.5 Internal plaster**

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

Internal plaster, unless otherwise described, shall be lime plaster of 15mm minimum overall finished thickness applied in two coats. The first coat consisting of cement, lime putty and sand mixed in the proportions of (1:2:9). The finishing coat shall be a skin coat comprising cement and lime putty in the proportion of (1:10).

Cement plaster is to be employed where specified on the drawings and is to be applied in two coats of approximately equal thickness to a total of 15mm minimum overall finished thickness. The composition of both coats shall be the same and shall comprise cement and sand (1:4) but a small percentage addition (not more than 10%) lime putty may be permitted if the Architect/Engineer considers that this will reduce the incidence of shrinkage cracks.

The contractor shall cut out and make good all cracks, blisters and other defects and leave the whole of the plastering and rendering perfect at completion. When making good defects the plaster shall be cut out to a rectangular shape with edges undercut to form dovetailed key, and all finished flush with the face of surrounding plaster.

#### **11.6.6 "Sandtex" finish**

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

### **11.7. Wall tiling**

Glazed wall tiles shall be from an approved manufacturer and shall conform with the requirements of BS. 1281. Tiles shall be with slightly rounded or 'cushion' 'edges' and unless otherwise described shall be 150 x 150 x 6mm thick. Tiles shall be laid with continuous straight joints and internal angles shall be butt jointed.

Rounded on edge tiles shall be used on all external angles and edges of panels. Tiles shall be bedded in approved tile adhesive and pointed in white cement.

Backings to tiles are to be cement and sand in the proportion of 1:4 rendering in one coat to a minimum thickness of 12mm trowelled smooth.

### **11.8 Wood block flooring**

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

### **11.9. PVC Flooring**

PVC. tile flooring shall be used according to specified standards with an approved base.

The selected colours to be used shall be approved by the Architect/Engineer.

### **11.10 Acoustic ceilings**

Acoustic tile ceilings shall be 600 x 600 x 15 mineral fibre tiles, fine fissured finish, with tegular edge with exposed powder coated suspended aluminium 24mm T frame grid system. All ceilings to have shadow gap trim to junction with wall, and to be set out with full tile at centre line in both directions of room or space ceiling installation. Manufacturer to be Armstrong or approved alternative, and to be installed entirely in accordance with the manufacturer's instructions, incorporating all fittings and accessories, including suspension cable wires and hanger system.

The ceilings shall include a proprietary suspension system as recommended by the manufacturer. The suspension system shall be suspended from wire hangers fixed to concrete soffit and steel roof structures by an approved method. All to be fixed strictly in accordance with the manufacturers instructions.

### **11.11 Gypsum Plasterboard Ceilings**

Plasterboard for ceilings to comply with the requirements of BS1230 Part I and to be manufactured under BS 750 Part 2 12.7mm thick . Fixing, installation and filling of joints to be strictly in accordance with manufacturers instructions. Plasterboard to have tapered edge, with taped and filled joints, finished in accordance with the manufacturers instructions.

The joints between boards shall be provided with a fine metal or plastic scrim tape, nailed or stapled to the boards so as to fully cover the joints and ready for a plaster skim.

Plasterboard is to be fixed to a proprietary pressed metal brading system to Architects approval.

## **12.0 GLAZING**

### **12.1 General**

Glass generally shall comply with the requirements of B.S.952 and shall be free from bubbles, specks waves, flows or any other defects.

Clear sheet glass shall be 24 or 32 oz. (4 or 5mm nominal thickness) flat drawn sheet of ordinary glazing quality.

Glass for louvre blades shall be clear sheet flat drawn or rough cast obscured rolled glass to the thickness shown on the drawings with all exposed edges ground and polished.

### **12.2 Putty**

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

### **12.3 Workmanship**

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

### **12.4 Cleaning and protection**

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

## **13.0 PAINTING**

### **13.1 Colour range**

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

### **13.2 Materials**

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

Insignia Ltd (Galaxy & Coral Paints)

Plascon

Goldstar Paints Tanzania Ltd

Paints are to be used strictly in accordance with the manufacturer's instructions and no contamination by mixing with other brands or materials will be permitted. Thinning is only permitted in so far as it is in accordance with the manufacturer's printed instructions.

Paint guarantee certificate should be handed over to the Architect/Engineer.

### **13.3 Preparation**

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

### **13.4 Plastered surfaces**

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

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

### **13.5 Woodwork preparations**

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

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

### **13.6 Metalwork**

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

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

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

## **14.0 DRAINAGE**

### **14.1 Generally**

The preambles for the previous trade sections are applicable to this section together with the following preambles. The drainage is to be carried out in accordance with the directions of the Architect/Engineer and the requirements of the Byelaws. No length of drain is to be covered until it has been tested and passed.

### **14.2 PVC drain pipes**

PVC Drain pipes comply with ISO R161 (4kg/cm<sup>2</sup>) 'Pipes of plastic materials for the transport of fluids.

The drainpipes shall be spigot and socket glued joints.

### **14.3 Cast iron drain pipes**

Shall be centrifugal cast (spun) iron drainpipes with spigot and socket to BS.437 thoroughly coated inside and outside, alternatively similar pipes but class 'B' in accordance with BS. 1211 may be used according to availability. Fittings shall be in accordance with BS.1130.

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

### **14.5 Concrete drain pipes**

Precast concrete pipes shall be in general conformity with BS. 556. Concrete cylindrical pipes and fittings . The concrete mix used for the manufacture of ordinary pipes shall not be weaker than grade '30'.

For foul water drainage sulphate resisting concrete pipes shall always be used. The manufacturer of sulphate resisting pipes shall be in general conformity with BS. 556. The concrete mix not weaker than grade '30'. Pipes up to and including 45cm diameter shall be un-reinforced and shall incorporate spigot and socket type joints. Pipes above 45cm diameter shall be reinforced with not less than steel fabric required by British Standard BS 8110 or the equivalent in mild steel and shall have spigot and socket joints or if the Architect/Engineer so approved shall have open type joints. The main reinforcement to be in circumferential direction. Pipes reinforcement shall be placed midway between the inner and outer surfaces of the concrete. In socketed pipes the reinforcement shall be extended continuously from the pipe barrel into the socket, the longitudinal bars cranked as necessary.

No wall thickness of the pipe barrels is specified but the reinforcement (if any) and the wall thickness must be so balanced that the pipes are in conformity with B.S.556 and the test specified therein.

### **14.6 Pitch impregnated fibre drainpipes**

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

### **14.7 Manholes**

Manholes shall be constructed on drain lines in the positions indicated or wherever

ordered by the Architect/Engineer.

Manholes on pipe drains be constructed with an-in-situ base in concrete grade "20" which shall be raised to form the benching and invert of the manhole. The benching and channels shall be carefully formed to shape according to the number, diameter and positions of the incoming and outgoing pipes. The channels in the manholes base shall have circular inverts. The 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 grade "20" and rendered with 15mm 1:3 cement mortar. Rendering to be carried out in sulphate resisting cement for foul water drainage . The ends of all entering the manholes are to be carefully cut to shape to suit the internal dimensions of the manholes and are to be as short as possible and are to be surrounded with 150mm concrete up to the first pipe joint.

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

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

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

#### **14.8 Concrete beds etc**

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

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

The contractor is to ensure that his, method of placing this second layer of concrete is such that the full length of each pipe is fully supported. The overall depth of beds is to be in accordance with the table given on the drawings. Where pipes are specified to be haunched, the bed shall be brought up with the second layer of concrete to a minimum overall depth of 150mm to the underside of the barrel of the pipes plus half the diameter of the pipe and then sloped up to the top of the barrel of the drain pipes.

Where pipes are specified to be surrounded, the bed shall be brought up with the second layer of concrete to a minimum overall depth of 150mm to the underside of the barrel of the pipe and then completely surrounded with concrete with 150mm minimum cover all round. Rates for this item are to include for any formwork required.

#### **14.9 Trenches and manhole excavation and back filling**

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

Back filling shall be executed with selected material in 150mm layers (300mm layers if a mechanical rammer is used) each layer being well rammed and watered to obtain the maximum compaction. Care be taken to ensure that no stone or other work is placed within 300mm of such work.

Rates for manhole excavation shall include for levelling the bottoms. All surface material including top soil which differs in any nature whatsoever from the substrata, shall in every case be carefully set aside and stored separately from other excavated materials. No claim for extras will be allowed for setting aside topsoil for later use.

#### **14.10 Pipe laying and jointing generally**

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

##### **14.10.1 Jointing PVC Drain pipes**

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

- i) The spigot end shall be chamfered
- ii) Clean spigot and socket with wet cloth and let dry
- iii) Un-grease spigot and socket with acetone
- iv) Mark length of joint and spigot

- v) Apply first a relatively thick layer of cement onto spigot and then a thin layer into socket
- vi) Flush home the joint to the mark quickly and give at once a 90 twist.
- vii) Remove pressed out cement
- viii) Do not disturb the joint for five minutes whilst cement is hardening. The cement used shall be supplied by the factory, which is supplying the pipe

#### **14.10.2: Jointing precast concrete pipes**

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

Cement mortar joints for concrete pipes with spigot and socket joints shall be made as follows:-

- i) Before commencing the jointing operation the socket of the previously placed pipe and the spigot of the new pipe shall be cleaned and thoroughly soaked with water.
- ii) The spigot shall be wrapped one complete lap with tarred hemp spun yarn and the new pipe shall be carefully drawn towards the previously laid pipe so that the spigot enters the full depth into the socket of the previously laid pipe . The new pipe shall then be adjusted and fixed in its correct position in line, level and gradient and the yarn shall be caulked tightly home into the socket. On completion of this operation the yarn shall not fill more than one quarter of the total depth of the socket.
- iii) The remainder of the socket shall be completely filled with cement mortar consisting of one part of cement (sulphate resisting cement for foul water drainage) to three parts of sand. The mortar filling shall terminate flush with the socket and shall be neatly trowelled to a smooth finish completely around the pipe.
- iv) To assist the curing of the mortar the contractor shall cover the joints immediately after they are made with a layer of hessian which shall be kept continuously wet during daylight hours and he shall further adopt such other measures as the Architect/Engineer may direct all at the Contractor's expense.

#### **14.11 Position of floor gullies etc.**

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

#### **14.12 Testing**

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

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

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

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

### **15.0 EXTERNAL WORKS - ROADS AND PARKINGS:**

#### **15.1.0 Earthworks**

##### **15.1.1 Dimensions.**

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

##### **15.1.2 Protection of earthworks**

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

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

##### **15.1.3 Drainage of earthworks**

Earthworks shall be executed at all times to levels and slopes, which effect drainage. Water shall not be permitted to stand in construction area at any time. It may be necessary to keep the excavation clear of water by pumping, in which case the contractor shall allow for this. The Contractor shall provide, maintain and operate the

pumping equipment, and shall construct such drains and sumps as may be necessary to remove the water from the excavations.

Water shall be dealt with in such a manner as will prevent the surfaces on or against which structures will be constructed from any deterioration of their natural conditions, or from such condition as improved by work executed under the Contract.

#### **15.1.4 Spoil**

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

#### **15.1.5 Formation**

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

#### **15.1.6 Topsoil**

Surface spoil shall be removed from all construction areas to the depth stated or required by the Engineer. Sufficient soil shall be stockpiled on site to enable a minimum thickness of 150mm to be returned to those areas, which are designated for grassing or landscaping, and the remainder shall be run to spoil. The Contractor is to exercise care to ensure that topsoil, is not contaminated with subsoil or construction materials. Should this occur he shall supply replacement topsoil in quality approved by the Engineer at his own expense.

#### **15.1.7 Placing of fill material**

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

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

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

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

Compaction for a minimum depth of 150mm.

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

Formation + 0mm - 50mm

Other fill areas + 50mm - 50 mm

### **15.1.8 Excavation**

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

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

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

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

### **15.1.9 Construction control testing;**

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

When the test results demonstrate the area of formation or fill complies in all respects with the requirements of this Specification, he shall apply to the Engineer for approval. Such application shall identify the boundaries of the area submitted and shall be accompanied by a copy of the test results. Upon receipt of an application for approval the Engineer will generally approve the area or layer submitted, but reserves the right to order without unreasonable delay such further tests as he considers to be necessary. This procedure will be relaxed at the discretion of the Engineer as soon as the Contractor consistently achieves by his methods and plant the standards required.

### **15.1.10 Excavation for structures and services**

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

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

#### **15.1.11 Supports for excavations**

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

#### **15.1.12 Back-filling excavations for structures and services**

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

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

#### **15.1.13 Over excavation**

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

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

#### **15.1.14 Use of explosives;**

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

Adequate warning must be given to road users and any persons in the neighbourhood when blasting is about to take place.

The Contractor shall indemnify the Employer against any claims for damages to persons or property on or near the site from any cause whatsoever arising out of the use of explosives.

The Contractor will be held solely responsible for and must immediately make good to the approval of the Engineer any damage that may occur through the use of explosives. No claim for extras whatsoever will be considered as a result of prohibition by the Public Authorities from the use of explosives.

#### **15.1.15 Grass**

Where instructed by the Engineer the Contractor will provide suitable grass and plant, water, weed, cut, maintain and deliver up the same in good condition at the end of the maintenance period. Planting should take place immediately before a rainy season and

should be carried out in accordance with good horticultural practice. Areas, which do not cover or die before they are properly established should be replaced, so that all areas to be grassed are delivered up in a wholly satisfactory condition.

## **15.2.0 Pavement construction**

### **15.2.1 Preparation:**

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

### **15.2.2. Alignment and level control**

Stakes, boards and boning rods of substantial construction shall be furnished, set and maintained by the Contractor, in order that the works will conform to the lines and levels shown on the Drawings. The stakes shall be set at intervals not exceeding 25 metres in lines parallel with the centre line and not parallel with the centre line and not more than 25 metres apart.

Stakes, boards and boning rods shall be painted in such a manner as to indicate clearly the lines and levels to be worked to for each layer of pavement.

### **15.2.3 Thickness and surface tolerances:**

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

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

Variation permitted (mm)
Sub base + 0-40
Road base + 0-25
Surfacing + 6- 6

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

#### **15.2.4 Gravel sub-base**

The material used shall be good quality naturally occurring gravel. It shall be subject to suitable testing at the direction of the Engineer to show that it has a 4 days soaked CBR of not less than 30% at 100% BS. Compaction. The grading of the material shall show a smooth grading curve parallel to and within the limits stated below. The material shall have a Plasticity Index not exceeding 20%.

The sub-base material shall be spread to the full width of the cross-section and to loose thicknesses so that after compaction the finished thicknesses will be those specified. Oversize pieces shall be removed or separately broken down. The method of compaction shall be approved by the Engineer and shall be such as to compact the material to 100% BS. Compaction through its full depth. Control testing shall be carried out if directed by the Engineer.

BS sieve size	Percentage passing		
37.5mm	100		
20mm	80-100	100	
10mm	55-80	80-100	100
5mm	40-60	50-75	80-100
2.36mm	30-50	35-60	50-80
1.18mm			40-65
600microns	15-30	15-35	
300microns			20-40
75microns	5-15	5-15	10-25

#### **15.2.5 Gravel road base**

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

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

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

### **15.2.6 Crushed stone road base:**

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

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

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

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

Mixing , handling, transporting ,pacing, spreading and compacting of the crushed stone shall take place whilst it is in a moist condition and in such a manner as to avoid segregation. The Contractor shall as necessary and further water so that compaction is carried out within the range of - 2% to + 0.5% of the optimum moisture content.

The material shall be spread by means of a mechanical paver, which shall be to the approval of the Engineer and be capable of spreading the crushed stone material in an even manner without segregation to a thickness which will give the required finished thickness.

No material shall be delivered to the paver over previously compacted material. Spreading shall commence at the high point of a pavement cross-section and finish at the low point or points. Where, in the opinion of the Engineer, segregation has occurred the material in the affected area shall be cut out and replaced.

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

Any voids appearing in the surface shall be filled with crusher fines, watered and re-compacted until a hard dense layer is obtained. Compaction shall proceed from the sides to the centre of the lane under construction or from one side towards previously compacted material. The crushed stone layer shall be compacted to 100% BS.

Compaction. Areas inaccessible to the roller shall be compacted by mechanical plate compactors. Control testing shall be carried out if directed by the Engineer.

#### **15.2.7 Protection of pavement layers:**

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

The placing of the road base shall be followed as soon as practicable by the placing of the surfacing.

#### **15.2.8 Prime coat**

A prime coat shall be applied to the road base before the premix or asphalt surfacing; or surface dressing. The surface shall be thoroughly swept by brooms, all laitance, loose and foreign material removed and the clean surface of the base and hard particles in the layer exposed as a mosaic.

All loose material shall be wept well clear of the area to be primed. The surface shall be checked for line, cross-fall and level and made good as necessary and approved by the Engineer before any bitumen prime is applied. Where required by the Engineer, immediately prior to the application of prime, the surface shall be lightly sprayed with water but not saturated.

The prime coat shall be sprayed immediately after the preparation of the stone layer is completed and approved. The type of prime coat shall be medium curing cutback bitumen MC 30 grade. The rate of spray will be as directed by the Engineer between 0.5 lit/m<sup>2</sup> - 1.0 lit/m<sup>2</sup>. The quantity used must give complete coverage with a slight trace of run off in places. Should the Contractor find that at the rate of spray directed the coverage is inadequate, or there is too much run off, he shall immediately inform the Engineer and amend the spray as directed.

