



**THIKA WATER AND SEWERAGE COMPANY LIMITED (THIWASCO)**

**TENDER NO: THIWASCO/074/POB/2022-2023**

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**PROPOSED OFFICE BLOCK FOR  
THIKA WATER AND SEWERAGE COMPANY LIMITED**

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**MANAGING DIRECTOR  
THIKA WATER AND SEWERAGE COMPANY LTD,  
P.O. BOX 6103 - 00100, THIKA – KENYA.**

**(2022-2023)**

**CLOSING DATE  
Thursday, May 19, 2022 at 12.00noon**



## INVITATION TO TENDER

**PROCURING ENTITY:** *Thika Water & Sewerage Company Limited (THIWASCO)*

**CONTRACT NAME AND DESCRIPTION:** *PROPOSED OFFICE BLOCK FOR THIKA WATER AND SEWERAGE COMPANY LIMITE (THIWASCO/074/POB/2022-2023)*

1. THIWASCO invites sealed tenders for the **Proposed office block for Thika water and Sewerage Company Ltd**
2. Tendering will be conducted under open competitive method (**National**) using a standardized tender document. Tendering is open to all qualified and interested Tenderers.
3. Qualified and interested tenderers may obtain further information and inspect the Tender Documents during office hours [0800hrs to 1600 hrs] at the address given below.
4. A complete set of tender documents may be purchased or obtained by interested tenders upon payment of a non-refundable fees of *(1,000 Kenya shillings)* in cash or Banker's Cheque and payable to the address given below. Tender documents may be obtained electronically from the Website. Tender documents obtained electronically will be free of charge.  
ACCOUNT NAME: THIKA WATER AND SEWERAGE COMPANY LTD  
BANK: EQUITY  
ACCOUNT NO: 0090294392028 Code 027
5. Tender documents may be viewed and downloaded for free from the website [www.thikawater.co.ke](http://www.thikawater.co.ke). Tenderers who download the tender document must forward their particulars immediately to [procurement@thikawater.co.ke](mailto:procurement@thikawater.co.ke) to facilitate any further clarification or addendum.
6. Tenders shall be quoted be in Kenya Shillings and shall include all taxes. Tenders shall remain valid for (182) days from the date of opening of tenders.
7. All Tenders must be accompanied by a **tender Security of Kshs.500,000.00**
8. The Tenderer shall chronologically serialize all pages of the tender documents submitted.
9. Completed tenders must be delivered to the address below on or before **Thursday, May 19, 2022 at 12noon**. Electronic Tenders **will not** be permitted.
10. Tenders will be opened immediately after the deadline date and time specified above or any dead line date and times specified later. Tenders will be publicly opened in the presence of the Tenderers' designated representatives who choose to attend at the address below.
11. Late tenders will be rejected.
12. The addresses referred to above are:

**A. Address for obtaining further information and for purchasing tender documents**

- (1) Name of Procuring Entity: **Thika Water and Sewerage Company Ltd**
- (2) Physical address for hand Courier Delivery to an office or Tender Box: **Thika Head Office Near Bluepost Hotel, Along Haile Sellasie Road**
- (3) Postal Address: **P.O. Box 6103-01000 Thika**

- (4) Insert name, telephone number and e-mail address of the officer to be contacted.: **Procurement Office, 0720-418444, [Procurement@thikawater.co.ke](mailto:Procurement@thikawater.co.ke)**

**B. Address for Submission of Tenders.**

- 1) Name of Procuring Entity: **Thika Water & Sewerage Company Ltd**
- 2) Postal Address **P.O. Box 6103-01000 Thika**
- (1) Physical address for hand Courier Delivery to an office or Tender Box: **Thika Head Office Near Bluepost Hotel, Along Haile Sellasie Road**

**C. Address for Opening of Tenders.**

- 1) Name of Procuring Entity: **Thika Water & Sewerage Company Ltd**
- (1) Physical address for the location: **Thika Head Office Near Bluepost Hotel, Along Haile Sellasie Road**

**[*Authorized Official*]**

**[*Authorized Official (name, designation, Signature and date)*]**

Name            Dr. Moses Kinya

Designation    Managing Director

Signature\_\_\_\_\_

Date\_\_\_\_\_

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## **PART 1 - TENDERING PROCEDURES**

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## SECTION I: INSTRUCTIONS TO TENDERERS

### A General Provisions

#### 1. Scope of Tender

- 1.1 The Procuring Entity as defined in the Appendix to Conditions of Contract invites tenders for Works Contract as described in the tender documents. The name, identification, and number of lots (contracts) of this Tender Document are **specified in the TDS**.

#### 2. Fraud and Corruption

- 2.1 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 “Declaration not to engage in corruption”. The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.
- 2.2 The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the “Certificate of Independent Tender Determination” annexed to the Form of Tender.
- 2.3 Unfair Competitive Advantage - Fairness and transparency in the tender process require that the firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. To that end, the Procuring Entity shall indicate in the **Data Sheet** and make available to all the firms together with this tender document all information that would in that respect give such firm any unfair competitive advantage over competing firms.
- 2.4 Unfair Competitive Advantage -Fairness and transparency in the tender process require that the Firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender being tendered for. The Procuring Entity shall indicate in the **TDS** firms (if any) that provided consulting services for the contract being tendered for. The Procuring Entity shall check whether the owners or controllers of the Tenderer are same as those that provided consulting services. The Procuring Entity shall, upon request, make available to any tenderer information that would give such firm unfair competitive advantage over competing firms.

#### 3. Eligible Tenderers

- 3.1 A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT 3.7 or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. Public employees and their close relatives (*spouses, children, brothers, sisters and uncles and aunts*) are not eligible to participate in the tender. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the tendering process and, in the event the JV is awarded the Contract, during contract execution. The maximum number of JV members shall be specified in the **TDS**.
- 3.2 Public Officers of the Procuring Entity, their Spouses, Child, Parent, Brothers or Sister. Child, Parent, Brother or Sister of a Spouse, their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers are also not allowed to participate in any procurement proceedings.
- 3.3 A Tenderer shall not have a conflict of interest. Any tenderer found to have a conflict of interest shall be disqualified. A tenderer may be considered to have a conflict of interest for the purpose of this tendering process, if the tenderer:
- Directly or indirectly controls, is controlled by or is under common control with another tenderer; or
  - Receives or has received any direct or indirect subsidy from another tenderer; or
  - Has the same legal representative as another tenderer; or
  - Has a relationship with another tenderer, directly or through common third parties, that puts it in a position

to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process; or

- e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender; or
- f) any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as Engineer for the Contract implementation; or
- g) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document or
- h) Has a close business or family relationship with a professional staff of the Procuring Entity who:
  - i) are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or
  - ii) would be involved in the implementation or supervision of such Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.

3.4 A tenderer shall not be involved in corrupt, coercive, obstructive, collusive or fraudulent practice. A tenderer that is proven to have been involved any of these practices shall be automatically disqualified.

3.5 A Tenderer (either individually or as a JV member) shall not participate in more than one Tender, except for permitted alternative tenders. This includes participation as a subcontractor in other Tenders. Such participation shall result in the disqualification of all Tenders in which the firm is involved. A firm that is not a tenderer or a JV member may participate as a subcontractor in more than one tender. Members of a joint venture may not also make an individual tender, be a subcontractor in a separate tender or be part of another joint venture for the purposes of the same Tender.

3.6 A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT 4.8. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or sub-consultants for any part of the Contract including related Services.

3.7 Tenderer that has been debarred from participating in public procurement shall be ineligible to tender or be awarded a contract. The list of debarred firms and individuals is available from the website of PPRA [www.ppra.go.ke](http://www.ppra.go.ke).

3.8 Tenderers that are state-owned enterprises or institutions may be eligible to compete and be awarded a Contract(s) only if they are accredited by PPRA to be (i) a legal public entity of the state Government and/or public administration, (ii) financially autonomous and not receiving any significant subsidies or budget support from any public entity or Government, and (iii) operating under commercial law and vested with legal rights and liabilities similar to any commercial enterprise to enable it compete with firms in the private sector on an equal basis.

3.9 A Firms and individuals may be ineligible if their countries of origin (a) as a matter of law or official regulations, Kenya prohibits commercial relations with that country, or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country. A tenderer shall provide such documentary evidence of eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request.

3.10 Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, subcontracts and labor) from national suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided in for this purpose is be provided in “*SECTION III - EVALUATION AND QUALIFICATION CRITERIA, Item 9*”.