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

#### **15.2.9 Chippings**

Chippings used for surface dressing should be single sized, cubical in shape, clean and free from dust, strong, durable and not susceptible to polishing under the action of traffic. These should be selected in accordance to British Standard BS 63, "Single sized road-stone and chippings".

Samples of chippings should be tested for grading, flakiness index, aggregate crushing value and when so instructed by the Engineer, the polished stone value and aggregate abrasion value, before the start of surface dressing operation or when new supplies are delivered.

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

15.2.9.1 The previously primed surface shall be swept clean with brooms and the debris deposited well clear of the surface to be surfaced, Any defects of the surface shall be made good as directed by the Engineer and no binder shall be applied until the surface has been approved by the Engineer.

The binder for surface dressing shall be straight run hot bitumen of grade 80/100 pen applied by a bitumen distributor complying with BS 1707 at a temperature between 145 degrees and 205°C

### **15.2.9.2 Dressing**

During spraying all kerbs, head walls, drains and the like which are liable to be disfigured by splashing of bitumen shall be protected, and any such feature which is accidentally marred by bitumen, shall be cleaned with a suitable solvent, or if this is not possible, removed and made good at the Contractor's expense.

Immediately after the binder has been applied, clean dry stone chippings shall be spread at the rate directed by the Engineer. Directly the stone chippings have been spread they shall be rolled initially so that the whole area receives at least one pass within ten minutes of the bitumen being sprayed. Immediately after the initial rolling, any area, which is deficient in chippings, shall be made good by hand spreading. Brooming of the material to effect redistribution of chippings will not be permitted. The number of passes of the roller shall be laid down by the Engineer, but shall be at least two. A certain amount of crushing under the roller is permissible, but should any general shattering occur, the Engineer may direct that rolling shall cease, regardless of the number of passes completed.

Pneumatic tyred rollers are preferred for rolling of all bitumen seal work though finishing with smooth steel-wheeled rollers may be permitted with the approval of the Engineer. No rollers or construction equipment shall be permitted to park on the completed work.

The road shall not be opened to traffic until the bitumen has attained sufficient viscosity to prevent stones being removed, and not earlier than 24 hours in the case of the first application of chippings.

Unless allowed otherwise by the Engineer, the area shall not be opened to works traffic before the application of the full number of specified coats.

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

### 15.2.10 Asphaltic concrete surfacing

Asphaltic concrete surfacing courses shall comprise a mixture of well-graded aggregate, filler and penetration grade bitumen.

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

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

#### Bitumen content

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

Minimum stability 250kg

flow value, between 2 - 5 mm

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

The surfacing material shall be mixed in a purpose-made mixing plant of the weigh batch or continuous mixing type in good order and approved by the Engineer, shall be transported to the works in clean covered vehicles and laid by a self-propelled mechanical spreader/finisher without delay. The mix temperature when placed in the spreader shall not be less than 135°C. and the mix shall be rolled immediately after laying and before the temperature falls below 120°C.

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

#### **15.2.11 Kerbs, edgings and quadrants**

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

#### **15.2.12 White line markings:**

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

### **16.0 ELECTRICAL INSTALLATION**

#### **16.1 TECHNICAL SPECIFICATIONS I**

##### **16.1.1 General Conditions**

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

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

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

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

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

### **16.1.2 Contractor's Conditions**

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

### **16.1.3 Statutory Regulations.**

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

### **16.1.4 Symbols**

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

### **16.1.5 Materials & Equipment**

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

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

### **16.1.6 Builder's works**

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

### **16.1.7 Cooperation with other trades**

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

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

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

#### **16.1.8 Setting out and final position of electrical gear**

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

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

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

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

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

#### **16.1.9 Access to plant rooms**

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

#### **16.1.10 Distribution boards and switch gear**

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

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

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

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

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

#### **16.1.11 Cables**

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

Rubber Insulated cables and flexible cords B.S.S. 6500

P.V.C. Insulated cables and flexible cords B.S.S. 6004

P.V.C. Insulated Armoured cable B.S.S. 6346

Butyl Rubber Insulated cables B.S.S.D. 6101V

The Contractor will, at the Engineer's discretion, be required to submit samples of cables for the Engineer's approval: The Engineer reserves the right to call for cables of an alternative manufacturer without any extra cost being incurred.

No cable of C.S.A. less than 1.5 mm<sup>2</sup> shall be used unless otherwise specified.

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

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

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

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

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

All P.V.C. S.W.A. cables run inside the building shall be fixed in rising ducts or on ceiling by means of diecast cable hooks or clamps, of appropriate size to suit cables, fixed by studs and

back nuts to their channel sections, Type C.S.I. Alternatively by B.I.C.C. claw type cleating system with diecast cleats and galvanized mild steel back straps or similar approved equal method for one or two cables runs together, the cleats shall be fixed to special channel section supports or back straps described above, which shall in turn be secured to walls or ceilings of ducts by rowbolts.

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

Depth of laying low voltage cable shall be 450mm minimum but 600mm to the top of cable tiles where planting is indicated on the drawing.

Any damage to the serving or sheathing of cables shall be brought to the Engineers notice in writing and their instructions that it should be repaired or replaced is to be carried out.

#### **16.1.13 P.V.C insulated cables**

These cables shall be of the non-braided type as C.M.A reference 6491x600/1000 volt grade cables, or equal approval cables for all service shall be in accordance with the schedules and the Electrical Regulations.

#### **16.1.14 Heat resisting cable**

Final connection to all lighting fittings (and other equipment where a temperature in excess of 65 0C is likely to be experienced) shall be made using silicone rubber insulated cable or equal approved.

#### **16.1.15 Conduit installation**

Conduit shall be Heavy gauge P.V.C. or steel as specified in the Bills of Quantities, of 20mm minimum diameter and made to applicable B.S.I. standards. Steel Conduit and fittings shall black enamel finish, unless otherwise specified for indoor use and outdoors-galvanised finish shall be used.

Cable capacity of conduit shall be in accordance with the appropriate tables of I.E.E. Regulations and sufficiently large to allow easy draw in or withdrawal of any one or all cables. A conduit run shall neither have more than two (2) right angle bends or equivalent nor more the 10m without the provision of a draw in box.

Conduit shall be installed in such a way that there is segregation of lighting, general-purpose power installations telephone, alarm systems etc. as outlined in the Regulations. In poured, reinforced concrete columns and slabs the fitting and boxes shall be laid and fixed in position to prevent displacement during mechanical vibration, and shall be sealed to prevent the

ingress of cement.

Conduits installed on surface shall be unobtrusive and runs shall be symmetrical and in keeping with the building design. The routes of all surface conduits shall be approved by the Engineer and/or Architect/Engineer on site before installation.

The crossing of expansion joints and feeders to work benches from floors shall be made with flexible conduit connecting each end of the P.V.C. conduit, care shall be taken to ensure that the flexible conduit/conduit connector are correctly installed and will not become disconnected when the expansion and contraction takes place.

Where permanent wiring is not installed a draw wire shall be left in all such conduits.

#### **16.1.16 Labelling**

All main switches, circuits breakers, isolators and distribution boards shall be labelled showing the area and service fed them, and where not otherwise immediately obvious, their source of supply.

The circuits fed from the DB shall be marked on a card fixed to the inside of the lid or as shall be agreed with the Engineers. The card must indicate without ambiguity the location of all the outlets fed from each distribution way and the size of the fuse or circuit breaker rating.

All control switches, isolators, starters, etc, shall be labelled to indicate the item or apparatus controlled, the supply voltage and phase.

Where socket outlets and/or single phase isolators in any one room area are connected to more than one phase, all such outlets and isolators shall be labelled to indicate the phase to which they are connected and where required by the Engineers, a warning label shall be provided and fixed as directed to indicate the presence of 415 volts between outlets on different phases.

#### **16.1.17 Final sub-circuits**

The wiring of each final sub-circuit shall be electrically separated from that of every other final sub-circuit. For all lighting and socket outlets wiring shall be carried out in the "Looping in" system, and there shall be no joints whatsoever.

The wiring sizes for lighting circuits and socket outlets are shown on the drawing. If not shown then the sizes specified in I.E.E. Regulations shall be assumed.

#### **16.1.18 lighting fittings**

The Contractor shall supply and fix all lighting fittings and lamps of number, and size indicated on the drawings manufactured and designed to comply with BS 4533/EN 60598. Fittings shall be assembled and cleaned and if necessary any suspension tubes cut and screwed to provide the right mounting height.

All fittings and pendants shall be fixed to conduit boxes with brass R/H screws. The whole of the metal work in each lighting fittings shall be effectively bonded to earth. In case of ball and/or knuckled joints, short lengths of flexible cable shall be provided bonded to the metal work on either side of the joints.

Where lamp holders are supported by flexible cable, the holders shall have “cord grip” arrangement, and in case of metal shades earthing screws be provided on each of the holders.

In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to central conduit bot fittings.

#### **16.1.19 Electric lamps**

All lamps shall conform with the specifications of the appropriate B.S.I. suitable for normal stated supply voltage.

Prior to installation, the Contractor shall enquire of and conform to the direction of the Engineers as to the colour of fluorescent lamps to be installed.

#### **16.1.20 Switches**

Switches shall be of the type(s) given in the Bills of Quantities of this specification, and shall conform to BS 3676. Steel flush mounting boxes for switches shall conform to BS 4662.

Where multi-gang switch assemblies are used the switches shall be connected so that their layout relative to each other on the switch-plate conforms, as far as practical, to the layout of the groups of appliances controlled.

Generally switches shall be mounted at a height of 1400mm above finished floor level, and 150mm from the doorframe.

#### **16.1.21 Socket outlets**

Socket outlets for general A.C supplies shall be 13 Ampere complying with BS 1363 and of the type specified in the Bills of Quantities. Flush and surface mounting boxes for sockets outlets shall be designed and manufactured to comply with BS 4662 and BS 5733 respectively.

Unless otherwise specified, socket outlets shall be mounted 300mm above finished floor level except those on top workbenches, which shall be, installed as detailed drawings.

Where two or more points are shown adjacent to each other on the drawing, e.g. socket outlet and telephone outlet, they shall be lined up vertically or horizontally on the centre lines of the units concerned. Normally the units shall be lined up on vertical centre lines, but where it is necessary to mount units at low level they shall be lined up horizontally.

#### **16.1.22 Telephone outlets**

Telephone outlets shall be installed in preparation rooms as shown in the drawings. Final wiring for the telephone system shall be carried out by others, however the Contractor shall lay conduits and draw wires as outlined in the drawings.

#### **16.1.23 Fume Cabinets**

Fume cabinets and similar apparatus shall be controlled either by local switch of suitable rating fitted with a neon indicator connected in a radial circuit.

Final connections to the cabinets shall be by butyl rubber silicone rubber or other approved heat resisting cables run in flexible conduit, which shall commence at flush circular conduit box situated beside the equipment.

#### **16.1.24 Earthing**

The Contractor shall be responsible for providing and installing all necessary electrodes, earthing conductors; clamps; connectors and to ensure that the entire installation is installed in accordance with the I.E.E. Regulations. Earth plates shall not be permitted.

The Earth resistance shall be tested in the manner described in the latest edition of the I.E.E. Regulations by the Contractor in the presence of Engineer, and the Contractor shall be responsible for the supply of all test equipment.

An Earthing Terminal must be provided at each box or other enclosure to which accessories are to be attached. The earth leads to each distribution board shall not be less than half the cross sectional area of the feeder.

#### **16.1.25 Testing and inspection**

On completion of the entire installation or as may be deemed necessary by engineer, the Contractor shall test all wiring and connections for:

- Earth continuity
- Neutral Earth loop impedance
- Insulation Resistance
- Earth Resistance

All tests shall be in accordance with the Electrical Regulations. In case power is not connected at the time of handover the Contractor shall ensure that a suitable generator set is available for the purpose of completing the tests. All related costs shall be borne by the Contractor.

The Contractor shall provide the Test Certificates which must be set out as indicated in the Electrical Regulations with additions where necessary to include functional tests and other tests, and shall be signed by the Engineer who shall be present at all site tests.

All the apparatus, attendance and assistance necessary, together with all skilled labour, shall be provided by the Contractor.

The Contractor shall advise the Engineers of a suitable date for the final inspection, which shall be prior to the date of handover of the Main contract. This shall be after:

- All boards Switchgear, outlets etc., have been cleared and damaged paint work made good.
- All lamps are in-situ and working
- All tests described above have been carried out and certificates produced.
- All labelling has been completed
- All conduit lids are secured
- All unused blanking holes have been blanked off
- All builder's work has been made good round outlets etc. to the Engineers satisfaction and all surplus paint cleaned off on items of electrical equipment.

Any faults defects, or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparent by such inspections or tests, shall be rectified by the Contractor at his own expense.

## **16.2.0 TECHNICAL SPECIFICATIONS II**

### **16.2.2 Main switch**

Location of main distribution board as shown in drawings is for tendering purposes only. The Engineer shall decide actual position on site after determining the exact mains entry point.

### **16.2.3 Distribution boards**

Distribution boards shall be installed at positions and height shown on drawings. All breakers and other apparatus shall only be accessible through the door, only incorporated isolators shall be accessible from outside.

Typewritten or stenciled labels showing each circuit shall be fixed on the inside of the door.

The circuits of the DB's shall have phase arrangement in accordance with that shown on the diagrams. However it shall be the responsibility of the Contractor to tong test the load to the satisfaction of the Engineer.

### **16.2.4 Wiring system**

All internal wiring shall be carried out in PVC insulated single core cables run in non-metallic conduits either concealed in chases cut in solid partition walls, or cast in-situ in concrete structure or fixed on the surface of walls or ceiling member shall be fixed by spacer

bar saddles fixed not more than 1 meter apart.

The Contractors shall install PVC pipes to accommodate the supply cables into and out of the building as proposed on drawings.

#### **16.2.5 Fittings and accessories**

Type and makes of fittings and accessories have been specified in the bills of quantities. The specifications are meant to ensure a good standard of quality of materials. Any other fittings must first be inspected and approved before being used.

#### **16.2.6 Installation of boxes for accessories**

All boxes shall be of metallic type.

The installation of boxes shall be made with great care and they shall be set plumb and true. Care shall be exercised to ensure that outlet boxes are set flush with wall finish so that cover plates will neither protrude beyond the surface of the wall nor be sprung out of shape by the outlet box being set too deep in the wall.

#### **16.2.7 Builders work**

The Contractor shall take special care in the location of conduits so that same will not clash with required locations for and proper grading of water, drain pipes etc., and he shall take special pains to refer to the drawings covering such requirement so as to ensure his equipment is installed in proper relation to other apparatus.

#### **16.2.8 Earthing**

Earthing shall be done as recommended in IEE Regulations for Electrical Installation of Buildings. Each unit shall have its own earthing points consisting of an earthing inspection chamber and copper electrodes.

#### **16.2.9 Final testing and inspection**

On Completion of the entire installation and before handover, inspection shall be carried out as given in part I of these specifications.

### **17.0 DEMOLITIONS AND ALTERATIONS**

#### **17.1 Demolition**

Demolitions, taking out and cutting away shall be carefully performed and every precaution shall be taken to ensure the safety of the works. If damage should occur in the carrying out of the demolitions or alterations the contractor shall reinstate and made good the same at his own expense.

## **17.2 Protection**

Supply, erect and maintain during the cutting of openings etc., all necessary protection to the existing premises against damage by weather or other causes.

## **17.3 Laying the dust**

Allow for laying the dust as far as possible during the alteration by watering with a hose or other means.

## **17.4 Making good**

All making good of blockwork, building up of openings etc., shall be in solid blockwork unless otherwise described, in cement mortar (1:4) properly cut, toothed and bonded and pinned up to existing work and pointed where necessary.

## **17.5 Credit for Materials**

Unless otherwise specified materials arising from the demolitions and alterations will become the property of the Contractor. If the Contractor wishes to allow a credit for any such materials the appropriate allowance should be included in the 'credit' column of the Bills of Quantities.

In the event that the Employer wishes to take possession of any such materials the Contractor will only be entitled to receive compensation to the amount of credit indicated.

## **17.6 Definitions of Terms**

The following definitions explain and simplify the terms indicated in the description of the works.

Removal shall include:

- Dismantling/pulling down/taking down/taking out/taking up/stripping etc., at the site of the works getting from the site of the works to the outside of building by whatever means is necessary and disposal.

Disposal shall include:

- Handling on site to store or to pick up point for loading
- Loading into skips or Lorries
- Transporting away from site to yard, store or tip
- Payment of all tip charges.

Making out shall include:

- Infilling to voids, openings, gaps and the like and matching materials and construction to existing.

Making good shall include:

- work as last described consequent on the carrying out of other work.

Form opening in brickwork or blockwork shall include:

- shoring up and needling as required
- cutting the opening

- designing, providing and inserting required beam or lintol and providing any calculations if required and obtaining building regulation approval
- providing and inserting cavity gutters and the like
- forming new arches and the like in facework to match existing
- quoining up jambs
- sealing cavity of hollow walls, at jambs and cill and providing and inserting damp proof course
- making good facework and features to match existing
- forming new external sub cills or sub thresholds to match existing
- making good the plasterwork or other applied finishes including making out into reveals and providing metal angle beads to arrises where required
- Removing debris.

Block in/Blank off/Fill in opening in brick work or block work shall include:

- carefully cutting out any flooring in opening and levelling and preparing for raising new work
- cutting toothings for bonding in new work
- filling the opening with brickwork or blockwork to match existing
- making out facework including cutting out arches, cills or ornamentation around the opening and continuing any general facework pattern
- wedging and pinning to existing soffit
- providing and inserting matching damp proof course
- Making out any plasterwork including continuing any existing patterns or labours and making good between new and old work so that after decoration or weathering the original opening cannot be discerned remove debris.

Remove partition shall include:

- shoring up if required
- sizing, providing and inserting required timber beam if the partition is loadbearing
- taking off skirtings, picture rails and the like
- stripping off lath plaster or other finished and insulation quilts
- taking out doors, borrowed lights, hatches and the like, frames, linings and architraves and the like within any area of partitioning to be removed
- dismantling and taking down studding or framed work
- making good plasterwork or other wall and ceiling finishes including cornices and other enrichments
- making good or making out floor boarding and any applied finishes
- taking out timber skirtings, picture rails and the like
- removing debris.

Repair roof covering shall include:

The term repair as applied to a tiled or slatted roof includes any or all of the following operations as are necessary:

- renew broken or missing tiles/slates to match existing including nailing with composition nails or securing with copper tingles

- re wedge and repoint flashings and making out with new as required
- re make tile/slate verges or eaves including any bedding and pointing
- renew defective or missing ridge or hip tiles
- remove debris.

Renew roof covering shall include:

The term renew roof covering as applied to a tiled or slatted roof includes:

- KAlift and afterwards refix flashings, soakers, ridge, hip and valley coverings etc
- strip existing roofing and battens, sort and set aside sound tiles/slates
- renew battens and re lay existing tiles/slates together with new tiles/slates as required all to match existing including sarking felt underlay whether previously provided or not, and including any special tiles/slates to eaves, verges, ridges and valleys
- re wedge and repoint flashings
- remove debris.

The term renew roof covering as applied to a sheet metal, felt or asphalt roof includes:

- strip existing roofing
- renovate sub base as required
- lift and afterwards refix flashings
- renew roof covering to match existing
- re wedge and repoint flashings
- remove debris.

Renew flashings and the like shall include:

The term renew flashings and the like as applied to pitched or flat roofs any or all of the following as may be applicable:

- strip existing flashings, soakers, gutters, ridge and hip coverings
- renew all work previously removed in material or similar quality and substance
- re wedge and repoint all new flashings
- remove debris.

Ease and adjust shall include:

The term ease and adjust as applied to doors, cupboard doors, casement sashes and the like includes:

- rehang on existing hinges
- planing edges as necessary
- oiling locks and hinges and leaving in working order

Overhaul shall include:

The term overhaul applied to doors, cupboard doors, casement sashes and the like includes any or all of the following operations as are necessary:

- cramp up loose tenon joints and wedge or re wedge including gluing wedges
- piecing in any damaged timber to door, frame and linings or architraves
- rehanging on existing hinges or renewing hinges if required
- plane edges
- plane off protruding tenons
- refix ironmongery and locks or renew if required
- oil locks and hinges
- renew glass where cracked or broken
- renew putties where loose, missing or defective

Strip existing installation shall include:

The term strip existing installation in relation to electrical installation includes:

- disconnecting at mains and making safe
- disconnecting and taking out all existing conduit, wiring and fittings (except where conduit is to be re used)
- Strip existing installations in relation to plumbing and engineering installations shall include:
  - turning off incoming supplies
  - disconnecting and taking out all existing appliances, fittings and pipework
  - removing defunct pipeclips, fixings and the like
  - making good walls, floors, ceilings as required
  - Removing debris.

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**BILL NO. 01 PRELIMINARIES**

**BILL NO. 1 - PRELIMINARIES**

ITEM	DESCRIPTION	SHS.
	<p><b><u>DESCRIPTION OF SITE</u></b></p> <p>A The site is located within the premises of ....., TANZANIA</p> <p>B The Contractor shall provide and maintain any necessary temporary roads, sleeper tracks and temporary cross over during the execution of the works, clear away same at completion and reinstate and make good any work distributed to the satisfaction of the local Authority and the Employer.</p> <p>C The Contractor shall be deemed to have visited the site and satisfied himself as to;-</p> <ul style="list-style-type: none"> <li>i) The nature of the site</li> <li>ii) The amount of bush, rubbish or debris to be cleared away before commencement</li> <li>iii) The nature of proximity and size of the adjoining building and property</li> <li>iv) The nature of the existing communications by roads or otherwise</li> <li>v) The means of access to the site</li> <li>vi) The availability of land for the erection and positioning of all temporary structures, plant and materials necessary for the execution of the works</li> <li>vii) The source of adequate supplies of labour, plant and materials for completion of works.</li> </ul>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
A	If the Contractor wishes to execute trial holes before submitting is tender, he may do so in positions to be agreed with the Employer and at his sole expenses, including the reinstatement of the ground if so required by the Employer.	
B	The whole of the site will be available to the Contractor immediately upon the issue of the order to commence.	
C	Any sand, aggregate to or other building materials shall be property of the Employer and shall not be used in the Construction of the works without the written consent of the Employer.	
D	The Contractor is to satisfy himself as to any difficulties that the site may present and to make all necessary enquiries to any point which in his opinion requires further elucidation as no claim for lack of information on any of the above will be entertained	
<b><u>DESCRIPTION OF WORKS</u></b>		
E	The work within this Contract comprises of Construction of the Proposed <b>Health Center to be built on plot no.....block..... At ....., ..... Municipality, ..... Region. Tanzania</b>	
<b>To collection</b>		<b>Tshs.</b>

ITEM	DESCRIPTION	SHS.
	<p><b><u>Definition of Terms</u></b></p> <p>A The following terms, where they occur, shall be interpreted as hereunder:-</p> <p>(i) The term "approved", "<i>directed</i>", or "selected", shall mean the approval direction or selection of the Project Manager.</p> <p>(ii) Wherever the word "<i>allow</i>" occurs, the cost of the items is at the risk of the contractor.</p> <p>(iii) The contractor shall provide all materials unless otherwise specified and wherever the term "supply" or "Provide" occur they shall be held to mean provide only in the section in use. It must be assumed that the fixing has been measured in another section of Bills of Quantities.</p> <p>(iv) Wherever the term "fix" occurs this shall mean the fixing only of materials of goods provided by Nominated Supplier.</p> <p>B The contractor shall provide and maintain any necessary temporary roads, cleeper tracks, ramps and temporary crossovers during the execution of the works, clear away same at completion, and satisfaction of the local authority and the Employer.</p> <p>C The Contractor shall be deemed to have visited the site and satisfied himself as to:-</p> <p>(i) The nature of the site</p> <p>(ii) The amount of bush, rubbish or debris to be cleared away before commencement of the works.</p> <p>(iii) The nature, proximity and size of any adjoining buildings and property.</p> <p>(iv) The nature of existing communication by road or otherwise</p> <p>(v) The means of access to the site</p> <p>(vi) The availability of land for the erection and positioning of all temporary structures, plant and materials necessary for the execution of the works.</p> <p>(vii) The sources of adequate suppliers of labour, plant and materials for the completion of the work.</p>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
	<p><b><u>Method Statement</u></b></p> <p>The bidder shall detail as part of his submission his <b>outline method statement for carrying out the works together with a preliminary programme</b> showing the order in which the various sections of the works described in the Bid enquiry documents are to be executed within the respective milestones and the time for completion. These documents shall detail the bidder's proposed method and sequence of carrying out the major items of work. Construction method drawings should be provided in order to illustrate the proposals. Bids which are not accompanied by a preliminary programme or a sufficiently comprehensive and project specific method statement will be rejected.</p> <p>The bidder's outline method statement shall include (but not limited to) the following:</p> <ol style="list-style-type: none"> <li>1. Method statement description.</li> <li>2. Preliminary programme showing sequencing and adherence to milestones and Time for Completion</li> <li>3. Procurement strategy plan.</li> <li>4. Logistics plans for labour and materials, including details of equipment use requirements.</li> <li>5. Details of storage facilities (provide details of location, size, climate control).</li> <li>6. Safety procedures.</li> <li>7. QA/QC (Quality Assurance / Quality Control) procedures and credentials.</li> <li>8. Staff organization chart showing site superintendence staff designated to the Contract</li> <li>9. Any proposal for speeding or simplifying construction, e.g. off site prefabrication of parts or whole sections of the works and modularization of elements etc.</li> </ol>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
	<p><b><u>Restricted nature of the site</u></b></p>	
A	<p>The contractor's attention is drawn to the restricted nature of the site in connection with movement of materials, plant and equipment.</p>	
	<p><b><u>Visit the Site</u></b></p>	
B	<p>The Contractor shall visit the site and acquaint himself with the location of the site, the nature of the ground sub-strata and other local conditions, position of power and water supplies, access roads, or any other limitations as no claims for extra will be considered on account of lack of knowledge in this respects.</p>	
	<p><b><u>Drawings</u></b></p>	
C	<p>The Drawings used in the preparation of these Bills of Quantities may be inspected at the office of the Project Manager.</p>	
	<p><b><u>Working and Storage Space</u></b></p>	
D	<p>The contractor shall upon receiving instruction to proceed with the works draw up a site plan, and set out the location of his various temporary works. The plan shall be discussed and agreed with the and no deviation from the plan will be permitted without the written consent of the Project Manager.</p>	
E	<p>The Contractor must make his own arrangement for any additional working and storage space required, obtain consents, or rentals in connection therewith and all else required.</p>	
F	<p>If the contractor wishes to excavate trial hole; before submitting his tender he may do so in positions to be agreed with the Project Manager and at his sole expense, including the reinstatement of the ground if so required by the Project Manager.</p>	
G	<p>Any sand, aggregate or other building material found on the site which have not been imported by the contractor shall be the property of the Employer and no such materials shall be used in the Construction of the works without the written consent of the Project Manager.</p>	

ITEM	DESCRIPTION	SHS.
	To collection Tshs.	

ITEM	DESCRIPTION	SHS.
A	The Value of any materials so used shall be assessed, based at current market prices of such materials and be allowed by the Contractor as a credit under this contract to the Employer.	
B	The contractor is to satisfy himself as to any difficulties that the site may present and to make all necessary inquiries to any point which in his opinion requires further elucidation as no claim for lack of information on any of the above will be entertained.	
	<p><b><u>Singular and Plural</u></b></p>	
C	Words Importing the singular only also include the plural and vice versa where the context applies.	
	<p><b><u>Law Governing Contract</u></b></p>	
D	The contract shall in all respects be construed and operate in accordance with the laws of the United Rrepublic of Tanzania	
	<p><b><u>Variations, Provisional and Prime Cost Sums</u></b></p>	
E	No extra work of any kind will considered unless a written authorization can be produced of the same.	
F	No daywork will be allowed for work that can possibly be measured, and no daywork will be allowed unless specifically as such on the order. A weekly voucher of all such works is to . be sent the PPM, set forth in details and signed by the foreman - in - charge	
G	The term ' <i>Provisional Sum</i> ' shall mean a sum of money to be included in the Contract to cover the cost of a portion of the works the extent or nature of which is undetermined at the time of preparing theContract Documents or which cannot be work accurately determined until the is completed.	
H	The term ' <i>Prime Cost Sum</i> ' shall mean a sum provided for which or services to be executed by a Nominated sub-contractor, a statutory Authority or a Public Undertaking, or for materials or goods to be obtained form a Nominated supplier. Such sum shall be deemed be exclusive of any cash discount or profit required by the General Contractor.	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
	<p><b><u>Variations, Provisional and Prime Cost Sums (Cont'd)</u></b></p> <p>A The Contractor's attention is drawn to the term '<i>Ass for profit</i>' which follows which follows all P. C. Sums and is to allow against this item where it occurs either by of a percentage or a lump sum addition for the profit which he requires. Any such addition will be subsequentlyadjusted pro-rata to any increase or decrease in the P.C Sum to which is applies. All P.C sums are to be used as directed by the Physical Planning and Maintenance Section and deducted in whole or in parttogether with any profit added by the Contractor, if not required.</p> <p><b><u>Contract Bills</u></b></p> <p>B Bills of Quantities have been prepared generally in accordance principles contained in the Standard Method of Measurement of Building Works for East Africa First Edition, October, 1970. In cases where descretionary power has been exercised to vary the method of measurement this is made clear by description in the item concerned and the contractor is to allow accordingly in this prices. No claim for extra payment will be considered for any alleged divergence between any item in the Bills of Quantities and a similar item in the Standard Method of Measurement.</p> <p>C The Contractor is particulary requested to bear in mind that the whole of the quantities in the Bills are 'measured net' as fixed and the Contractor must include in his prices for all waste of . every description</p> <p>D Variations of '<i>Builder's Work</i>' will be subject to the same amended rates or perecentage adjustment.</p> <p><b><u>Pricing Preliminaries</u></b></p> <p>E The contractor shall price individually and in detail all the items in this or other section of the Bills of Quantities as required and under no circumstances will lumpsums be allowed.</p> <p><b><u>Definition of Abbreviations</u></b></p> <p>F Abbreviations have been used in the bills of Quantities for the Units of measurement and the Contractor should take due notice of the undermentioned:-</p> <p>mm - Millimetre  cm - Centimeter  m3 (CM) - Cubic Metre</p>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
	<p>m2 (SM) - Square Metre                      m (LM) - Linear Metre                      No. (NO) - Number                      Kg. - Kilogramme</p> <p><b><u>Valuation of Preliminaries</u></b></p> <p>A For the purpose of Interim Certificates, Preliminaries will be valued as follows:-</p> <p>B Where Insurances have been priced, Insurance premiums will be paid on production of receipts and any balance will be paid in proportion to the value of builder's work completed.</p> <p>Signboards, stores, accommodation will be apportioned for setting up maintainance and removing.</p> <p>Indivisual items will be included in valuations when they have been executed.</p> <p>In general all other prliminary costs will be included in valuations in direct proportion to the value of builder's work completed.</p> <p><b><u>Records</u></b></p> <p>C The contractor shall allow for keeping all records pertaining to the works and shall keep on the site daily diary recording , weather conditions temperature, visitors to the site etc.</p> <p>D The Contractor is to supply to the Project Manager such information as weather conditions, he may require in connection with the works including statement showing the notes (stating the name of the project) for all materials delivered to the site.</p> <p><b><u>Advertisements</u></b></p> <p>E No advertisements will be permitted without the written authorization of the Project Manager.</p> <p><b><u>Rates of Wages, Hours &amp; Conditions of Labour</u></b></p> <p>F The Contractor shall pay rates of wages and observe hours and conditions of labour not less favourable than those laid down in the Regulations of Wages and Conditions of Employment Act and Construction industry issued by the Government of Tanzania.</p>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
A	<p>The Contractor shall be deemed to have provided in his tender for all proper emoluments and expenses of labour current in the district at the of submission of tender.</p>	
	<p><b><u>Distrurbance of Nuisance</u></b></p>	
B	<p>The Contractor shall allow for taking all necessary precaution in the order an execution of the works so as to avoid causing disturbance or nuisance to the occupants or existing building and those adjacent to the works and for complying with the Project Manager Instructions in this respect.</p>	
	<p><b><u>Trepass, Damage and Care of Works</u></b></p>	
C	<p>The contractor shall prevent any trespass on the adjoining property, and shall take all reasonable precautions during the progress of the contract to prevent any damage to the adjoining property or public or private roadways and to prevent materials, plant, rubbish, debris e.t.c collection on the adjoining property or roadways.</p>	
D	<p>The Contractor will be responsible for the protection of adjoining building boundary walls, fences, fence, services either overhead or underground and for the making good of or caused in the course of building operations.</p>	
E	<p>The contractor shall at all times observe any police regulations including those regarding the loading or unloading of, or waiting vehicles on the public highway and the contract sum shall be deemed to include for strict compliance therewith.</p>	
F	<p>The Contractor shall allow for making good all damage to the roads, kerbs, surface water channels, etc, occasioned by heavy traffic, delivery of materials and building operations generally, to the entire satisfaction of the Prooject Manager, and shall be responsible for observing any by-law or authority regarding keeping the roads free from mud, filth, etc. arising out of the execution of the works.</p>	
	<p><b><u>Temporary office for Project Manager</u></b></p>	
G	<p>The contractor shall allow for providing and maintaining suitable temporary timber framed office for the use of the Project Manager, size not less than 12 square metres properly lighted, ventilated, air conditioned, floored roofed and supplied with electric power, desk with two drawers, locks, keys and chairs suitable for site meeting. Allow for attendance and removal on completion or when directed.</p>	
	<p><b>To collection</b></p>	<p><b>Tshs. 0</b></p>