3.11 Pursuant to the eligibility requirements of ITT 4.10, a tender is considered a foreign tenderer, if the tenderer is not registered in Kenya or if the tenderer is registered in Kenya and has less than 51 percent ownership by Kenyan

Citizens. JVs are considered as foreign tenderers if the individual member firms are not registered in Kenya or if are registered in Kenya and have less than 51 percent ownership by Kenyan citizens. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.

3.12 The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website [www.nca.go.ke](http://www.nca.go.ke).

3.13 The Competition Act of Kenya requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website [www.cak.go.ke](http://www.cak.go.ke)

3.14 A Kenyan tenderer shall provide evidence of having fulfilled his/her tax obligations by producing a valid tax clearance certificate or tax exemption certificate issued by the Kenya Revenue Authority.

#### **4. Eligible Goods, Equipment, and Services**

4.1 Goods, equipment and services to be supplied under the Contract may have their origin in any country that is not eligible under ITT 3.9. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of Goods, equipment and services.

4.2 Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.

#### **5. Tenderer's Responsibilities**

5.1 The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.

5.2 The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine the Site of the Works and its surroundings, and obtain all information that may be necessary for preparing the tender and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the tenderer's own expense.

5.3 The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against all liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the inspection.

5.4 The tenderer shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including charts, as necessary or required.

#### **B. Contents of Tender Documents**

#### **6. Sections of Tender Document**

6.1 The tender document consists of Parts 1, 2, and 3, which includes all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITT 8.

## **PART 1 Tendering Procedures**

- i) Section I - Instructions to Tenderers (ITT)
- ii) Section II - Tender Data Sheet (TDS)
- iii) Section III - Evaluation and Qualification Criteria
- iv) Section IV - Tendering Forms

## **PART 2 Works Requirements**

- i) Section V - Drawings
- ii) Section VI - Specifications
- iii) Section VII - Bills of Quantities

## **PART 3 Conditions of Contract and Contract Forms**

- i) Section VIII - General Conditions of Contract (GCC)
- ii) Section IX - Special Conditions of Contract (SC)
- iii) Section X - Contract Forms

6.2 The Invitation to Tender Document (ITT) issued by the Procuring Entity is not part of the Contract documents.

6.3 Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 8. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.

The Tenderer is expected to examine all instructions, forms, terms, and specifications in the Tender Document and to furnish with its Tender all information and documentation as is required by the Tender document.

## **7. Site Visit**

7.1 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the Site of the Required Services and its surroundings and obtain all information that may be necessary for preparing the Tender and entering into a contract for the Services. The costs of visiting the Site shall be at the Tenderer's own expense.

## **8. Pre-Tender Meeting**

8.1 The Procuring Entity shall specify in the **TDS** if a pre-tender meeting will be held, when and where. The Procuring Entity shall also specify in the **TDS** if a pre-arranged pretender site visit will be held and when. The Tenderer's designated representative is invited to attend a pre-arranged pretender visit of the site of the works. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

8.2 The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the **TDS** before the meeting.

8.3 Minutes of the pre-Tender meeting and the pre-arranged pretender site visit of the site of the works, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents in accordance with ITT 6.3. Minutes shall not identify the source of the questions asked.

8.4 The Procuring Entity shall also promptly publish anonym zed (*no names*) Minutes of the pre-Tender meeting and the pre-arranged pretender visit of the site of the works at the web page identified in the **TDS**. Any modification to the Tender Documents that may become necessary as a result of the pre-tender meeting and the pre-arranged pretender site visit, shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT 8 and not through the minutes of the pre-Tender meeting. Nonattendance at the pre-Tender meeting will not be a cause for disqualification of a Tenderer.

## **9. Clarification and amendments of Tender Documents**

9.1 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address specified in the **TDS** or raise its enquiries during the pre-Tender meeting and the pre-

arranged pretender visit of the site of the works if provided for in accordance with ITT 8.4. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the **TDS** prior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender Documents in accordance with ITT 6.3, including a description of the inquiry but without identifying its source. If specified in the **TDS**, the Procuring Entity shall also promptly publish its response at the web page identified in the **TDS**. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents appropriately following the procedure under ITT 8.4.

## **10. Amendment of Tendering Document**

- 10.1 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tendering document by issuing addenda.
- 10.2 Any addendum issued shall be part of the tendering document and shall be communicated in writing to all who have obtained the tendering document from the Procuring Entity in accordance with ITT 6.3. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's web page in accordance with ITT 8.4.
- 10.3 To give prospective Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity shall extend, as necessary, the deadline for submission of Tenders, in accordance with ITT 25.2 below.

## **C. Preparation of Tenders**

### **11. Cost of Tendering**

- 11.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

### **12. Language of Tender**

- 12.1 The Tender, as well as all correspondence and documents relating to the tender exchanged by the tenderer and the Procuring Entity, shall be written in the English Language. Supporting documents and printed literature that are part of the Tender may be in another language provided they are accompanied by an accurate and notarized translation of the relevant passages into the English Language, in which case, for purposes of interpretation of the Tender, such translation shall govern.

### **13. Documents Comprising the Tender**

- 13.1 The Tender shall comprise the following:
- a) Form of Tender prepared in accordance with ITT 14;
  - b) Schedules including priced Bill of Quantities, completed in accordance with ITT 14 and ITT 16;
  - c) Tender Security or Tender-Securing Declaration, in accordance with ITT 21.1;
  - d) Alternative Tender, if permissible, in accordance with ITT 15;
  - e) Authorization: written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 22.3;
  - f) Qualifications: documentary evidence in accordance with ITT 19 establishing the Tenderer's qualifications to perform the Contract if its Tender is accepted;
  - g) Conformity: a technical proposal in accordance with ITT 18;
  - h) Any other document required in the **TDS**.
- 13.2 In addition to the requirements under ITT 11.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender,



together with a copy of the proposed Agreement. The Tenderer shall chronologically serialize pages of all tender documents submitted.

13.3 The Tenderer shall furnish in the Form of Tender information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Tender.

#### **14. Form of Tender and Schedules**

14.1 The Form of Tender and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section IV, Tendering Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITT 20.3. All blank spaces shall be filled in with the information requested.

#### **15. Alternative Tenders**

15.1 Unless otherwise specified in the **TDS**, alternative Tenders shall not be considered.

15.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the **TDS**, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.

15.3 Except as provided under ITT 13.4 below, Tenderers wishing to offer technical alternatives to the requirements of the Tender Documents must first price the Procuring Entity's design as described in the Tender Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Winning Tender conforming to the basic technical requirements shall be considered by the Procuring Entity. When specified in the **TDS**, Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts will be identified in the **TDS**, as will the method for their evaluating, and described in Section VII, Works' Requirements.

#### **16. Tender Prices and Discounts**

16.1 The prices and discounts (including any price reduction) quoted by the Tenderer in the Form of Tender and in the Bill of Quantities shall conform to the requirements specified below.

16.2 The Tenderer shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Tenderer shall be deemed covered by the rates for other items in the Bill of Quantities and will not be paid for separately by the Procuring Entity. An item not listed in the priced Bill of Quantities shall be assumed to be not included in the Tender, and provided that the Tender is determined substantially responsive notwithstanding this omission, the average price of the item quoted by substantially responsive Tenderers will be added to the Tender price and the equivalent total cost of the Tender so determined will be used for price comparison.

16.3 The price to be quoted in the Form of Tender, in accordance with ITT 14.1, shall be the total price of the Tender, including any discounts offered.

16.4 The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 14.1.

16.5 It will be specified in the **TDS** if the rates and prices quoted by the Tenderer are or are not subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, except in cases where the contract is subject to fluctuations and adjustments, not fixed price. In such a case, the Tenderer shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Procuring Entity may require the Tenderer to justify its proposed indices and weightings.

16.6 Where tenders are being invited for individual lots (contracts) or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 16.4, provided the Tenders for all lots (contracts) are opened at the same time.

16.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 30 days prior to the deadline for submission of Tenders, shall be included in the rates and prices and the total Tender Price submitted by the Tenderer.

## **17. Currencies of Tender and Payment**

17.1 Tenderers shall quote entirely in Kenya Shillings. The unit rates and the prices shall be quoted by the Tenderer in the Bill of Quantities, entirely in Kenya shillings. A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya shall device own ways of getting foreign currency to meet those expenditures.

## **18. Documents Comprising the Technical Proposal**

18.1 The Tenderer shall furnish a technical proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Tender Forms, in sufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the work's requirements and the completion time.