ITEM	DESCRIPTION	SHS.
A	<p><b><u>Temporary office for Clerk of Works</u></b></p> <p>The contractor shall allow for providing and maintaining suitable temporary timber framed office for the use of the Clerk of Works, size not less than 12 square metres properly lighted, ventilated, air conditioned, floored roofed and supplied with electric power, desk with two drawers, locks, keys and chairs suitable for site meeting. Allow for attendance and removal on completion or when directed.</p>	
B	<p><b><u>Temporary office for Foreman - in - charge</u></b></p> <p>The contractor shall allow for providing and maintaining suitable office accommodation for the use of the Foreman - in - charge with proper storage for the drawings and all documents necessary for use upon the works with lock up desk and a chair, and for power, lighting and attendance and removal on completion or when directed.</p>	
C	<p><b><u>Rates and Taxes</u></b></p> <p>The contractor shall allow for the payment of any rates and taxes levied by the Rating Authority upon temporary structures the Contractor is required to provide on the site for the execution of these works.</p>	
D	<p><b><u>Temporary hoarding, fencing etc.</u></b></p> <p>The contractor shall provide all necessary fencing, guards barriers, hoarding, fan, planked footways, gantries and all other safeguards necessary for protecting the public and for the proper execution of the works.</p>	
E	<p><b><u>Protection from the weather</u></b></p> <p>The Contractor shall allow for covering up and protecting all new work from injury by weather or any other cause. Any damage loss or expense caused by non-compliance with this clause shall be at the sole risk of the contractor.</p>	
F	<p><b><u>Tools, Plants and Scaffolding</u></b></p> <p>Provide all necessary cranes, hoists, concrete mixers and other plant including ladders, staging, access gangways, tackle, , tarpaulins, tools moulds, tempelates and other requisites necessary for the proper execution of the works. Allow for removing and reinstating, adapting from time to time as may be necessary and and maintaining all plant equipment during the course of the Contract.</p>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p> <p style="text-align: center;">-</p>

ITEM	DESCRIPTION	SHS.
A	The Contractor shall allow for providing, adapting from time to time as may be necessary and maintain all scaffolding, scaffold boards and temporary stagings, etc., necessary for the execution . of the works	
B	The contractor is to provide everthing necessary for the proper execution of the works according to the true intent and meaning of the drawings, etc, wether the same may or may not be drawings or described in the Bills of Quantities, provided that the same is reasonably to be inferred therefrom.	
C	<p><b><u>Site Accommodation for Contractor's Staff</u></b></p> <p>The Contractor shall allow for providing, maintaining temporary sheds and shelters for the accommodation of all workmen, workshops and sheds for the storage of materials that may be necessary for the works in approved positions on the site, including those required by sub- contracotrs and for removing same when no longer required or when directed.</p>	
D	<p>The Contractor shall allow for providing, maintaining and keeping in a sanitary condition an adequate temporary sanitary accommodation and facilities in accordance with local regulations for all persons employed on the works, including sub-contractors. Alter,shift and adapt from time to time as necessary, remove same when no longer required or when directed,reinstae ground to the satisfaction of the Project Manager and deodorise soil.</p> <p><b><u>Water for Works</u></b></p>	
E	<p>The Contractor shall allow for all necessary clean, fresh water for Works, including that required by sub-contractors and for any temporary plumbing, meters and storage facilities and pay all charges in connection therewith and clear away on completion and make good works distrurbed.</p> <p><b><u>Lighting and Power of the works</u></b></p>	
F	<p>The Contractor shall allow for providing and maintaining a temporary electricity supply for the works including that required by the sub-contractors and for any meters and fittings to give artificial lighting and power necessary to the execution of the works and pay all charges in connection and make good all works distrurbed.</p>	
	<b>To collection</b>	<b>Tshs.</b>

ITEM	DESCRIPTION	SHS.
A	<p><b><u>Watching and Lighting</u></b>                      The Contractor shall allow for providing and maintaining any barriers, hoarding, watching and lighting, which must comply with the by-laws of requirements of the Local Authority and Police Regulations and the Contract must give all requisite, provide everything necessary to protect the general public, workmen, plant, materials and the whole of the worksform injury or damage.</p> <p><b><u>Signboard</u></b>                      The Contractor shall provide and erect a signboard on the site showing the titles of the Contract, the names and addresses of the Employer, Consultants, Nominated suppliers and sub-contractors, and such information as may be required by the Project Manager who shall provide the design layout and colours of the boards. The whole board shall be maintained in good conditions, repainted when necessary and removed when no longer required. <b>The signboard shall include the cost for Project registration which entails purchase of stickers for the LOGO's of respective professional bodies which include, AQRB,ERB and CRB .</b></p>	
C	<p>The Contractor is required to protect the Works in all section until practical completion.</p>	
	<p><b><u>Testing</u></b></p>	
D	<p>Allow for all testing to all installations so required to be stated and provide everything necessary for this purpose and leave the whole in prefect working order to the satisfaction of the Architect and Local Authority.</p>	
	<p><b><u>Removing Rubbish and Cleaning</u></b></p>	
E	<p>The Contractor shall make good all defects, and injuries to the works, clean down external faces, wash off marks of mortar and windows inside and outside, scrub floors, flush out plumbing installation and drain runs and leave all parts of the works clean, free from rubbish and waste material and perfect on completion.</p>	
F	<p>The contractor shall clear and cut away all rubbish as it accumulates and keep the Works in an orderly condition to the satisfaction of the Project Manager.</p>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>
		<p>-</p>

ITEM	DESCRIPTION	SHS.
A	<p><b><u>Setting out the Works</u></b></p> <p>The Contractor shall setout the works in accordance with the dimension and levels shown on the drawings and shall be responsible for the correctness of all dimensions and levels so setout by him and will be required to amend all errors arising from inaccurate setting out at his own cost and expenses. In the event of any error or discrepancy in the dimensions or levels marked on the drawings being discovered such error or discrepancies must be reported by the Contractor to the Architect for his immediate Action.</p>	
B	<p>No work shall be commenced by the Contractor until he has received writte instructions from the Architect to Adjust such discrepancies which may be proved. Upon receipt of such instructions the Contractor shall there upon be responsible for accurate settingout of the works giving effect to the adjustments necessary to comply with such instructions, and no claim for extra expense based on any discrepancy or error in the dimensions levels shown on the drawings may be made thereafter.</p>	
	<p><b><u>Site levels</u></b></p>	
C	<p>Before commencing work the Contractor must arrange for and agreed with the Architect the existing site levels and similarly establish and agree a bench mark</p> <p>The levels and benchmark thus agreed will then be used for duration of works for all purposes</p> <p>The Contractor shall allow in his tender the need to attain a levelled ground by cut and fill method from midpoint of the site</p>	
	<p><b><u>Occupation Certificates</u></b></p>	
D	<p>At the Completion of the Contract the Contractor shall apply for and obtain any necessary occupation certificate from the local authority and see that it is duly completed and signed in accordance with the conditions laid down by the current by- laws</p>	
	<p><b>To collection</b></p>	<p><b>Tshs.</b></p>

ITEM	DESCRIPTION	SHS.
	<b>COLLECTION</b>	
	Page Prelim. VIII/01/1	
	Page Prelim. VIII/01/2	
	Page Prelim. VIII/01/3	
	Page Prelim. VIII/01/4	
	Page Prelim. VIII/01/5	
	Page Prelim. VIII/01/6	
	Page Prelim. VIII/01/7	
	Page Prelim. VIII/01/8	
	Page Prelim. VIII/01/9	
	Page Prelim. VIII/01/10	
	Page Prelim. VIII/01/11	
	Page Prelim. VIII/01/12	
	Page Prelim. VIII/01/13	
<b>TOTAL FOR PRELIMINARIES CARRIED TO GENERAL SUMMARY TSHS.</b>		

## **MEASURED WORKS**

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO. 01:-SUBSTRUCTURE (All Provisional)</u></b>				
	<b><u>EXCAVATION AND EARTHWORK</u></b>				
a	Site clearance of small trees, shrubs and the like including grubbing up roots and remove average of 150mm deep vegetable soil away from site	200.49	m <sup>2</sup>		
b	Excavate oversite evarage 150mm deep to remove vegetable soil convey average 150mm deep and remove away from site.	200.49	m <sup>2</sup>		
	<b><u>Trenches in natural ground; to receive foundations: starting from stripped level</u></b>				
c	Not exceeding 1.50 meters deep	60.63	m <sup>3</sup>		
	<b><u>Pits: to receive foundations footing starting from stripped level</u></b>				
d	Not exceeding 1.50 meters deep	0	m <sup>3</sup>		
	<b><u>Extra over all kinds of excavations irrespective of the depth for</u></b>				
e	breaking up rocks(Provisional)	4	m <sup>3</sup>		
	<b><u>Disposal</u></b>				
	<b><u>Excavated materials</u></b>				
f	Backfilling; depositing and compacting in layers maximum 150mm thick imported material	46.26	m <sup>3</sup>		
	<b><u>Surplus excavated materials</u></b>				
g	Removing from the site	14.37	m <sup>3</sup>		
	<b><u>DISPOSAL OF WATER</u></b>				
h	Keeping excavation free from all water including spring or running water		Item		
	<b><u>PLUNKING AND STRUTTING</u></b>				
i	Generally sides of excavation		Item		
	<b>To Collection</b>			<b>T.shs.</b>	



ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>FORMWORK TO INSITU CONCRETE</u>				
	<u>Formwork generally</u>				
a	To vertical sides of Column Bases	-	m <sup>2</sup>		
b	To vertical sides of Starter Column	13.62	m <sup>2</sup>		
c	To vertical sides of beams	36.74	m <sup>2</sup>		
d	Edges of beds and the like over 75 to 150mm	12.25	m		
	<u>WALLING</u>				
	<u>Concrete block B.S 2028 type A: 3.5N per square millimetre; solid in cement sand mortar (1:4)</u>				
e	230mm Thick wall	144.35	m <sup>2</sup>		
	<u>DAMP-PROOF- COURSE (DPC)</u>				
f	230mm Wide	91.86	m		
	<u>DAMP-PROOF-MEMBRANE (DPM)</u>				
g	500Gauge polythene sheet laying on blinded hardcore with 150mm sides and endlaps	176.90	m <sup>2</sup>		
	<u>WALL SUNDRIES</u>				
	<u>generally</u>				
h	15mm Cement and sand (1:3) external rendering to concrete block wall	-	m <sup>2</sup>		
i	Prepare and apply two coats of black bituminous paint on rendered or concrete surfaces, externally	-	m <sup>2</sup>		
	<b>To Collection</b>			<b>T.shs.</b>	
	COLLECTION				
	Page 2/1/1				
	Page 2/1/2				
	Page 2/1/3				
	<b><u>ELEMENT NUMBER 01: SUBSTRUCTURE CARRIED TO SUMMARY OF BUILDING WORKS</u></b>			<b>T.Shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT No. 02 - FRAME</u></b>				
	<b><u>REINFORCED CONCRETE WORK INCLUDING REINFORCEMENT BARS</u></b>				
	<u>Vibrated Reinforced in-situ concrete:</u> <u>grade 20N/sq.mm nominal mix</u> <u>(1:1.5:3). Reinforcement: bars: BS 4449:1969 hot</u> <u>rolled round high yield steel straight or bent</u>				
a	Ring beam or the like, irrespective of sectional area	5.83	m <sup>3</sup>		
b	Columns	1.59	m <sup>3</sup>		
c	Slab	5.66	m <sup>3</sup>		
	<b><u>PLAIN CONCRETE</u></b>				
	<u>Plain in-situ concrete: grade 15N/sq.mm</u> <u>nominal mix (1:2:4)</u>				
d	Concrete capping	1.42	m <sup>3</sup>		
	<b><u>FORMWORK TO INSITU CONCRETE</u></b>				
	<u>Sawn formwork to.</u>				
e	vertical sides of column	14.54	m <sup>2</sup>		
f	horizontal sides and soffites of ring beam	36.74	m <sup>2</sup>		
g	Concrete capping	14.22	m <sup>2</sup>		
h	Concrete slab	37.75	m <sup>2</sup>		
	<b><u>ELEMENT NUMBER 02:- FRAME CARRIED TO SUMMARY OF BUILDNG WORKS</u></b>			<b>T.Shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT No 03 : WALLS AND PARTITIONS</u></b>				
	<b><u>BLOCKWORK WALL</u></b>				
	<b><u>Blockwork; solid concrete blocks; BS 6073 type A; compressive strength 2.8N/sq.mm; in cement mortar (1:4);</u></b>				
a	150mm thick	275.51	m <sup>2</sup>		
c	100mm thick	13.31	m <sup>2</sup>		
	<b><u>ELEMENT NO 03 : WALLS CARRIED TO SUMMARY OF BUILDING WORKS</u></b>			T.Shs.	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO 4: DOORS</u></b>				
	<b><u>HARDWOOD DOORS</u></b>				
	<u>Supply and fix 45mm woodened flash door complete with frame and architrave: comprising high fanlight filled with clear glass, 45 x 100mm stiles, intermediate stiles, top and middle rails, 45mm x 100mm bottom rails with solid panels infill tongued and grooved, pattern as per approval.</u>				
a	Sized 1800mm x 2400mm high double swing door including 20 x 20mm glazing beads	3	Nr		
b	Sized 800mm x 2400mm high including 20 x 20mm glazing beads	4	Nr		
c	Sized 800mm x 2100mm high including 20 x 20mm glazing beads	0	Nr		
	<u>Supply and fix the following Ironmongery: supply and fix the following as manufactured by Assa Abloy, Union "or other equal and approved supplier with matching screws"</u>				
e	125mm x 80 x 4mm brass polished heavy duty butt hinges	30	Nr		
f	Stainless steel overhead door closer	0	Nr		
g	Three level mortice lockset with furniture and handler	10	Nr		
	<u>Glass in openings: 6mm ordinary quality clear glass to wood with wood beads and wash leather (inclusive)</u>				
h	Panes not exceed 0.50 square metres	2.58	m <sup>2</sup>		
	<u>Metal Works:Mild steel</u>				
i	Supply and fix metal grilles to approved pattern	12.96	m <sup>2</sup>		
	<b><u>ELEMENT NO 4: DOORS CARRIED TO SUMMARY OF BUILDING WORKS</u></b>			T.Shs.	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO 05: WINDOWS</u></b>				
	<u>PURPOSE MADE UNITS</u>				
	<u>Supply, assemble and fix purpose made natural anodized aluminium sliding windows complete with 6mm thick clear glass sheet; with 80x45x2mm minimum thickness of frame; 21 microns; complete with necessary locks, hinges, draught stirrups, pull handles snap on glazing beads; building in lugs to jambs; plugging and screwed head and sill and bedding in water proof cement mortar and painted in approved mastic externally; oiling; easing and adjusting;</u>				
a	Overall size 1500mm x 2000mm high	8	Nr		
b	Overall size 1200 x 2500mm high	8	Nr		
c	Overall size 1200 x 2000mm high	2	Nr		
d	Overall size 1200 x 1500mm high	0	Nr		
e	Overall size 900 x 1500mm high	0	Nr		
f	Overall size 800 x 800mm high	8	Nr		
	<u>DISPENSING WINDOW</u>				
	<u>Supply, assemble and fix 8mm thick clear toughened glass dispensing window; with 80x45x2mm minimum thickness of frame to pharmacy</u>				
e	Overall size 1800 x 1300mm high	0	Nr		
	<u>METAL GRILLS TO WINDOWS</u>				
g	Supply and fix window grilles to approved	57.92	m <sup>2</sup>		
	<b><u>ELEMENT NO 05:WINDOWS CARRIED TO SUMMARY OF BUILDING WORKS</u></b>			<b>TShs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO.06 ROOFING</u></b>				
	<b><u>ROOF COVERING</u></b>				
	<u>Flat Roofing: 28 gauge Resin Colour Coated IT5 aluminium sheets; single length; supplied by ALAF Ltd. or equal and approved; fixed in accordance with the manufacturer's printed instructions including all accessories</u>				
a	Coverings; flat or sloping not exceeding 10 degrees from horizontal; including ridges and valley gutter	141	m <sup>2</sup>		
	<b><u>STRUCTURAL TIMBER</u></b>				
	<u>MPODO, Mtambara . cypress, seasoned with moisture content below 18%, pressure impregnated, treated with insecticides to:</u>				
b	Overall area	141	m <sup>2</sup>		
c	25mm thick x 225mm wide, fascia board, pine, wrot hardwood	19.4	m		
d	Allow for all rain water accessories down pipe, gutter,	1	Item		
	<b><u>Water Proofing to Slab</u></b>				
e	Supply and fix water profing membrane sheet to slab as approved by engineer	6.06	m <sup>2</sup>		
	<b><u>Water Proofing to Roof Edges</u></b>				
f	Supply and fix water profing membrane sheet to roofing edges as approved by engineer	53.4	m		
	<b><u>ELEMENT NO. 06 - ROOFING CARRIED TO SUMMARY OF BUILDING WORKS</u></b>			<b>T.Shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO. 07: FINISHINGS</u></b>				
	<u>INSITU FINISHINGS</u>				
	<u>Plastering cement and sand mix (1:4) in two coats steel trowelled to a smooth finish mixed with gypsum powder</u>				
a	15mm To walls internally and externally	577.64	m <sup>2</sup>		
b	15mm To door and window openings	29.37	m <sup>2</sup>		
c	Concrete capping	22.52	m <sup>2</sup>		
	<u>TILE, SLAB OR BLOCKWORK</u>				
	<u>Glazed RAK ceramic wall tiles with cushion edges to BS 1281 or other equal and approved suppliers, grade "A" 200 x 200 x 10mm; laid to approved pattern; bedding with approved adhesive; grouting with approved grout</u>				
d	generally	45.84	m <sup>2</sup>		
	<u>600 x 600 x 10mm PEV Matt Porcelain floor tiles Ex Spain or other approved materials fixed laid to approved pattern; bedding with approved adhesive; grouting with approved grout</u>				
e	Floors	150.59	m <sup>2</sup>		
f	Stairs	25.88	m <sup>2</sup>		
g	skirting; 100mm wide;	61.61	m		
	<u>Gypsum plasterboard to BS 1230 Pt. 2 1970 tapered edge wallboard selfs tapping galvarnized drive screws;head holes filled and sanded taped ans scrimmed board joints;all to receive direct decoration ;but joints;to timber framework base (measured separately)</u>				
h	9mm Thick Gypsum Ceiling	165.1	m <sup>2</sup>		
i	50 x 50mm Hardwood branderings	1100.67	m		
	<b>To Collection</b>			<b>T.shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
j	<u>Cornices: coved and decorated with approved shape</u> 50 x 50mm screwed to timber; curved	61.61	m		
	<u>BEDS AND BACKING</u>				
	<u>Cement and sand (1:4) wood floated surface finish</u>				
k	30mm Bed to receive floor tiles	150.59	m <sup>2</sup>		
l	12mm Bed to receive wall tiles	45.84	m <sup>2</sup>		
	<b>To Collection</b>			<b>T.shs.</b>	
	COLLECTION Page 2A/7/1 Page 2A/7/2				
	<b><u>ELEMENT NO.07: FINISHINGS</u></b> <b><u>CARRIED TO SUMMARY OF BUILDING</u></b>			<b>T.shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<p><b><u>ELEMENT NO. 08: PAINTING AND DECORATIONS</u></b></p> <p><b><u>INTERNAL WORKS</u></b></p> <p><u>Prepare and apply (Skimm) and apply one thinned coat primer and two full coats of Acrylic vinyl silk wash and wear emulsion paint internally and two full coats of Acrylic weatheguard emulsion paint externally;</u></p>				
a	Plastered wall	577.64	m <sup>2</sup>		
b	15mm To door and window openings	29.37	m <sup>2</sup>		
c	Concrete capping	22.52	m <sup>2</sup>		
d	Gypsum Ceiling	165.1	m <sup>2</sup>		
	<p><u>Varnishing; internal work; prepare and apply three coats of clear polyurethane clear varnish; wood surfaces;</u></p>				
e	General surfaces; frames, linings and associated mouldings 200-300mm girth	51.28	m <sup>2</sup>		
	<p><u>Prepare and apply (scrap) and apply one thinned coat of red oxide primer followed by two full coats of High Gloss Enamel paint to metal grilles;</u></p>				
f	generally	71	m <sup>2</sup>		
	<p><b><u>ELEMENT NO. 08: PAINTING AND DECORATION CARRIED TO SUMMARY OF BUILDING WORKS</u></b></p>			T.Shs.	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO. 09: FIXTURES AND FITTINGS</u></b>				
	<b><u>ABLUTIONS</u></b>				
	<u>Cylindrical Concrete ablusion seats finished with tiles</u>				
a	Sized 310mm diameter x 520mm high	12	Nr		
	<b><u>KITCHEN</u></b>				
c	<u>Supply and fix Hardwood Low Level Kitchen Cabinet;boards or panelled, linings,casings and partitions,mkongo board,butt joints,fixed by screwing and timber glue; finished with marble top including all necessary accessories, panelled doors, drawers; design to be approved by engineer</u>				
b	Overall sized 4100 x 600 x 900mm high	-	Nr		
	<u>Supply and fix Hardwood High Level Kitchen Cabinet;boards or panelled, linings,casings and partitions,mkongo board,butt joints,fixed by screwing and timber glue; finished with marble top including all necessary accessories; design to be approved by engineer</u>				
c	Overall sized 1900 x 300 x 600mm high	-	Nr		
d	Prepare and apply three coats of clear polyurethane vanish to cabinets	-	m <sup>2</sup>		
	<b><u>MADRASAT</u></b>				
e	<u>Supply and Fix hardwood and metal school furnitures; design to be approved by engineer.</u>				
f	School chair; sized 450mm x 410mm x 750mm high	-	Nr		
g	School desk; sized 600mm x 400mm x 700mm high	-	Nr		
	<b>To Collection</b>			<b>T.shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>Supply and fix standard school whiteboard</u>				
h	Sized 3000mm x 1200mm high	-	Nr		
	<u>MOSQUE</u>				
i	Supply and fix mosque floor carpet. Colour, pattern, material to be approved by engineer	-	m2		
	<u>Cupboard units made of MDF Melamine; High level wall based units</u>				
j	Consultation Rooms; Overall sized 750mm high x 600mm wide x 300mm depth	-	Nr		
	<u>Low level unit; made of MDF melamine boards including doors, iron mongery and shelevs all finished with black granite</u>				
k	L-Shaped Laboratory; Overall size 4000mm long x 900mm high x 600mm wide	-	Nr		
l	L-Shaped pharmacy store; Overall size 4400mm long x 900mm high x 600mm wide	-	Nr		
m	Straight-Shaped staff lounge conter; Overall size 3500mm long x 900mm high x 600mm wide	-	Nr		
n	Straight-Shaped phlebotomy conter; Overall size 3000mm long x 900mm high x 600mm wide	-	Nr		
	<b>To Collection</b>			<b>T.shs.</b>	
	COLLECTION Page 2A/9/1 Page 2A/9/2				
	<b><u>ELEMENT NO. 09: FIXTURES &amp; FITTINGS</u></b> <b><u>CARRIED TO SUMMARY OF BUILDING WORKS</u></b>			<b>T.Shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<b><u>ELEMENT NO. 10: EXTERNAL WORKS</u></b>				
	<u>BOUNDARY WALL</u>				
a	<u>Excavation foundation trench</u> Not exceeding 1.50 meters deep	-	m <sup>3</sup>		
b	<u>Backfilling</u> Approved materials	-	m <sup>3</sup>		
c	<u>Surplus excess materils</u> Remove from site	-	m <sup>3</sup>		
d	<u>Vibrated Reinforced in-situ concrete; grade</u> <u>20N/sq.mm nominal mix (1:1.5:3) rate to include</u> <u>reinforcements bars</u> plinth beam	-	m <sup>3</sup>		
e	<u>Walling</u> 230mm tick	-	m <sup>2</sup>		
f	150mm thick	-	m <sup>2</sup>		
g	block column 450mm x 230mm x 2500mm high	-	Nr		
h	<u>Finishing and decoaration</u> 15mm cement and sand plaster(1:4)	-	m <sup>2</sup>		
i	<u>Prepare and apply (Skimm) and apply one thinned</u> <u>coat primer and two full coats of Acrylic</u> <u>weatherguard emulsion paint</u> generally	-	m <sup>2</sup>		
j	<u>Metal Grilles</u> <u>Supply and fix metal grilles to front side boundary</u> <u>wall; finished with one coat of red oxide and two</u> <u>coats of high gloss enamel; paint shade and pattern</u> <u>to be approved by engineer</u> generally 1750mm high	-	m		
	<b>To Collection</b>			<b>T.shs.</b>	

ITEM	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
	<u>Supply and fix automatic sliding gate; pattern as approved by engineer; sized 5000mm x 2550mm high; finished with one coat of red oxide and two coats of high gloss enamel</u>				
k	generally <u>Gate Structure</u>	-	Nr		
	<u>Vibrated Reinforced in-situ concrete; grade 20N/sq.mm nominal mix (1:1.5:3) rate to include reinforcements bars</u>				
l	Column	-	m <sup>3</sup>		
m	Beam	-	m <sup>3</sup>		
n	Plastering cement and sand(1.4)	-	m <sup>2</sup>		
o	Painting weatherguard	-	m <sup>2</sup>		
	<u>SOFT LANDSCAPING</u>				
p	Garden; grass, trees and flowers	-	m <sup>2</sup>		
	<u>DRIVEWAY/WALKWAYS/PARKING</u>				
q	50mm well compacted gravel(moram) including 30mm well compacted sand bed.	0.00	m <sup>2</sup>		
	<u>MOSQUE TOWERS</u>				
r	Design and construct mosque towers n.e 2.8m high with associated structures as per preliminary drawing; design as approved by engineer.	4.00	Nr		
	<b>To Collection</b>			<b>T.shs.</b>	

## **SUMMARY OF BUILDING WORKS**

ITEM	DESCRIPTION	PAGE	AMOUNT
	<b><u>SUMMARY OF MEASURED WORKS</u></b>		
a	ELEMENT NO. 01 - SUBSTRUCTURE	2A/1/3	
b	ELEMENT NO. 02 - FRAME	2A/2/1	
c	ELEMENT NO. 03 - WALLS	2A/3/1	
d	ELEMENT NO. 04 - DOORS	2A/4/1	
e	ELEMENT NO. 05 - WINDOWS	2A/5/1	
f	ELEMENT NO. 06 - ROOF	2A/6/2	
g	ELEMENT NO. 07 - FINISHINGS	2A/7/2	
h	ELEMENT NO. 08 - PAINTING AND DECORATIONS	2A/8/1	
	ELEMENT NO. 09 FIXTURES AND FITTINGS	2A/9/1	
	ELEMENT NO. 10 EXTERNAL WORKS	2A/10/4	
	<b>SUMMARY OF MEASURED WORKS CARRIED TO GENERAL SUMMARY</b>	<b>T.Shs.</b>	

## **GENERAL SUMMARY**

ITEM	DESCRIPTION	PAGE	AMOUNT
	<b>GENERAL SUMMARY</b>		
	BILL NO. 01 :- PRELIMINARIES		-
	BILL NO. 02 :- MEASURED WORKS		
	BILL NO. 03 :- ELECTRICAL INSTALLATION		2,581,190.00
	BILL NO. 04 :- PLUMBING INSTALLATION		3,500,000.00
	<u>Allow for:</u> Professional consultancy fee, Project Registration and Permit Application Fee		
	<b>SUB TOTAL <sub>01</sub></b>	<b>T.Shs.</b>	
	Add: 18% VAT	T.Shs.	
	<b><u>TOTAL COST FOR GENERAL SUMMARY CARRIED TO FORM OF TENDER</u></b>	<b>T.Shs.</b>	

Signed for and on behalf Of.....  
 .....

Date.....

Official Stamp.