## **19. Documents Establishing the Eligibility and Qualifications of the Tenderer**

19.1 Tenderers shall complete the Form of Tender, included in Section IV, Tender Forms, to establish Tenderer's eligibility in accordance with ITT 4.

19.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Tenderer shall provide the information requested in the corresponding information sheets included in Section IV, Tender Forms.

19.3 A margin of preference will not be allowed. Preference and reservations will be allowed, individually or in joint ventures. Applying for eligibility for Preference and reservations shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 33.1.

19.4 Tenderers shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a contractor or group of contractors qualifies for a margin of preference. Further the information will enable the Procuring Entity identify any actual or potential conflict of interest in relation to the procurement and/or contract management processes, or a possibility of collusion between tenderers, and thereby help to prevent any corrupt influence in relation to the procurement process or contract management.

19.5 The purpose of the information described in ITT 19.4 above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.

19.6 The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which information on any changes to the information which was provided by the tenderer under ITT 6.3. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.

19.7 All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.

19.8 If a tenderer fails to submit the information required by these requirements, its tender will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.

19.9 If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of

interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:

- i) if the procurement process is still ongoing, the tenderer will be disqualified from the procurement process,
- ii) if the contract has been awarded to that tenderer, the contract award will be set aside,
- iii) the tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other persons have committed any criminal offence.

19.10 If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT 6.7 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tenderer.

## 20. Period of Validity of Tenders

20.1 Tenders shall remain valid for the Tender Validity period specified in the **TDS**. The Tender Validity period starts from the date fixed for the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 24). A Tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.

20.2 In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 21.1, it shall also be extended for thirty (30) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting the request shall not be required or permitted to modify its Tender, except as provided in ITT 20.3.

20.3 If the award is delayed by a period exceeding the number of days to be specified in the **TDS** days beyond the expiry of the initial tender validity period, the Contract price shall be determined as follows:

- a) in the case of **fixed price** contracts, the Contract price shall be the tender price adjusted by the factor specified in the **TDS**;
- b) in the case of **adjustable price** contracts, no adjustment shall be made; or in any case, tender evaluation shall be based on the tender price without taking into consideration the applicable correction from those indicated above.

## 21. Tender Security

21.1 The Tenderer shall furnish as part of its Tender, either a Tender-Securing Declaration or a Tender Security as specified in the **TDS**, in original form and, in the case of a Tender Security, in the amount and currency specified in the **TDS**. A Tender-Securing Declaration shall use the form included in Section IV, Tender Forms.

21.2 If a Tender Security is specified pursuant to ITT 19.1, the Tender Security shall be a demand guarantee in any of the following forms at the Tenderer's option:

- a) an unconditional Bank Guarantee issued by reputable commercial bank); or
- b) an irrevocable letter of credit;
- c) a Banker's cheque issued by a reputable commercial bank; or
- d) another security specified in the **TDS**,

21.3 If an unconditional bank guarantee is issued by a bank located outside Kenya, the issuing bank shall have a correspondent bank located in Kenya to make it enforceable. The Tender Security shall be valid for thirty (30) days beyond the original validity period of the Tender, or beyond any period of extension if requested under ITT 20.2.

21.4 If a Tender Security or Tender-Securing Declaration is specified pursuant to ITT 19.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.

21.5 If a Tender Security is specified pursuant to ITT 21.1, the Tender Security of unsuccessful Tenderers shall be returned as promptly as possible upon the successful Tenderer's signing the Contract and furnishing the Performance Security and any other documents required in the **TDS**. The Procuring Entity shall also promptly return the tender security to the tenderers where the procurement proceedings are terminated, all tenders were



determined nonresponsive or a bidder declines to extend tender validity period.

21.6 The Tender Security of the successful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required Performance Security, and any other documents required in the **TDS**.

21.7 The Tender Security may be forfeited or the Tender-Securing Declaration executed:

- e) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension thereto provided by the Tenderer; or
- f) if the successful Tenderer fails to:
  - i) sign the Contract in accordance with ITT 50; or
  - ii) furnish a Performance Security and if required in the **TDS**, and any other documents required in the **TDS**.

21.8 Where tender securing declaration is executed, the Procuring Entity shall recommend to the PPRA that PPRA debars the Tenderer from participating in public procurement as provided in the law.

21.9 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of tendering, the Tender Security or the Tender-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITT 4.1 and ITT 11.2.

21.10 A tenderer shall not issue a tender security to guarantee itself.

## **22. Format and Signing of Tender**

22.1 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 13 and clearly mark it "ORIGINAL." Alternative Tenders, if permitted in accordance with ITT 15, shall be clearly marked "ALTERNATIVE." In addition, the Tenderer shall submit copies of the Tender, in the number specified in the **TDS** and clearly mark them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

22.2 Tenderers shall mark as "CONFIDENTIAL" all information in their Tenders which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

22.3 The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the **TDS** and shall be attached to the Tender. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Tender where entries or amendments have been made shall be signed or initialed by the person signing the Tender.

22.4 In case the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

22.5 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender.

## **D. Submission and Opening of Tenders**

### **23. Sealing and Marking of Tenders**

23.1 Depending on the sizes or quantities or weight of the tender documents, a tenderer may use an envelope, package or container. The Tenderer shall deliver the Tender in a single sealed envelope, or in a single sealed package, or in a single sealed container bearing the name and Reference number of the Tender, addressed to the Procuring Entity and a warning not to open before the time and date for Tender opening date. Within the single envelope, package or container, the Tenderer shall place the following separate, sealed envelopes:

- a) in an envelope or package or container marked "ORIGINAL", all documents comprising the Tender, as described in ITT 11; and

- b) in an envelope or package or container marked “COPIES”, all required copies of the Tender; and
- c) if alternative Tenders are permitted in accordance with ITT 15, and if relevant:
  - i) in an envelope or package or container marked “ORIGINAL –ALTERNATIVE TENDER”, the alternative Tender; and
  - ii) in the envelope or package or container marked “COPIES- ALTERNATIVE TENDER”, all required copies of the alternative Tender.

The inner envelopes or packages or containers shall:

- a) bear the name and address of the Procuring Entity.
- b) bear the name and address of the Tenderer; and
- c) bear the name and Reference number of the Tender.

23.2 If an envelope or package or container is not sealed and marked as required, the *Procuring Entity* will assume no responsibility for the misplacement or premature opening of the Tender. Tenders that are misplaced or opened prematurely will not be accepted.

## **24. Deadline for Submission of Tenders**

24.1 Tenders must be received by the Procuring Entity at the address specified in the **TDS** and no later than the date and time also specified in the **TDS**. When so specified in the **TDS**, Tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures specified in the **TDS**.

24.2 The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the Tender Documents in accordance with ITT 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

## **25. Late Tenders**

25.1 The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of tenders, in accordance with ITT 24. Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

## **26. Withdrawal, Substitution, and Modification of Tenders**

26.1 A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 22.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:

- a) prepared and submitted in accordance with ITT 22 and ITT 23 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and
- b) received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 24.

26.2 Tenders requested to be withdrawn in accordance with ITT 26.1 shall be returned unopened to the Tenderers.

26.3 No Tender may be withdrawn, substituted, or modified in the interval between the deadline for submission of Tenders and the expiration of the period of Tender validity specified by the Tenderer on the Form of Tender or any extension thereof.

## **27. Tender Opening**

27.1 Except in the cases specified in ITT 23 and ITT 26.2, the Procuring Entity shall publicly open and read out all Tenders received by the deadline, at the date, time and place specified in the **TDS**, in the presence of Tenderers' designated representatives who chooses to attend. Any specific electronic Tender opening procedures required if electronic Tendering is permitted in accordance with ITT 24.1, shall be as specified in the **TDS**.

27.2 First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelopes with the corresponding Tender shall not be opened, but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal

and is read out at Tender opening.

- 27.3 Next, envelopes marked “SUBSTITUTION” shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Tender opening.
- 27.4 Next, envelopes marked “MODIFICATION” shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Tender opening.
- 27.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether there is a modification; the total Tender Price, per lot (contract) if applicable, including any discounts and alternative Tenders; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.
- 27.6 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further for evaluation. The Form of Tender and pages of the Bills of Quantities are to be initialed by the members of the tender opening committee attending the opening. The number of representatives of the Procuring Entity to sign shall be specified in the **TDS**.
- 27.7 At the Tender Opening, the Procuring Entity shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 25.1).
- 27.8 The Procuring **Entity shall prepare minutes of the Tender Opening that shall include, as a minimum:**
- a) the name of the Tenderer and whether there is a withdrawal, substitution, or modification;
  - b) the Tender Price, per lot (contract) if applicable, including any discounts;
  - c) any alternative Tenders;
  - d) the presence or absence of a Tender Security, if one was required.
  - e) number of pages of each tender document submitted.
- 27.9 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers upon request.