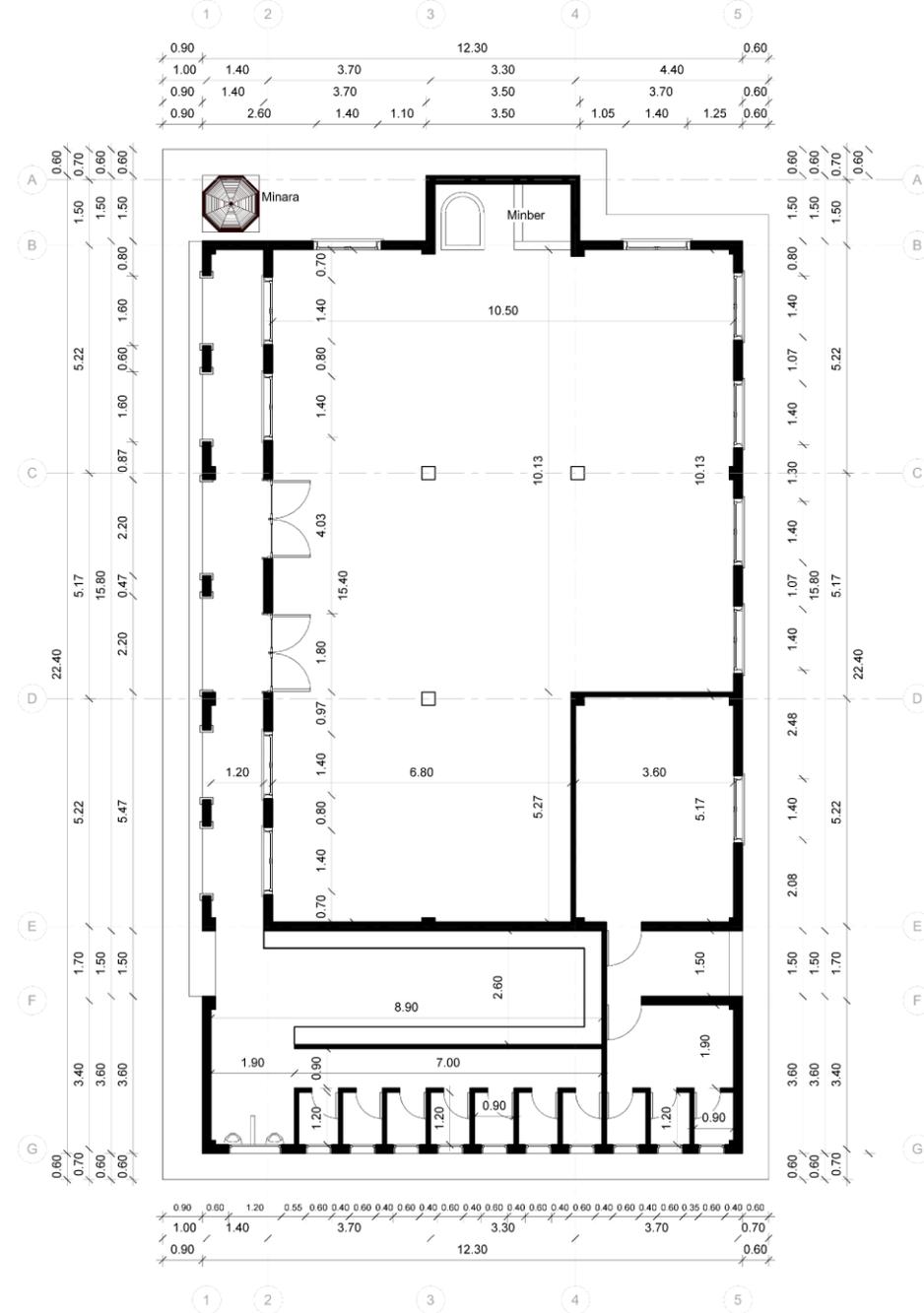
# MASJID

**TOTAL AREA : 200 m<sup>2</sup>**



# GROUND FLOOR PLAN

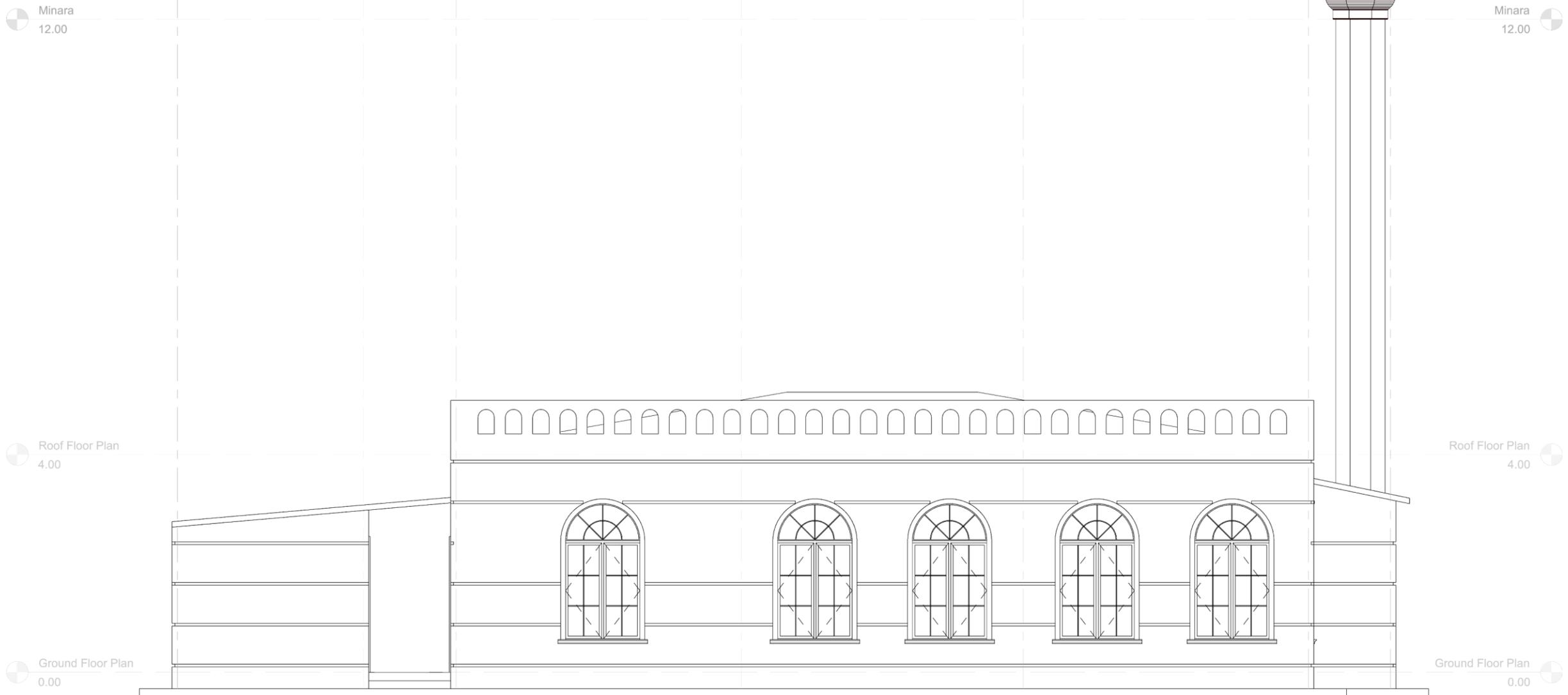
AREA : 200 M2



Masjid Ground Floor Plan  
Area : 200 m2

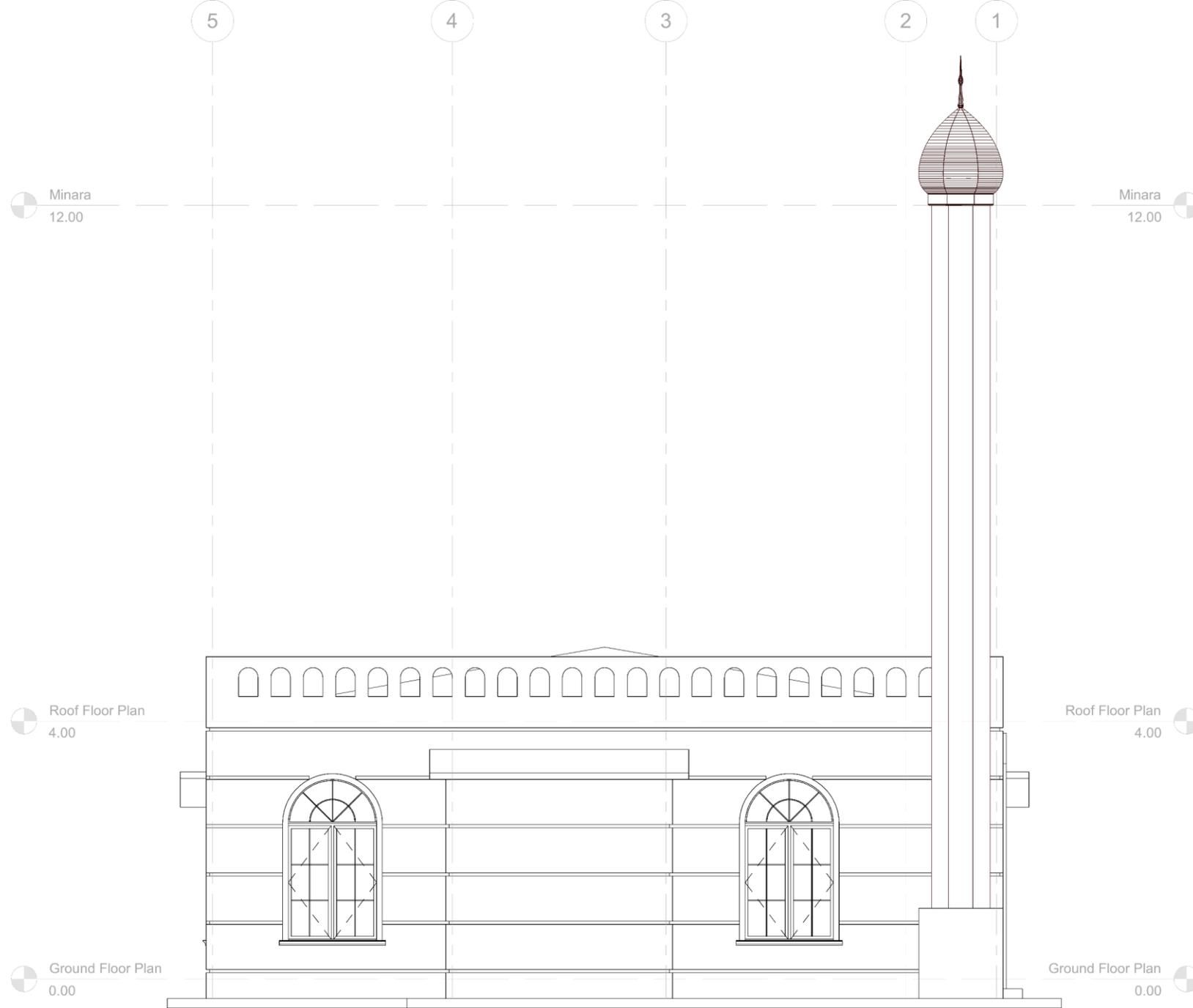
# ELEVATION

G F E D C B A



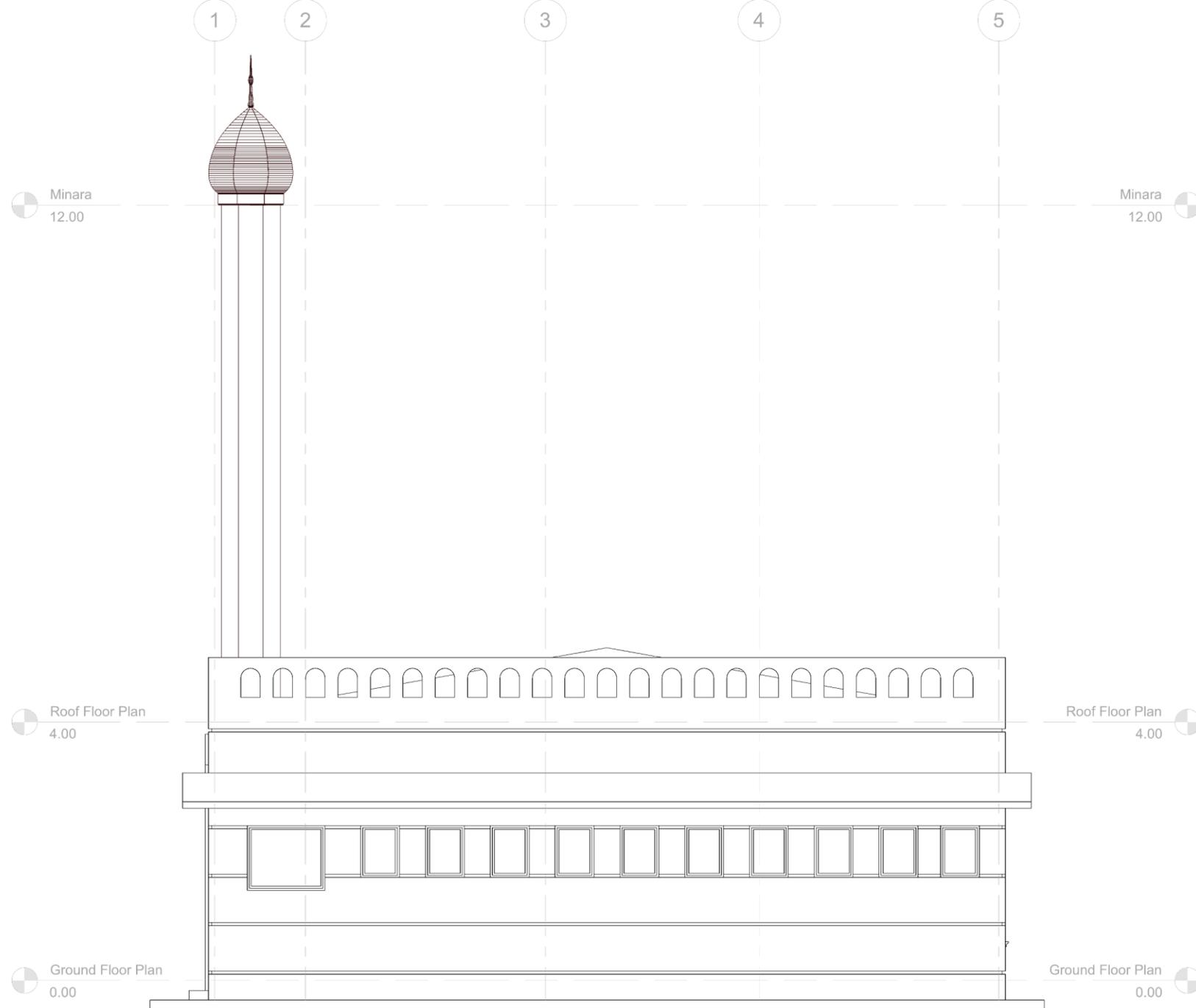
Rear Elevation

# ELEVATION



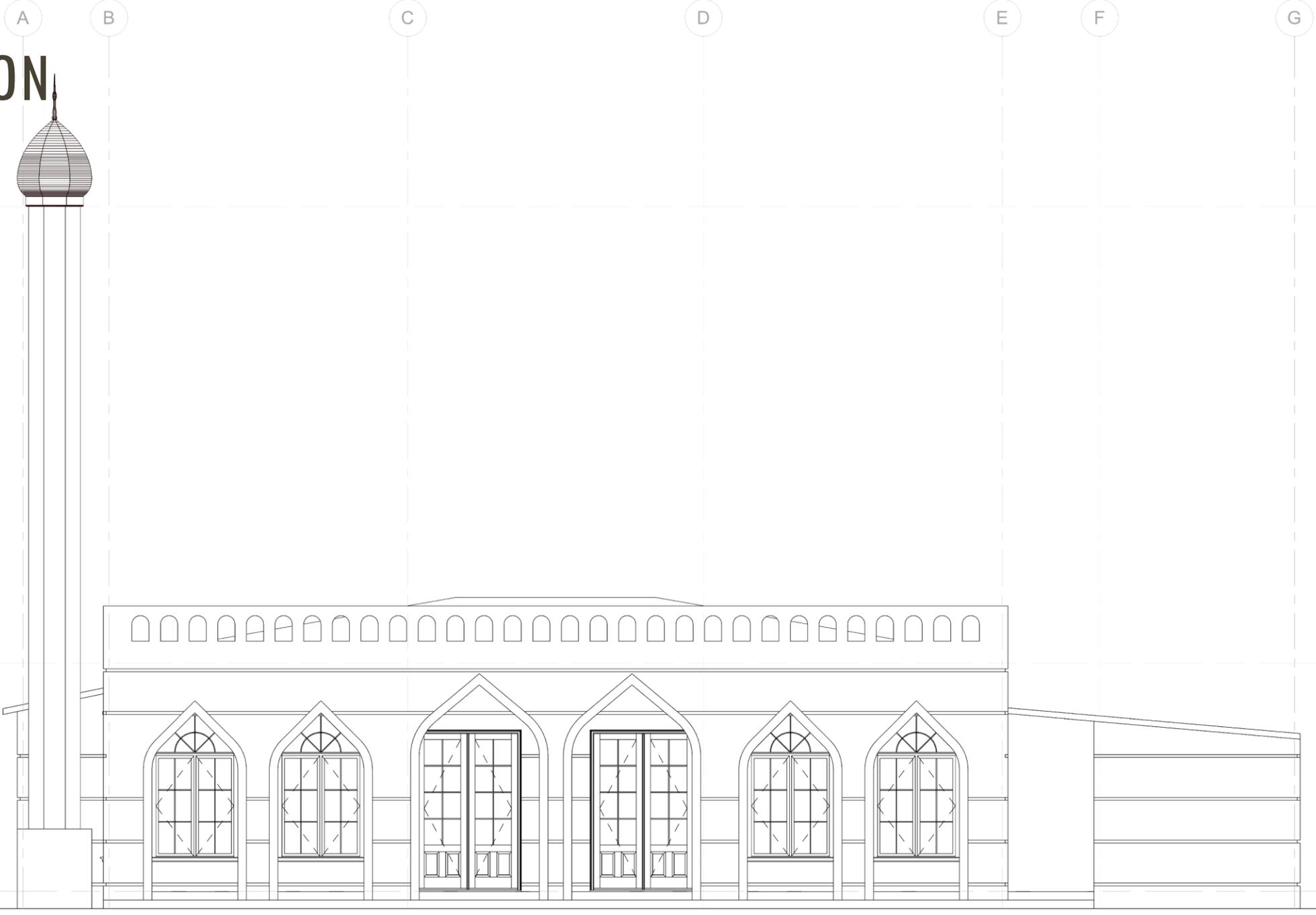
Side Elevation

# ELEVATION



Side Elevation

# ELEVATION



Minara  
12.00

Minara  
12.00

Roof Floor Plan  
4.00

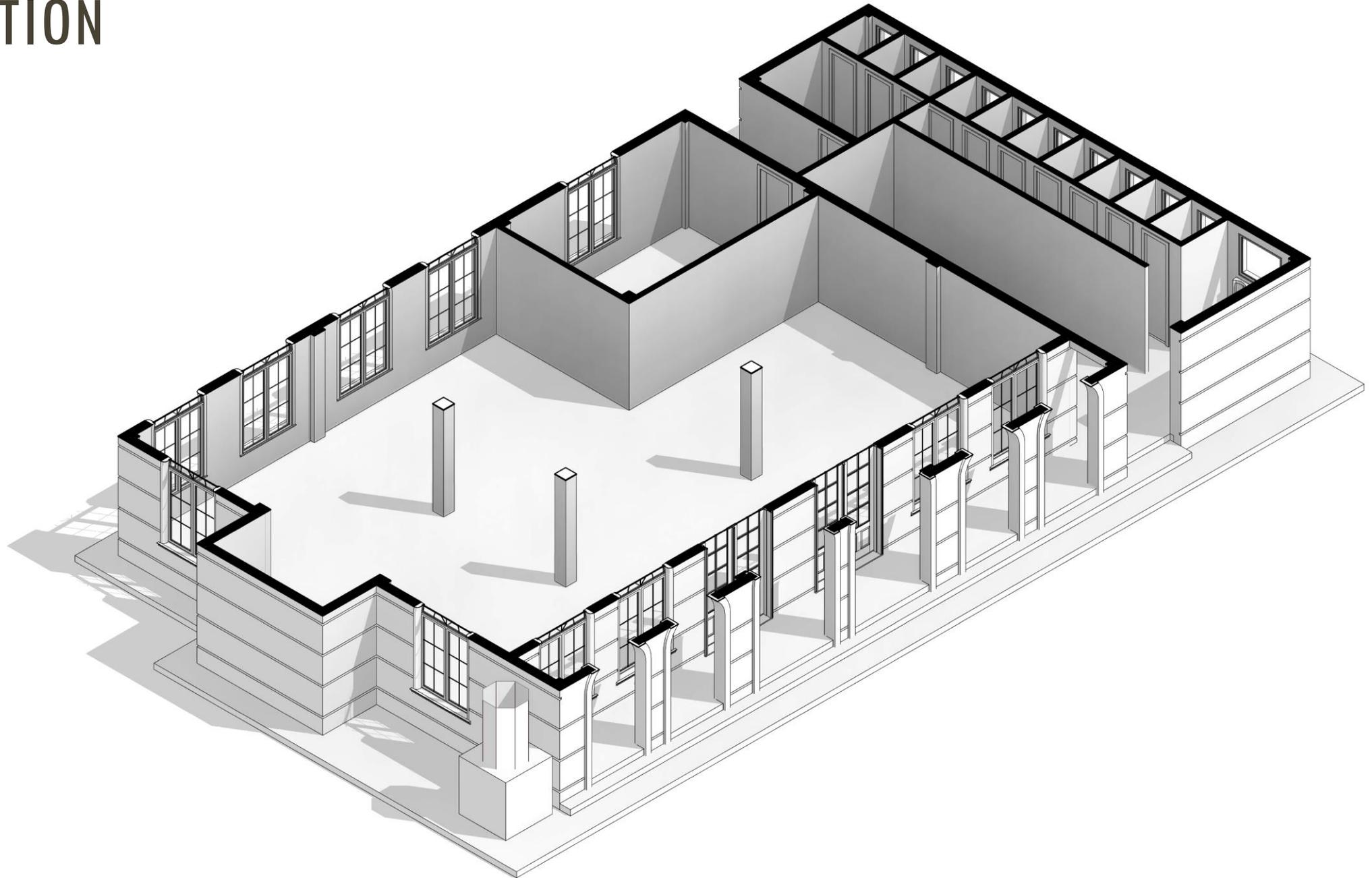
Roof Floor Plan  
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Ground Floor Plan  
0.00

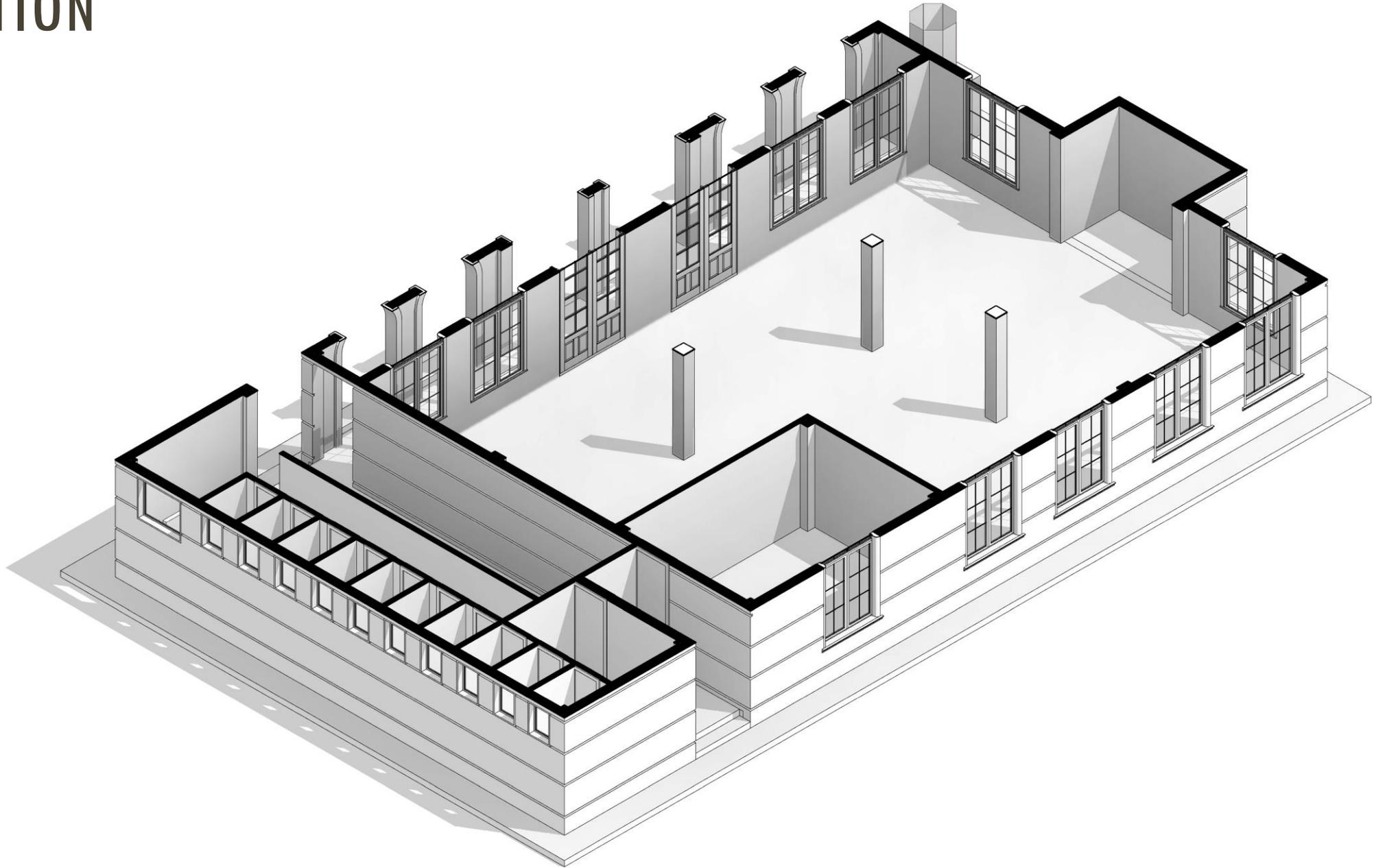
Ground Floor Plan  
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Main Elevation

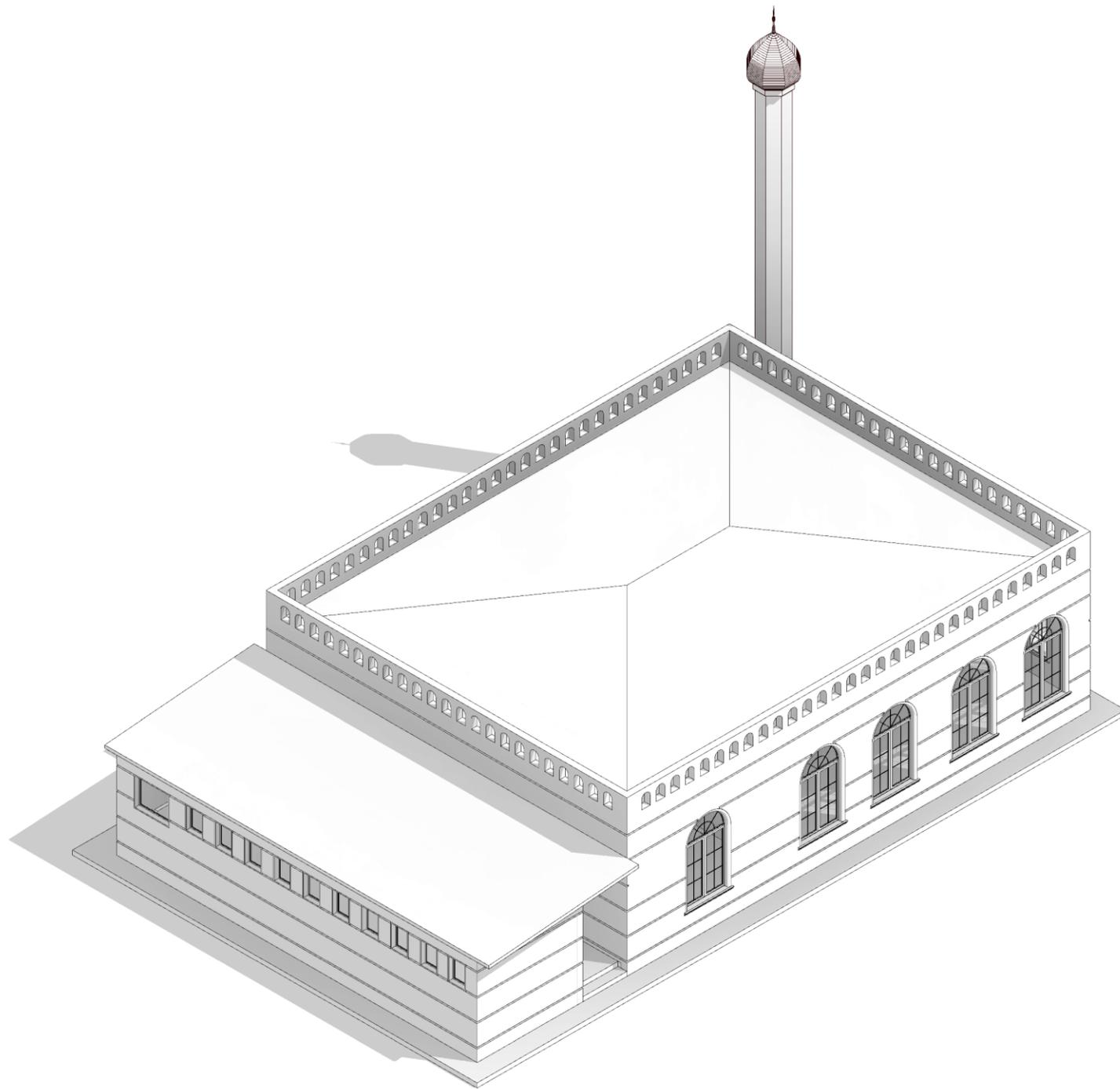
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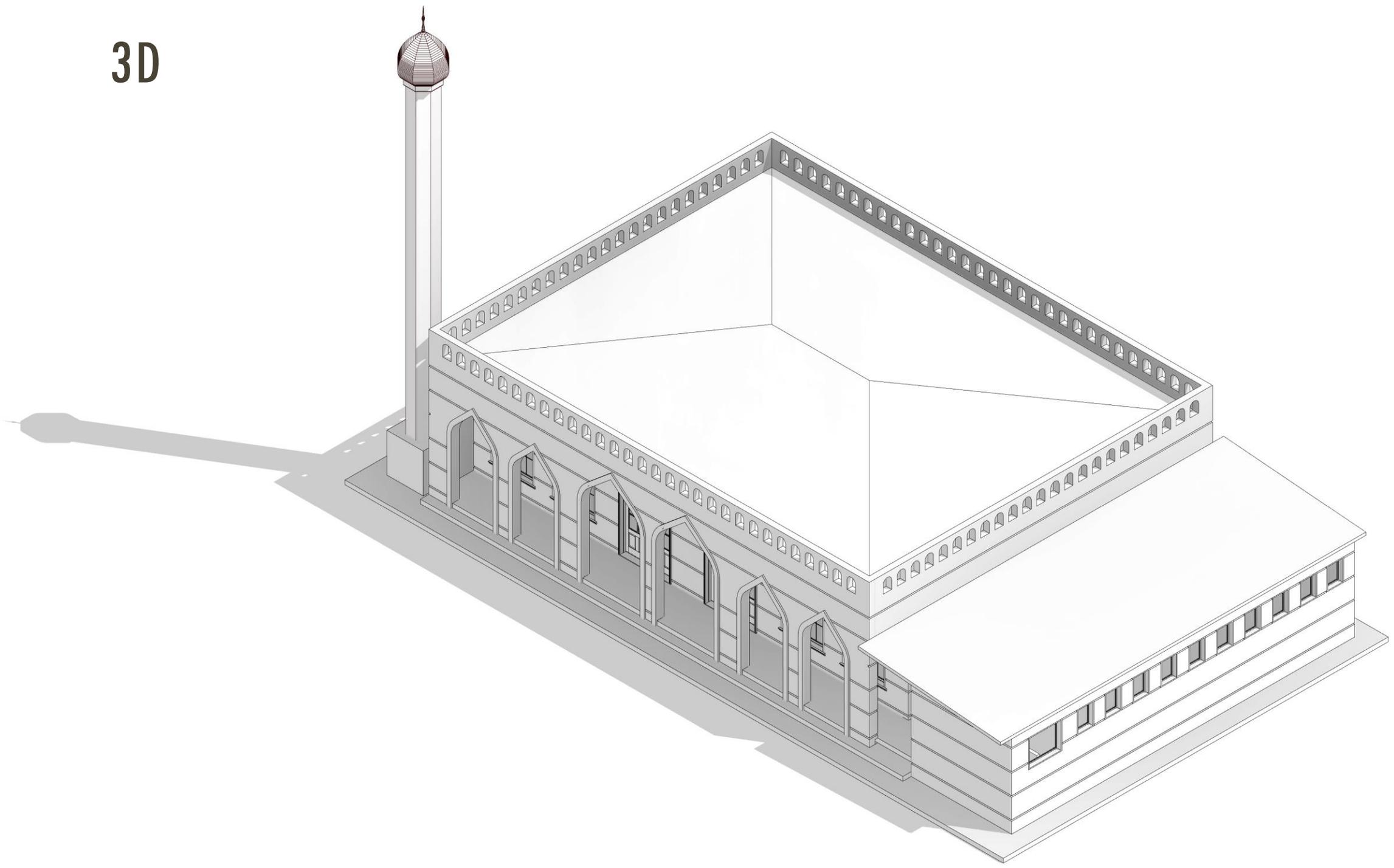
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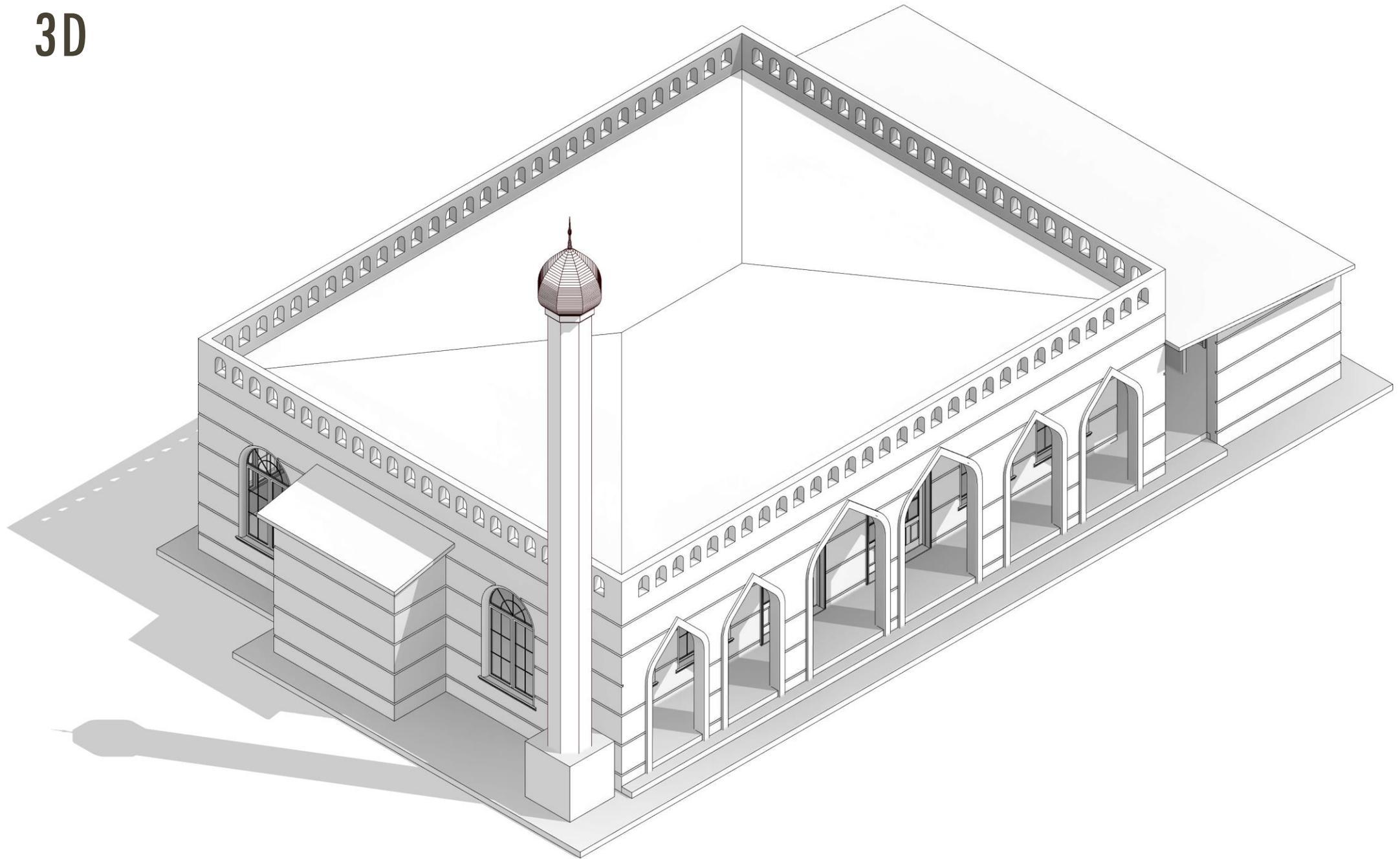
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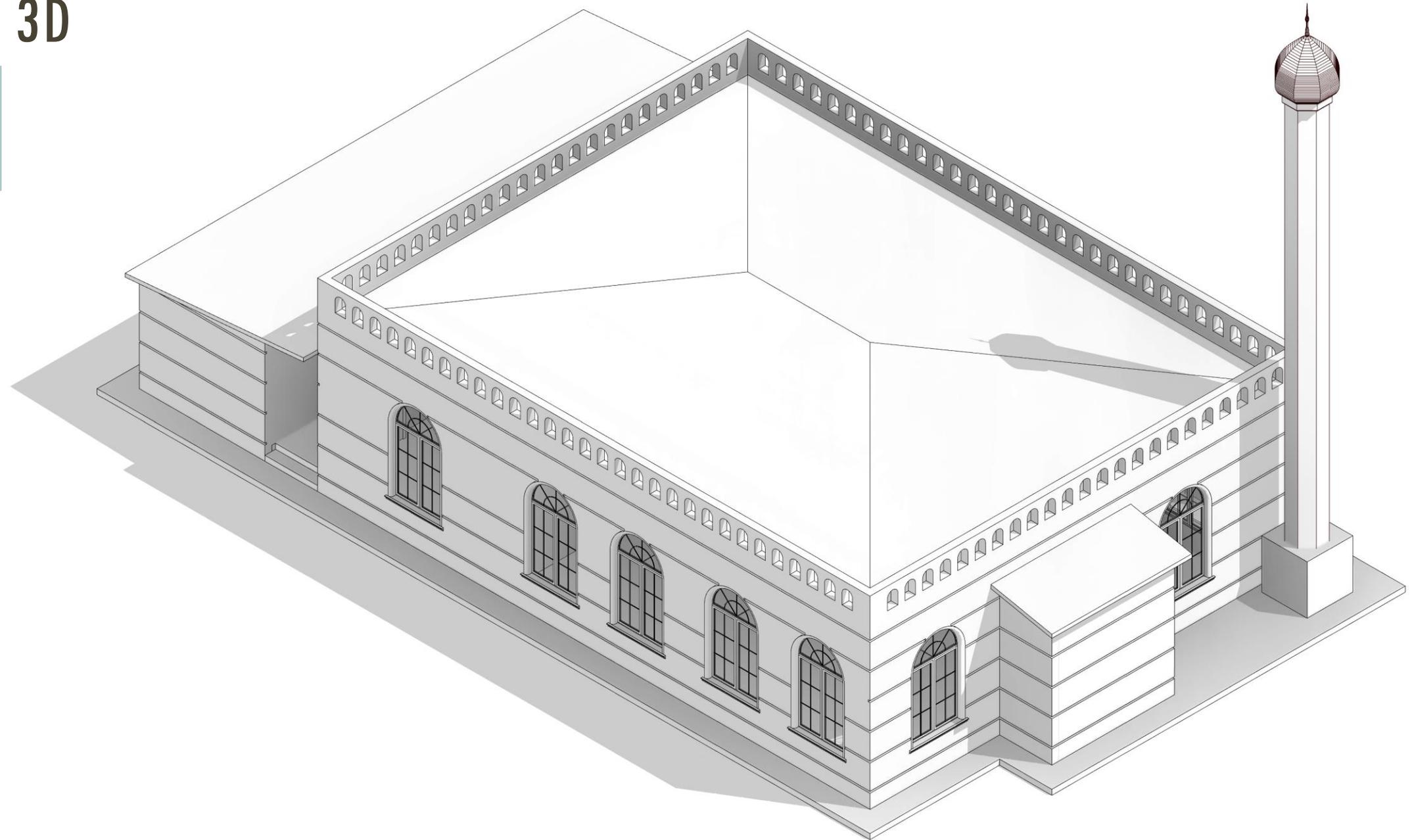
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3D