## **E. Evaluation and Comparison of Tenders**

### **28. Confidentiality**

- 28.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderers or any other persons not officially concerned with the Tender process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 46.
- 28.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its tender.
- 28.3 Notwithstanding ITT 28.2, from the time of tender opening to the time of contract award, if a tenderer wishes to contact the Procuring Entity on any **matter related to the tendering process, it shall do so in writing.**

### **29. Clarification of Tenders**

- 29.1 To assist in the examination, evaluation, and comparison of the tenders, and qualification of the tenderers, the Procuring Entity may, at its discretion, ask any tenderer for a clarification of its tender, given a reasonable time for a response. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the tenders, in accordance with ITT 33.
- 29.2 If a tenderer does not provide clarifications of its tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

### 30. Deviations, Reservations, and Omissions

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

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

### 31. Determination of Responsiveness

31.1 The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the tender itself, as defined in ITT 13.

31.2 A substantially responsive Tender is one that meets the requirements of the Tender document without material deviation, **reservation, or omission. A material deviation, reservation, or omission is one that, if accepted, would:**

- a) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
- b) limit in any substantial way, inconsistent with the tender document, the Procuring Entity's rights or the tenderer's obligations under the proposed contract; or
- c) if rectified, would unfairly affect the competitive position of other tenderers presenting substantially responsive tenders.

31.3 The Procuring Entity shall examine the technical aspects of the tender submitted in accordance with ITT 18, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.

31.4 If a tender is not substantially responsive to the requirements of the tender document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

### 32. Non-material Non-conformities

32.1 Provided that a tender is substantially responsive, the Procuring Entity may waive any non-conformities in the tender.

32.2 Provided that a Tender is substantially responsive, the Procuring Entity may request that the tenderer submit the necessary information or documentation, within a reasonable period, to rectify nonmaterial non-conformities in the tender related to documentation requirements. Requesting information or documentation on such non-conformities shall not be related to any aspect of the price of the tender. Failure of the tenderer to comply with the request may result in the rejection of its tender.

32.3 Provided that a tender is substantially responsive, the Procuring Entity shall rectify quantifiable nonmaterial non-conformities related to the Tender Price. To this effect, the Tender Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified in the **TDS**.

### 33. Arithmetical Errors

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

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

- a) Any error detected if considered a major deviation that affects the substance of the tender, shall lead to disqualification of the tender as non-responsive.
- b) Any errors in the submitted tender arising from a miscalculation of unit price, quantity, and subtotal and total bid price shall be considered as a major deviation that affects the substance of the tender and shall lead to disqualification of the tender as non-responsive. and
- c) if there is a discrepancy between words and figures, the amount in words shall prevail

33.3 Tenderers shall be notified of any error detected in their bid during the notification of a ward.

#### **34. Currency provisions**

34.1 Tenders will be priced in Kenya Shillings only. Tenderers quoting in currencies other than in Kenya shillings will be determined non-responsive and rejected.

#### **35. Margin of Preference and Reservations**

35.1 No margin of preference shall be allowed on contracts for small works.

35.2 Where it is intended to reserve the contract to specific groups under Small and Medium Enterprises, or enterprise of women, youth and/or persons living with disability, who are appropriately registered as such by the authority to be specified in the **TDS**, a procuring entity shall ensure that the invitation to tender specifically indicates that only businesses/firms belonging to those specified groups are the only ones eligible to tender. Otherwise if no so stated, the invitation will be open to all tenderers.

#### **36. Nominated Subcontractors**

36.1 Unless otherwise stated in the **TDS**, the Procuring Entity does not intend to execute any specific elements of the Works by subcontractors selected in advance by the Procuring Entity.

36.2 Tenderers may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified in the **TDS**. Subcontractors proposed by the Tenderer shall be fully qualified for their parts of the Works.

36.3 The subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated by the Procuring Entity in the **TDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

#### **37. Evaluation of Tenders**

37.1 The Procuring Entity shall use the criteria and methodologies listed in this ITT and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Best Evaluated Tender in accordance with ITT 40.

37.2 To evaluate a Tender, the Procuring Entity shall consider the following:

- a) price adjustment due to discounts offered in accordance with ITT 16;
- b) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with ITT 39;
- c) price adjustment due to quantifiable nonmaterial non-conformities in accordance with ITT 30.3; and
- d) any additional evaluation factors specified in the **TDS** and Section III, Evaluation and Qualification Criteria.

37.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered in Tender evaluation.

37.4 In the case of multiple contracts or lots, Tenderers shall be allowed to tender for one or more lots and the methodology to determine the lowest evaluated cost of the lot (contract) combinations, including any discounts offered in the **Form of Tender**, is specified in Section III, Evaluation and Qualification Criteria.

#### **38. Comparison of Tenders**

38.1 The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders established in accordance with ITT 38.2 to determine the Tender that has the lowest evaluated cost.

#### **39. Abnormally Low Tenders**

39.1 An Abnormally Low Tender is one where the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer in regards to the Tenderer's ability to perform the Contract for the offered Tender Price or that genuine competition between Tenderers is compromised.



39.2 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tender document.

39.3 After evaluation of the price analyses, in the event that the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

#### **40. Abnormally High Tenders**

40.1 An abnormally high price is one where the tender price, in combination with other constituent elements of the Tender, appears unreasonably too high to the extent that the Procuring Entity is concerned that it (the Procuring Entity) may not be getting value for money or it may be paying too high a price for the contract compared with market prices or that genuine competition between Tenderers is compromised.

40.2 In case of an abnormally high tender price, the Procuring Entity shall make a survey of the market prices, check if the estimated cost of the contract is correct and review the Tender Documents to check if the specifications, scope of work and conditions of contract are contributory to the abnormally high tenders. The Procuring Entity may also seek written clarification from the tenderer on the reason for the high tender price. The Procuring Entity shall proceed as follows:

- i) If the tender price is abnormally high based on wrong estimated cost of the contract, the Procuring Entity may accept or not accept the tender depending on the Procuring Entity's budget considerations.
- ii) If specifications, scope of work and/or conditions of contract are contributory to the abnormally high tender prices, the Procuring Entity shall reject all tenders and may retender for the contract based on revised estimates, specifications, scope of work and conditions of contract, as the case may be.

40.3 If the Procuring Entity determines that the Tender Price is abnormally too high because genuine competition between tenderers is compromised (*often due to collusion, corruption or other manipulations*), the Procuring Entity shall reject all Tenders and shall institute or cause competent Government Agencies to institute an investigation on the cause of the compromise, before retendering.

#### **41. Unbalanced and/or Front-Loaded Tenders**

41.1 If in the Procuring Entity's opinion, the Tender that is evaluated as the lowest evaluated price is seriously unbalanced and/or front loaded, the Procuring Entity may require the Tenderer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the tender prices with the scope of works, proposed methodology, schedule and any other requirements of the Tender document.

41.2 After the evaluation of the information and detailed price analyses presented by the Tenderer, the Procuring Entity may as appropriate:

- a) accept the Tender; or
- b) require that the total amount of the Performance Security be increased at the expense of the Tenderer to a level not exceeding a 30% of the Contract Price; or
- c) agree on a payment mode that eliminates the inherent risk of the Procuring Entity paying too much for undelivered works; or
- d) reject the Tender,

#### **42. Qualifications of the Tenderer**

42.1 The Procuring Entity shall determine to its satisfaction whether the eligible Tenderer that is selected as having submitted the lowest evaluated cost and substantially responsive Tender, meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.

42.2 The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 19. The determination shall not take into consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the Tender document), or any other firm(s) different from the Tenderer.

42.3 An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative

determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated price to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

42.4 An Abnormally Low Tender is one where the Tender price, in combination with other elements of the Tender, appears so low that it raises material concerns as to the capability of the Tenderer in regards to the Tenderer's ability to perform the Contract for the offered Tender Price.

42.5 In the event of identification of a potentially Abnormally Low Tender, the Procuring Entity shall seek written clarifications from the Tenderer, including detailed price analyses of its Tender price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Tender document.