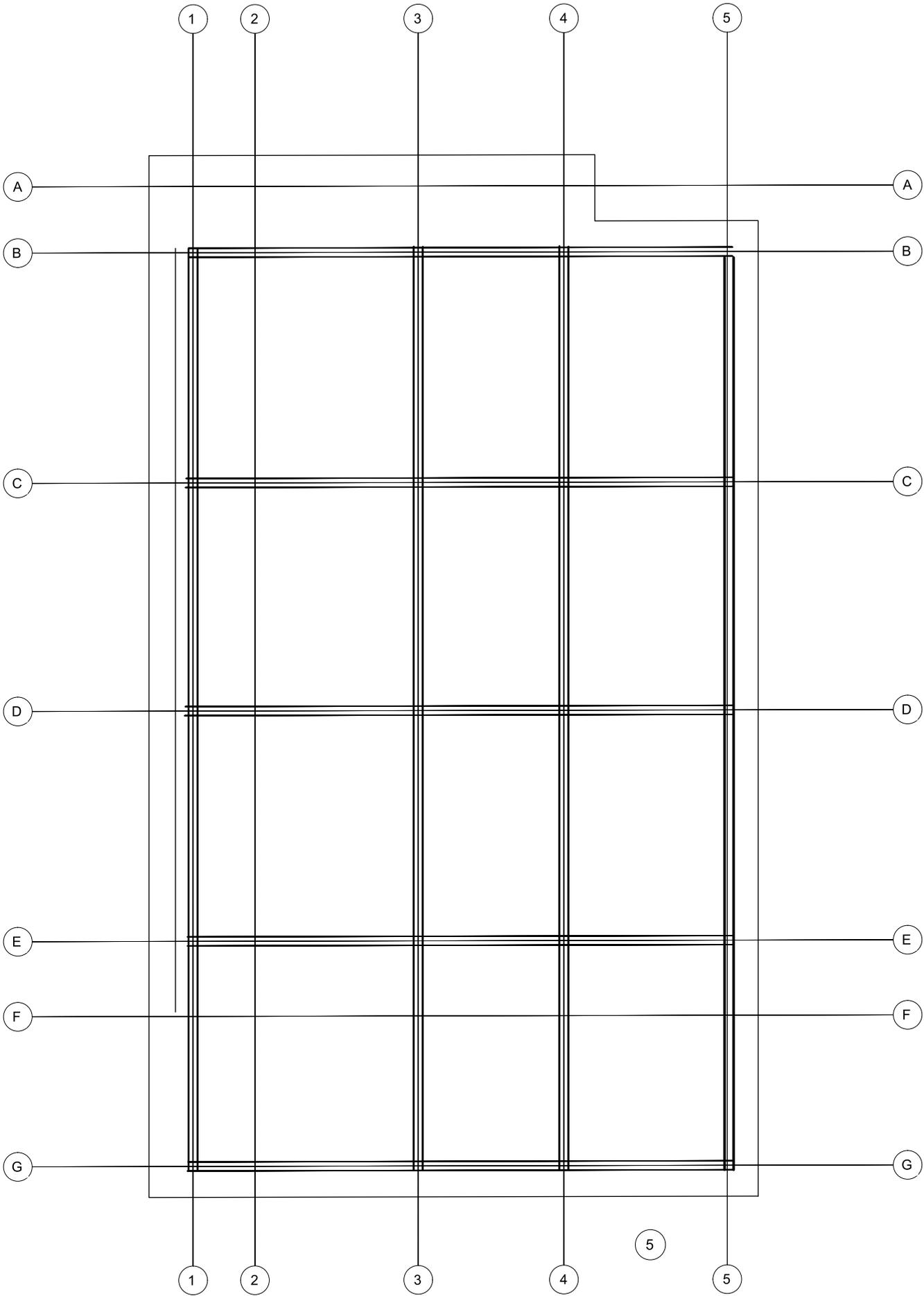


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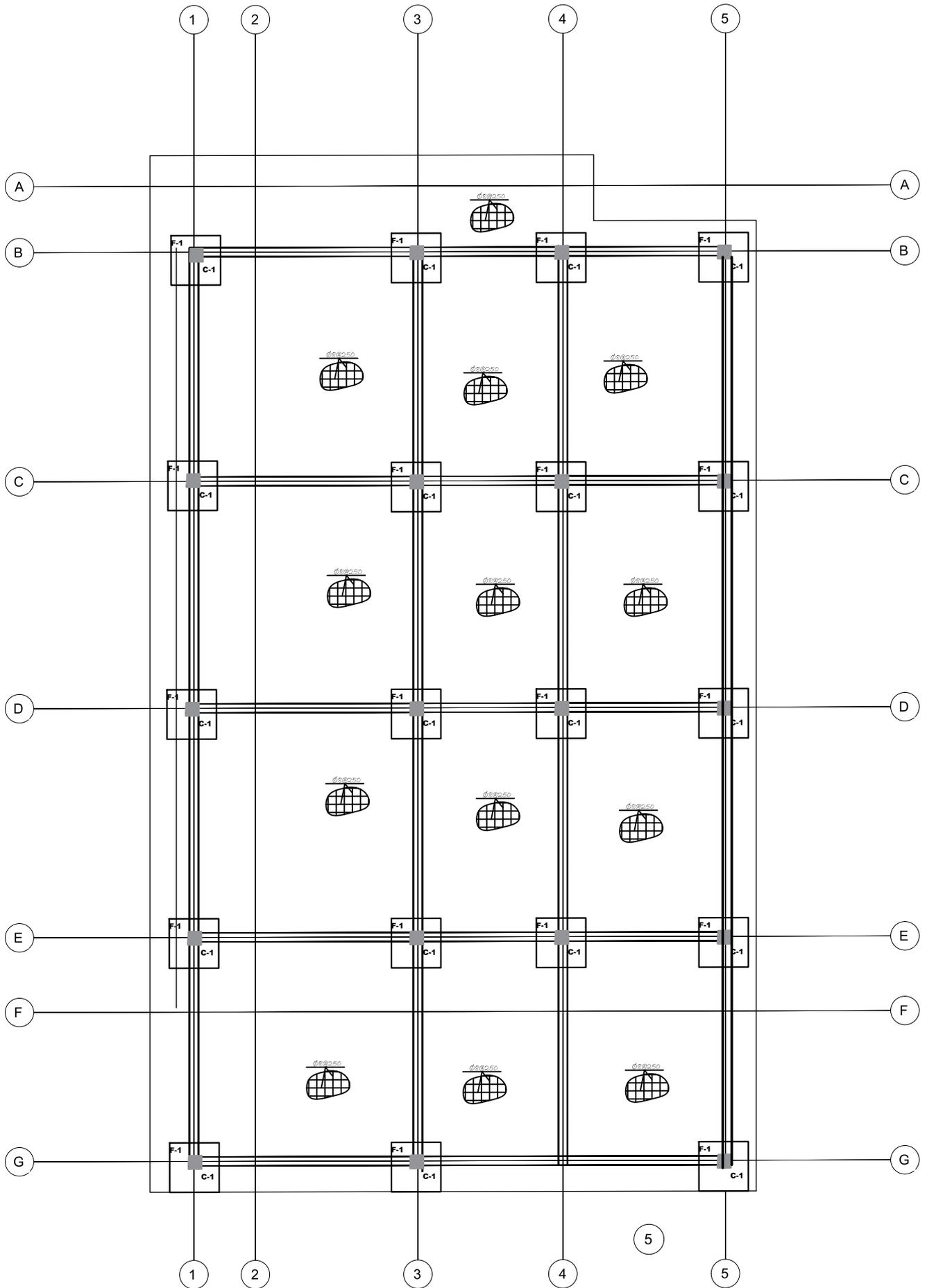
3D





Masjid  
Area : 200 m<sup>2</sup>

**slab thickness=100mm**

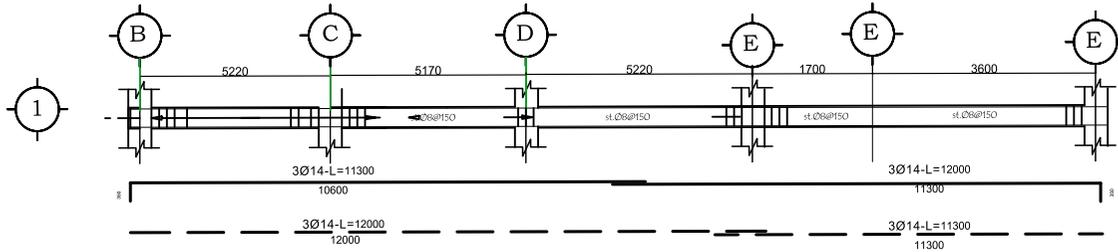


Masjid

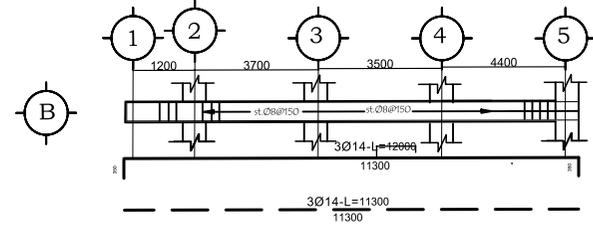
Area : 200 m<sup>2</sup>

# Gead beams type at level ±0.00 m

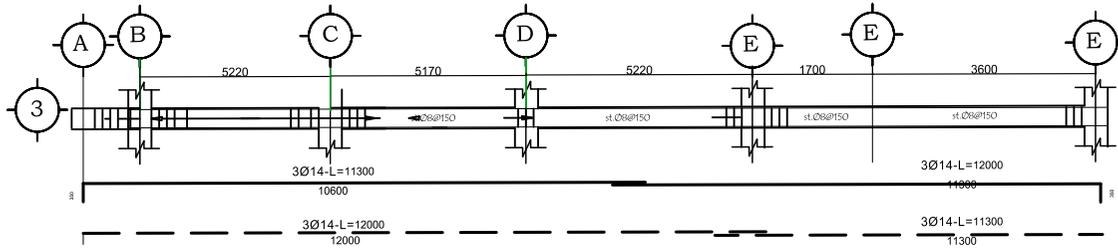
Axis 1&2 (200x400)



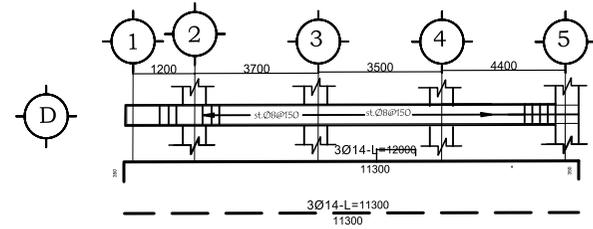
Axis B (200x400)



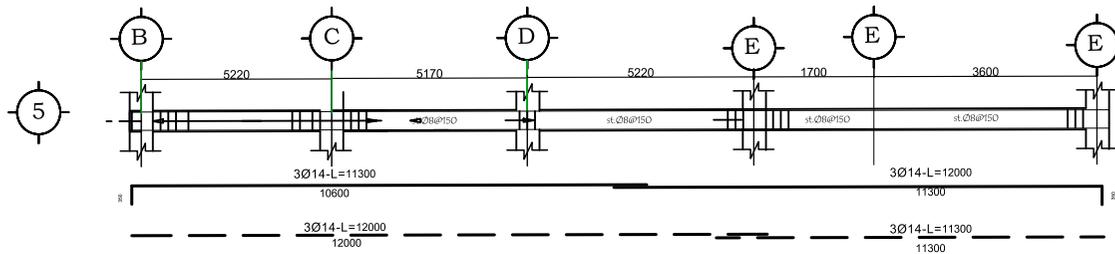
Axis 3&4 (200x400)



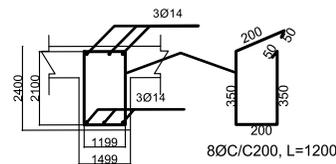
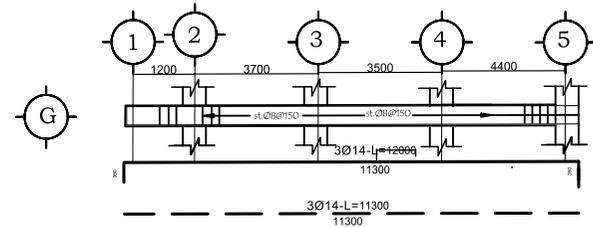
Axis D & E (200x400)

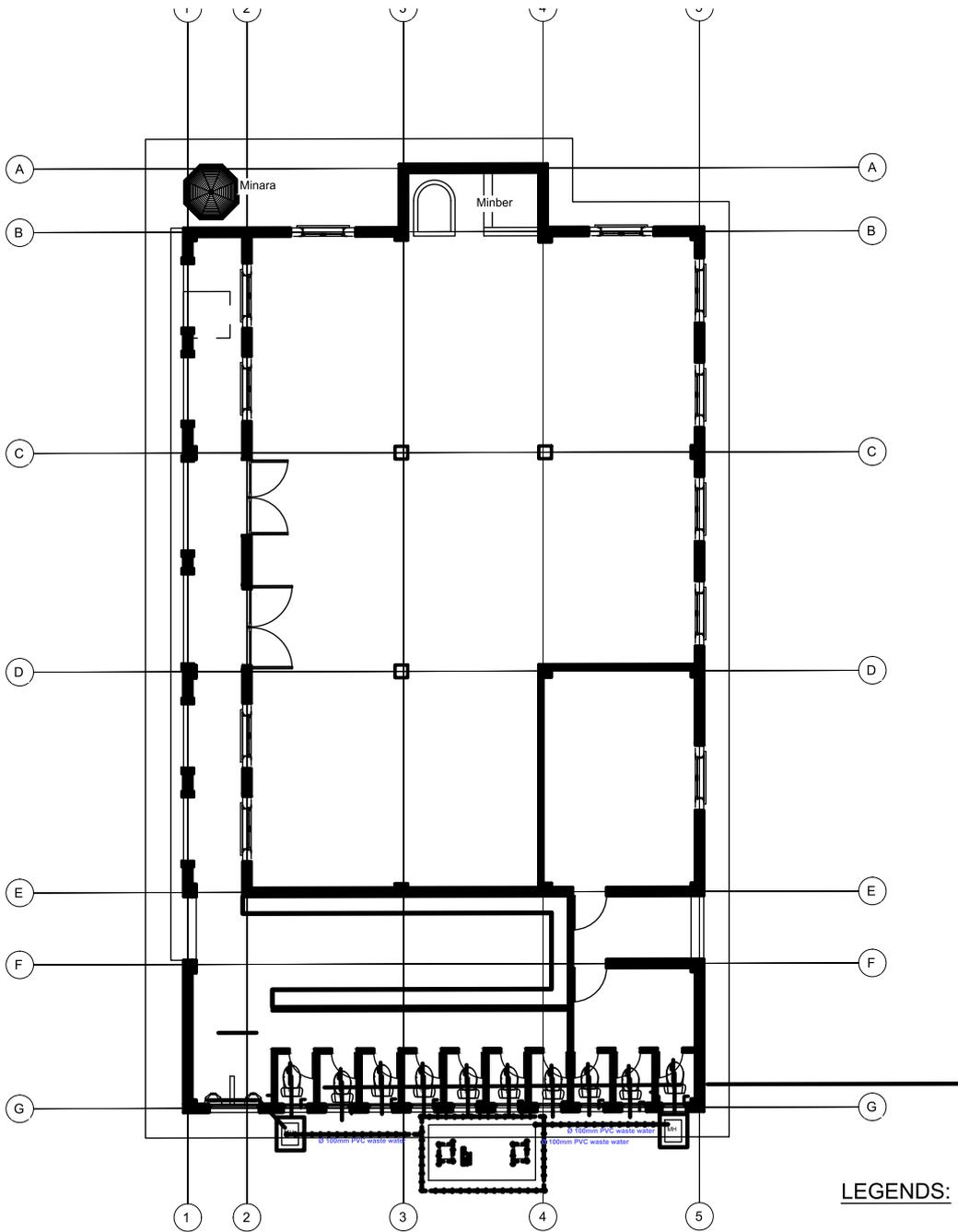


Axis 5 (200x400)



Axis G (200x400)





Masjid Ground Floor Plan  
Area : 200 m2

**LEGENDS:**

- Cold water supply pipe line.
- Hot water supply pipe line
- Waste water drainage pipe line.
- ✕ ----- Control/ Gate valve.
- ∩ ----- Check/ Non-return valve.

- FE Fire Extinguishers.
- WM Water meter.
- HB Hand wash basin.
- WC Wash down water closet.
- ST Septic tank.
- SH Shower tray.
- IWH Instant water heater
- FD Floor Drain.
- KS Kitchen Sink.
- DP Down Pipe.
- RD Roof Drain.
- VC Vent Cap.
- MH Man Hole
- T/A To Above.
- F/B From Below.
- T/RL To Roof Level.
- T/MH To Manhole
- Ø20/25 Water supply pipe size.
- Ø50/110 Waste water drainage pipe size.
- W1/W2 Water supply pipe riser.
- S1/S2 Waste water drainage stack.