42.6 After evaluation of the price analyses, if the Procuring Entity determines that the Tenderer has failed to demonstrate its capability to perform the Contract for the offered Tender Price, the Procuring Entity shall reject the Tender.

#### **43. Best Evaluated Tender**

43.1 Having compared the evaluated prices of Tenders, the Procuring Entity shall determine the Best Evaluated Tender. The Best Evaluated Tender is the Tender of the Tenderer that meets the Qualification Criteria and whose Tender has been determined to be:

- a) Most responsive to the Tender document; and
- b) the lowest evaluated price.

#### **44. Procuring Entity's Right to Accept Any Tender, and to Reject Any or All Tenders.**

44.1 The Procuring Entity reserves the right to accept or reject any Tender and to annul the Tender process and reject all Tenders at any time prior to Contract Award, without thereby incurring any liability to Tenderers. In case of annulment, all Tenderers shall be notified with reasons and all Tenders submitted and specifically, Tender securities, shall be promptly returned to the Tenderers.

### **F. Award of Contract**

#### **45. Award Criteria**

45.1 The Procuring Entity shall award the Contract to the successful tenderer whose tender has been determined to be the Lowest Evaluated Tender.

#### **46. Notice of Intention to enter into a Contract**

46.1 Upon award of the contract and Prior to the expiry of the Tender Validity Period the Procuring Entity shall issue a Notification of Intention to Enter into a Contract / Notification of award to all tenderers which shall contain, at a minimum, the following information:

- a) the name and address of the Tenderer submitting the successful tender;
- b) the Contract price of the successful tender;
- c) a statement of the reason(s) the tender of the unsuccessful tenderer to whom the letter is addressed was unsuccessful, unless the price information in (c) above already reveals the reason;
- d) the expiry date of the Standstill Period; and
- e) instructions on how to request a debriefing and/or submit a complaint during the standstill period;

#### **47. Standstill Period**

47.1 The Contract shall not be signed earlier than the expiry of a Standstill Period of 14 days to allow any dissatisfied tender to launch a complaint. Where only one Tender is submitted, the Standstill Period shall not apply.

47.2 Where a Standstill Period applies, it shall commence when the Procuring Entity has transmitted to each Tenderer the Notification of Intention to Enter **into a Contract with the successful Tenderer.**

#### **48. Debriefing by the Procuring Entity**

48.1 On receipt of the Procuring Entity's Notification of Intention to Enter into a Contract referred to in ITT 46, an unsuccessful tenderer may make a written request to the Procuring Entity for a debriefing on specific issues or concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.

48.2 Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its own costs of attending **such a debriefing meeting**.

#### **49. Letter of Award**

49.1 Prior to the expiry of the Tender Validity Period and upon expiry of the Standstill Period specified in ITT 42.1, upon addressing a complaint that has been filed within the Standstill Period, the Procuring Entity shall transmit the Letter of Award to the successful Tenderer. The letter of award shall request the successful tenderer to furnish the Performance Security within 21 days of the date of the letter.

#### **50. Signing of Contract**

50.1 Upon the expiry of the fourteen days of the Notification of Intention to enter into contract and upon the parties meeting their respective statutory requirements, the Procuring Entity shall send the successful Tenderer the Contract Agreement.

50.2 Within fourteen (14) days of receipt of the Contract Agreement, the successful Tenderer shall sign, date, and return it to the Procuring Entity.

50.3 The written contract shall be entered into within the period specified in the notification of award and before expiry of the tender validity period

#### **51. Appointment of Adjudicator**

51.1 The Procuring Entity proposes the person named in the **TDS** to be appointed as Adjudicator under the Contract, at the hourly fee specified in the **TDS**, plus reimbursable expenses. If the Tenderer disagrees with this proposal, the Tenderer should so state in his Tender. If, in the Letter of Acceptance, the Procuring Entity does not agree on the appointment of the Adjudicator, the Procuring Entity will request the Appointing Authority designated in the Special Conditions of Contract (SCC) pursuant to Clause 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.

#### **52. Performance Security**

52.1 Within twenty-one (21) days of the receipt of the Letter of Acceptance from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and, any other documents required in the **TDS**, in accordance with the General Conditions of Contract, subject to ITT 40.2 (b), using the Performance Security and other Forms included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. A foreign institution providing a bank guarantee shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent bank is not required.

52.2 Failure of the successful Tenderer to submit the above-mentioned Performance Security and other documents required in the **TDS**, or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Tender Security. In that event the Procuring Entity may award the Contract to the Tenderer offering the next Best Evaluated Tender.

52.3 Performance security shall not be required for contracts estimated to cost less than Kenya shillings five million shillings.

#### **53. Publication of Procurement Contract**

53.1 Within fourteen days after signing the contract, the Procuring Entity shall publish the awarded contract at its notice boards and websites; and on the Website of the Authority. At the minimum, the notice shall contain the following information:

- a) name and address of the Procuring Entity;
- b) name and reference number of the contract being awarded, a summary of its scope and the selection



- method used;
- c) the name of the successful Tenderer, the final total contract price, the contract duration.
- d) dates of signature, commencement and completion of contract;
- e) names of all Tenderers that submitted Tenders, and their Tender prices as read out at Tender opening.

#### **54. Procurement Related Complaints and Administrative Review**

54.1 The procedures for making Procurement-related Complaints are as specified in the **TDS**.

54.2 A request for administrative review shall be made in the form provided under contract forms.

## Section II - Tender Data Sheet (TDS)

The following specific data shall complement, supplement, or amend the provisions in the Instructions to Tenderers (ITT). Whenever there is a conflict, the provisions herein shall prevail over those in ITT.

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	<b>A. General</b>
<b>ITT 1.1</b>	<p>The name of the contract is: <b>PROPOSED OFFICE BLOCK FOR THIKA WATER AND SEWERAGE COMPANY LIMITED</b></p> <p>The reference number of the Contract is: <b>THIWASCO/074/POB/2022-2023</b></p> <p>The number and identification of lots (contracts) comprising this Tender are <i>[insert number and identification of lots (contracts)]</i></p> <p>Lot 1- Name: <b>Not Applicable</b></p> <p>Lot 2- Name: Not applicable</p> <p>Lot3- Name : Not applicable</p>
<b>ITT 2.3</b>	The Information made available on competing firms is as follows: Not applicable
<b>ITT 2.4</b>	The firms that provided consulting services for the contract being tendered for are: <b>Not applicable</b>
<b>ITT 3.1</b>	Maximum number of members in the Joint Venture (JV) shall be: <i>[two]</i> .
	<b>B. Contents of Tender Document</b>
<b>8.1</b>	<p>(A) Pre-Tender conference <i>[insert "shall"]</i> take place at the following date, time and place:  Date: Not applicable  Time: not applicable  Place: not applicable</p> <p>(B) A pre-arranged pretender visit of the site of the works <i>["shall"]</i> take place at the following date, time and place:  Date: Friday, May 13, 2022  Time: 10.00am  Place: Thika water Main Offices</p>
<b>ITT 8.2</b>	The Tenderer will submit any questions in writing, to reach the Procuring Entity not later than <b>5.00pm Monday, May 16, 2022</b>
<b>ITT 8.4</b>	<p>The Procuring Entity's website where Minutes of the pre-Tender meeting and the pre-arranged pretender site visit will be published is :<b>www.thikawater.co.ke</b></p> <p>(A) A pre-arranged pretender site visit <b>shall</b> take place.  Date: <b>Friday, May 13, 2022</b>  Time: <b>10:00am</b>  Place: <b>Members to meet at head office, then proceed to site.</b></p> <p>(B) Pre-Tender meeting <b>shall not</b> take place</p>
<b>ITT 9.1</b>	<p>For Clarification of Tender purposes, for obtaining further information and for purchasing tender documents, the Procuring Entity's address is:</p> <p>(1)Name of Procuring Entity: <b>Thika Water And Sewerage Company Ltd</b></p> <p>(2)Physical address for hand Courier Delivery to an office or Tender Box (City, Street, Building, Floor Number and Room) <b>THIWASCO Head Office, Haile Sellasie Road Near BluePost Hotel Room No.1</b></p> <p>(3)Postal Address: <b>P.O. Box 6103-01000 Thika.</b></p>

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	(4)Insert name, telephone number and e-mail address of the officer to be contacted <b>Procurement Department, 0720-418444, <a href="mailto:procurement@thikawater.co.ke">procurement@thikawater.co.ke</a></b>
<b>C. Preparation of Tenders</b>	
ITP 13.1 (h)	The Tenderer shall submit the following additional documents in its Tender: <b>No other additional documents required.</b>
ITT 15.1	Alternative Tenders [ " <i>shall not be</i> " ] considered.
ITT 15.2	Alternative times for completion [ " <i>shall not be</i> " ] permitted.
ITT 15.4	Alternative technical solutions shall be permitted for the following parts of the Works: <b>Not Permitted</b>
ITT 16.5	The prices quoted by the Tenderer shall be: " <i>fixed</i> "
ITT 20.1	The Tender validity period shall be <b>182</b> days.
ITT 20.3 (a)	(a) The delayed to exceeding <b>none</b> number of days.  (b) The Tender price shall be adjusted by the following percentages of the tender price:  (i) By <b>none</b> % of the local currency portion of the Contract price adjusted to reflect local inflation during the period of extension, and  (ii) By <b>none</b> % the foreign currency portion of the Contract price adjusted to reflect the international inflation during the period of extension.
ITT 21.1	A Tender Security <i>shall be</i> required.  A Tender-Securing Declaration [ " <i>shall be</i> " ] required for special group eligible bidders who wishes to participate.  The type of Tender security shall be <b>500,000.00</b> in the amount of Kenya shillings <b>from a financial institution as indicated on PPRA Website.</b>
ITT 21.2 (d)	The other Tender Security shall be: no <b>other tender security</b>
ITT 21.5	On the Performance Security, other documents required shall be: <b>Program of works, insurance policies.</b> Performance security shall be 10% of the total quoted amount.
ITT 22.1	In addition to the original of the Tender, the number of copies is: <b>two copies (original and a copy)</b>
ITT 22.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: <b>Confidential business questionnaire duly completed detailing directors/partners/sole proprietorship, MUST disclose power of attorney of the signatory.</b>
<b>D. Submission and Opening of Tenders</b>	
ITT 24.1	(A) For <u>Tender submission purposes</u> only, the Procuring Entity's address is:  (1) Name of Procuring Entity: <b>Thika Water &amp; Sewerage Company Ltd</b>  (2) Postal Address <b>Managing Director, P.O. Box 6103-01000 Thika,</b>

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
	<p>(3) Physical address for hand Courier Delivery to an office or Tender Box:  <b>THIWASCO Main Offices, haile Sellasie Road near BluePost Hotel, Procurement Office, Room No. 1</b></p> <p>(4) Date and time for submission of Tenders: <b>Thursday, May 19, 2022 at 12.00noon</b></p> <p>(5) Tenders <b>shall not submit</b> tenders electronically.</p>
ITT 27.1	<p>The Tender opening shall take place at the time and the address for Opening of Tenders provided below:</p> <p>(1) Name of Procuring Entity: <b>Thika Water &amp; Sewerage Company Ltd</b></p> <p>(2) Physical address for the location <b>THIWASCO Main Offices, haile Sellasie Road near Blue Post Hotel.</b></p> <p>(3) State date and time of tender opening: <b>Thursday, May 19, 2022 at 12.00noon</b></p>
ITT 27.1	<p>If Tenderers are allowed to submit Tenders electronically, they shall follow the electronic tender submission procedures: <b>Not permitted</b></p> <hr/> <hr/>
ITT 27.6	<p>The number of representatives of the Procuring Entity to sign is: <b>Four.</b></p>
<b>E. Evaluation, and Comparison of Tenders</b>	
ITT 32.3	<p>The adjustment shall be based on the “<i>average</i>” price of the item or component as quoted in other substantially responsive Tenders. If the price of the item or component cannot be derived from the price of other substantially responsive Tenders, the Procuring Entity shall use its best estimate.</p>
ITT 35.2	<p>Invitation is open to all tenderers.</p>
ITT 36.1	<p>At this time, the Procuring Entity [<i>“does not intend”</i>] to execute certain specific parts of the Works by subcontractors selected in advance.</p>
ITT 36.2	<p>Contractor’s may propose subcontracting: Maximum percentage of subcontracting permitted is: <b>not permitted</b> % of the total contract amount. Tenderers planning to subcontract more than 10% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience.</p>
ITT 36.3	<p>[Indicate N/A if not applicable]</p> <p>The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Subcontractors are designated as follows:  N/A  For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors will be added to the qualifications of the Tenderer for the purpose of evaluation.</p>
ITT 37.2 (d)	<p>Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.</p>
ITT 51.1	<p>The person named to be appointed as Adjudicator is <b>Nyongesa Nafula and Company advocate</b> (tel. no. 2021001150 ,p.o box 42540-00100,Nairobi. email address: nyongesa@nneadvocates.co.ke) at an hourly fee of Shs.11,600.00 per hour.</p>
ITT 52.2	<p>Other documents required are: <b>no other documents required</b></p>

ITT Reference	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 54.1	<p>The procedures for making a Procurement-related Complaints are detailed in the “Regulations” available from the PPRA Website <a href="http://www.ppra.go.ke">www.ppra.go.ke</a> or email <a href="mailto:complaints@ppra.go.ke">complaints@ppra.go.ke</a>. If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to:</p> <p>For the attention: <i>[Dr. Moses Kinya]</i></p> <p>Title/position: <i>[Managing Director]</i></p> <p>Procuring Entity: <i>[Thika Water &amp; Sewerage Company Ltd]</i></p> <p>Email address: <i>[info@thikawater.co.ke or procurement@thikawater.co.ke]</i></p> <p>In summary, a Procurement-related Complaint may challenge any of the following:</p> <ul style="list-style-type: none"> <li>(i) the terms of the Tender Documents; and</li> <li>(ii) the Procuring Entity’s decision to award the contract.</li> </ul>

## **SECTION III - EVALUATION AND QUALIFICATION CRITERIA**

### **1. General Provisions**

Wherever a Tenderer is required to state a monetary amount, Tenderers should indicate the Kenya Shilling equivalent using the rate of exchange determined as follows:

- a) For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.
- b) Value of single contract - Exchange rate prevailing on the date of the contract signature.
- c) Exchange rates shall be taken from the publicly available source identified in the ITT 14.3. Any error in determining the exchange rates in the Tender may be corrected by the Procuring Entity.

This section contains the criteria that the Employer shall use to evaluate tender and qualify tenderers. No other factors, methods or criteria shall be used other than specified in this tender document. The Tenderer shall provide all the information requested in the forms included in Section IV, Tendering Forms. The Procuring Entity should use the Standard Tender Evaluation Document for Goods and Works for evaluating Tenders.

#### **Evaluation and contract award Criteria**

The Procuring Entity shall use the criteria and methodologies listed in this Section to evaluate tenders and arrive at the Lowest Evaluated Tender. The tender that (i) meets the qualification criteria, (ii) has been determined to be substantially responsive to the Tender Documents, and (iii) is determined to have the Lowest Evaluated Tender price shall be selected for award of contract.

### **2. Preliminary examination for Determination of Responsiveness**

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other requirements in the ITT, and that the tender is complete in all aspects in meeting the requirements of “Part 2 – Procuring Entity's Works Requirements”, including checking for tenders with unacceptable errors, abnormally low tenders, abnormally high tenders and tenders that are front loaded. The Standard Tender Evaluation Report Document for Goods and Works for evaluating Tenders provides very clear guide on how to deal with review of these requirements. Tenders that do not pass the Preliminary Examination will be considered irresponsive and will not be considered further.

*[The Procuring Entity will provide the preliminary evaluation criteria. To facilitate, a template may be attached or clearly described all information and list of documentation to be submitted by Tenderers to enable preliminary evaluation of the Tender]*

### **3. Tender Evaluation (ITT 35) Price evaluation:** in addition to the criteria listed in ITT 35.2 (a) – (c) the following criteria shall apply:

- i) **Alternative Completion Times**, if permitted under ITT 13.2, will be evaluated as follows:

.....

- ii) **Alternative Technical Solutions** for specified parts of the Works, if permitted under ITT 13.4, will be evaluated as follows: .....

- iii) **Other Criteria**; if permitted under ITT 35.2(d):

.....

### **4. Multiple Contracts**

Multiple contracts will be permitted in accordance with ITT 35.4. Tenderers are evaluated on basis of Lots and the lowest evaluated tenderer identified for each Lot. The Procuring Entity will select one Option of the two Options listed below for award of Contracts.

#### **OPTION 1**

- i) If a tenderer wins only one Lot, the tenderer will be awarded a contract for that Lot, provided the tenderer meets the Eligibility and Qualification Criteria for that Lot.
- ii) If a tenderer wins more than one Lot, the tender will be awarded contracts for all won Lots, provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the Lots. The tenderer will be awarded the

combination of Lots for which the tenderer qualifies and the others will be considered for award to second lowest the tenderers.

## **OPTION 2**

The Procuring Entity will consider all possible combinations of won Lots [contract(s)] and determine the combinations with the lowest evaluated price. Tenders will then be awarded to the Tenderer or Tenderers in the combinations provided the tenderer meets the aggregate Eligibility and Qualification Criteria for all the won Lots.

### **5. Alternative Tenders (ITT 13.1)**

*An alternative if permitted under ITT 13.1, will be evaluated as follows:*

The Procuring Entity shall consider Tenders offered for alternatives as specified in Part 2- Works Requirements. Only the technical alternatives, if any, of the Tenderer with the Best Evaluated Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

### **6. Margin of Preference is not applicable**

### **7. Post qualification and Contract award (ITT 39), more specifically,**

- a) In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of pre-qualification data, if so required.
- b) In case the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.
  - i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow of Kenya Shillings \_\_\_\_\_.
  - ii) Minimum average annual construction turnover of Kenya Shillings \_\_\_\_\_ [insert amount], equivalent calculated as total certified payments received for contracts in progress and/or completed within the last \_\_\_\_\_ [insert of year] years.
  - iii) At least \_\_\_\_\_ (insert number) of contract(s) of a similar nature executed within Kenya, or the East African Community or abroad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings \_\_\_\_\_ equivalent.
  - iv) Contractor's Representative and Key Personnel, which are specified as \_\_\_\_\_
  - v) Contractors key equipment listed on the table "Contractor's Equipment" below and more specifically listed as [specify requirements for each lot as applicable] \_\_\_\_\_
  - vi) Other conditions depending on their seriousness.
- a) **History of non-performing contracts:**

Tenderer and each member of JV in case the Tenderer is a JV, shall demonstrate that Non-performance of a contract did not occur because of the default of the Tenderer, or the member of a JV in the last \_\_\_\_\_ (specify years). The required information shall be furnished in the appropriate form.
- b) **Pending Litigation**

Financial position and prospective long-term profitability of the Single Tenderer, and in the case the Tenderer is a JV, of each member of the JV, shall remain sound according to criteria established with respect to Financial Capability under Paragraph (i) above if all pending litigation will be resolved against the Tenderer. Tenderer shall provide information on pending litigations in the appropriate form.
- c) **Litigation History**

There shall be no consistent history of court/arbitral award decisions against the Tenderer, in the last \_\_\_\_\_ (specify years). All parties to the contract shall furnish the information in the appropriate form about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the years specified. A consistent history of awards against the Tenderer or any member of a JV may result in rejection of the tender.

## 8. QUALIFICATION FORM SUMMARY

1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	Document To be Completed by Tenderer	For Procuring Entity's Use (Qualification met or Not Met)
1	Nationality	Nationality in accordance with ITT 3.6	Forms ELI – 1.1 and 1.2, with attachments	
2	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by the the Kenya Revenue Authority in accordance with ITT 3.14.	Form of Tender	
3	Conflict of Interest	No conflicts of interest in accordance with ITT 3.3	Form of Tender	
4	PPRA Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.8	Form of Tender	
5	State- owned Enterprise	Meets conditions of ITT 3.7	Forms ELI – 1.1 and 1.2, with attachments	
6	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 4.1	Forms ELI – 1.1 and 1.2, with attachments	
7	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since 1 <sup>st</sup> January [.....].	Form CON-2	
8	Suspension Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not under suspension based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 19.9	Form of Tender	
9	Pending Litigation	Tender's financial position and prospective long-term profitability still sound according to criteria established in 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.	Form CON – 2	
10	Litigation History	No consistent history of court/arbitral award decisions against the Tenderer since 1 <sup>st</sup> January [insert year]	Form CON – 2	
11	Financial Capabilities	<p>(i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as Kenya Shillings [insert amount] equivalent for the subject contract(s) net of the Tenderer's other commitments.</p> <p>(ii) The Tenderers shall also demonstrate, to the satisfaction of the Procuring Entity, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.</p>	Form FIN – 3.1, with attachments	



1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	Document To be Completed by Tenderer	For Procuring Entity's Use (Qualification met or Not Met)
		(iii) The audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last <i>[insert number of years]</i> years shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability.		
12	Average Annual Construction Turnover	Minimum average annual construction turnover of Kenya Shillings <i>[insert amount]</i> , equivalent calculated as total certified payments received for contracts in progress and/or completed within the last <i>[insert of year]</i> years, divided by <i>[insert number of years]</i> years	Form FIN – 3.2	
13	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last <i>[insert number of years]</i> years, starting 1 <sup>st</sup> January <i>[insert year]</i> .	Form EXP – 4.1	
	Specific Construction & Contract Management Experience	<p>A minimum number of <i>[state the number]</i> similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between 1st January <i>[insert year]</i> and tender submission deadline i.e. .... (number) contracts, each of minimum value Kenya shillings..... equivalent.</p> <p><i>[In case the Works are to be tender as individual contracts under multiple contract procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options mentioned in ITT 35.4]</i></p> <p>The similarity of the contracts shall be based on the following: <i>[Based on Section VII, Scope of Works, specify the minimum key requirements in terms of physical size, complexity, construction method, technology and/or other characteristics including part of the requirements that may be met by specialized subcontractors, if permitted in accordance with ITT 34.3]</i></p>	Form EXP 4.2(a)	

## APPENDIX TO SECTION III - EVALUATION AND QUALIFICATION CRITERIA

Particulars to the appendix of evaluation and qualification criteria below shall be used to determine the lowest evaluated responsive bidder who shall be awarded the contract;

<b>PART A</b>		<b>MANDATORY EVALUATION CRITERIA</b> ( <i>Noncompliance with any MANDATORY requirement will automatically result in disqualification</i> )		
	<b>Preliminary examination for Determination of Responsiveness</b>	<b>Responsiveness</b>	<b>Not responsive</b>	<b>Indicate page number where evidence is provided</b>
1.1	Attach copies of incorporation or certificate or registration certificate			
1.2	Dully filled and stamped form of tender and price schedule			
1.3	Duly filled, signed and stamped confidential business questionnaire			
1.4	Proof of NCA5 registration and a valid practicing License (for Building Works Category)			
1.5	Proof of NCA 6 registration and valid practicing License (for Electrical services)			
1.6	Proof of NCA 6 registration and valid practicing License (for Mechanical services)			
1.7	Attach relevant Valid Tax Compliance certificate			
1.8	Attach a valid business permit			
1.9	Attach CR12 /Partnership deed			
2.0	Attach Copies of IDs of Directors			

2.1	Provide proof of physical address (attach copy of rental or lease agreement)			
2.2	Duly filled, signed and stamped Tender-Securing Declaration form in the format provided in the tender document			
2.3	Bid security of Kshs.500,000.00 from reputable Commercial Bank or approved insurance company by PPRA and shall be valid for 182 days from date of tender opening.			
2.4	No consistent history of court/arbitral award decisions against the tenderer since 1st January 2020-fill form CON-2, nationality <b>Forms ELI – 1.1 and 1.2, with attachments</b>			
2.5	History of non -performance Non-performance of a contract did not occur as a result of contractor default since 1 <sup>st</sup> January 2017 – fill Form CON-2			
2.6	Bidders must serialize every page of the bid document submitted from page one to the last page			
2.7	Bidders shall prepare and submit two copies marked clearly “ORIGINAL and COPY bid”			
2.6	Bidders shall submit their tender documents in line with all the formats provided in the tender document.			

PART B	TECHNICAL EVALUATION CRITERIA ( any bidder who fails to satisfy any of the technical requirement will be disqualified for further evaluation)			
	Technical evaluation criteria	Met	Not met	Indicate page number where evidence is provided
1.0	Proof of work of similar magnitude undertaken in the last five years. Attach proof copies of completion certificate, letters of awards, LPOs/LSOs.			
1.1	Submission of certified audited financial statements for the last three years to demonstrate the current soundness of the tenderers financial position and its long-term profitability-complete form FIN-3.1 with attachments			
1.2	Annual construction turnover of KES 50 million Liquidity ratios (minimum 1:1) Current ratio=current asset/current liabilities			
1.3(i)	The tenderer shall demonstrate he has access to or has available, liquid assets, unencumbered real assets, lines of credit and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as Kenya shillings (30,000,000.00)			
1.3(ii)	The tenderers shall also demonstrate, to satisfaction of the procuring entity that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments			
1.3(iii)	The audited balance sheets for the last three years shall be submitted and must demonstrate the current soundness of the tenderers position and indicate its prospective long-term profitability. Complete form			

	FIN- 3.1,with attachments			
1.4	<p>Minimum average annual construction turnover of ksh (30,000,000.00) equivalent calculated as total certified payments received for contracts in progress and/ or completed within the last three years.</p> <p>Complete form</p> <p>FIN-3.2</p>			
1.5	A minimum number of three similar contracts of 30 million that have been satisfactorily and substantially completed. complete form EXP 4.2(a)			
1.6	History of non- performing contract- complete form CON-2			
1.7	<b>Key Technical staff Provide detailed proposal of key technical members for the proposed project, copies and CV of the proposed team, Enclose detailed certificate</b>			
1.7(i)	Project Manager <b>Degree in Architecture/Quantity Surveying/Construction Management/ Civil Engineering</b> with 10 years minimum relevant experience			
1.7(ii)	Site Agent (Minimum qualification <b>Degree in Architecture/Quantity Surveying/Construction Management/ Civil Engineering</b> with 5 years minimum relevant experience			
1.7(iii)	Foreman 3No. (Building, Electrical and Mechanical) (Minimum qualification is diploma in civil or water related engineering field) with			

	3 years relevant experience			
1.8	<b>Equipment (proof of valid ownership / lease agreement)</b> <ul style="list-style-type: none"> <li>• Excavator/backhoe (Engine power 120kw/160Hp) with Rock breaker (Impact Energy 21kg-m minimum)</li> <li>• Water Pumps (Minimum 20m<sup>3</sup>/hr)</li> </ul> (Provide log books/ valid lease agreements) – complete forms ELI-1.1 and 1.2 with attachments Concrete mixer 350 litres Plate compactor <ul style="list-style-type: none"> <li>• Hoists/lift</li> <li>• Concrete vibrators</li> <li>• Scaffolding</li> <li>• Trucks</li> </ul>			
1.9	Submit a draft methodology and program of works in the form of a bar chart which shall form part of the contract if the bid is accepted. Any change in the program or schedule shall be subjected to the approval of the Client			
2.0	Attach Copy of Valid Certificate of N.S.S.F. and N.H.I.F			

<b>PART C</b>	<b>POST QUALIFICATION CRITERIA</b>	<b>Responsive</b>	<b>Not responsive</b>	<b>Indicate page number where evidence is provided</b>
1.0	The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance p a y m e n t) sufficient to meet t h e construction c a s h f l o w o f K e n y a Shillings 30,000,00.00			
1.1	Minimum average annual construction turnover of Kenya Shillings [30,000,000.00], equivalent calculated as total certified payments received for contracts in progress and/or completed within the last [insert of year] years.			
1.3	Confirm at least (two) of contract(s) of a similar nature executed within Kenya, or the East African Community or abroad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings equivalent			
1.4	Confirm history of non-performance of the previous works awarded.			
<b>PART D</b>	<b>FINANCIAL EVALUATION AND CONTRACT</b>	<b>The tender shall be awarded to the lowest most evaluated</b>		

	<b>AWARD</b>	<b>responsive bidder within the budget .in case of a tie competitive bidding shall be applied in accordance to the procedures envisaged in the PPADA 2015 and PPADR 2020.</b>
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## QUALIFICATION FORMS

### 1. FORMEQU: EQUIPMENT

The Tenderer shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Tenderer.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Omit the following information for equipment owned by the Tenderer.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

## 2 FORM PER -1

### Contractor's Representative and Key Personnel Schedule

Tenderers should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

### Contractor' Representative and Key Personnel

1.	<b>Title of position: Contractor's Representative</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
2.	<b>Title of position: [_____]</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
3.	<b>Title of position: [_____]</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
4.	<b>Title of position: [_____]</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
5.	<b>Title of position: [insert title]</b>	
	<b>Name of candidate</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>

### 3. **FORM PER-2:**

Resume and Declaration - Contractor's Representative and Key Personnel.

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

<b>Name of Tenderer</b>
-------------------------

Position [#1]: <i>[title of position from Form PER-1]</i>		
Personnel information	Name:	Date of birth:
	Address:	E-mail:
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency: <i>[language and levels of speaking, reading and writing skills]</i>	
Details	Address of Procuring Entity:	
	Telephone:	Contact (manager / personnel officer):
	Fax:	
	Job title:	Years with present Procuring Entity:

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	Role	Duration of involvement	Relevant experience
<i>[main project details]</i>	<i>[role and responsibilities on the project]</i>	<i>[time in role]</i>	<i>[describe the experience relevant to this position]</i>

## Declaration

I, the undersigned *[insert either "Contractor's Representative" or "Key Personnel" as applicable]*, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Tender:

Commitment	Details
Commitment to duration of contract:	<i>[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]</i>
Time commitment:	<i>[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]</i>

I understand that any misrepresentation or omission in this Form may:

- a) be taken into consideration during Tender evaluation;
- b) result in my disqualification from participating in the Tender;
- c) result in my dismissal from the contract.

Name of Contractor's Representative or Key Personnel: *[insert name]*

Signature: \_\_\_\_\_

Date: (day month year): \_\_\_\_\_ Countersignature

of authorized representative of the Tenderer:

Signature: \_\_\_\_\_ Date: (day month

year): \_\_\_\_\_

## 4 TENDERER'S QUALIFICATION WITHOUT PRE-QUALIFICATION

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Tenderer shall provide the information requested in the corresponding Information Sheets included hereunder.

### 4.1 FORM ELI -1.1

#### Tenderer Information Form

Date: \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Tenderer's name
In case of Joint Venture (JV), name of each member:
Tenderer's actual or intended country of registration: <i>[indicate country of Constitution]</i>
Tenderer's actual or intended year of incorporation:
Tenderer's legal address [in country of registration]:
Tenderer's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITT 3.6 <input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITT 3.5 <input type="checkbox"/> In case of state-owned enterprise or institution, in accordance with ITT 3.8, documents establishing: <ul style="list-style-type: none"><li>• Legal and financial autonomy</li><li>• Operation under commercial law</li><li>• Establishing that the Tenderer is not under the supervision of the Procuring Entity</li></ul>
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

## 4.2 FORM ELI -1.2

### **Tenderer's JV Information Form**

**(to be completed for each member of Tenderer's JV)**

Date: \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
<p>1. Attached are copies of original documents of</p> <p><input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITT 3.6.</p> <p><input type="checkbox"/> In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 3.8.</p> <p>2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.</p>



### 4.3 FORM CON – 2

#### Historical Contract Non-Performance, Pending Litigation and Litigation History

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> Contract non-performance did not occur since 1 <sup>st</sup> January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.			
<input type="checkbox"/> Contract(s) not performed since 1 <sup>st</sup> January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, requirement 2.1			
Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and Kenya Shilling equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Procuring Entity: <i>[insert full name]</i> Address of Procuring Entity: <i>[insert street/city/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.			
<input type="checkbox"/> Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: _____ Status of dispute: _____	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4.			
<input type="checkbox"/> Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			

Year of award	Outcome as percentage of Net Worth	Contract Identification	Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)
[insert year]	[insert percentage]	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Entity: [insert full name] Address of Procuring Entity: [insert street/city/country] Matter in dispute: [indicate main issues in dispute] Party who initiated the dispute: [indicate "Procuring Entity" or "Contractor"] Reason(s) for Litigation and award decision [indicate main reason(s)]	[insert amount]

#### 4.4 **FORM FIN – 3.1:**

##### Financial Situation and Performance

Tenderer's Name: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 JV Member's Name \_\_\_\_\_  
 ITT No. and title: \_\_\_\_\_

##### 4.4.1. Financial Data

Type of Financial information in _____ (currency)	Historic information for previous _____ years, _____ (amount in currency, currency, exchange rate*, USD equivalent)				
	Year 1	Year 2	Year 3	Year 4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					

Type of Financial information in _____ (currency)	Historic information for previous _____ years, _____ (amount in currency, currency, exchange rate*, USD equivalent)				
	Year 1	Year 2	Year 3	Year 4	Year 5
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

\*Refer to ITT 15 for the exchange rate

#### 4.4.2 Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	Source of finance	Amount (Kenya Shilling equivalent)
1		
2		
3		

#### 4.4.3 Financial documents

The Tenderer and its parties shall provide copies of financial statements for \_\_\_\_\_ years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

- (a) reflect the financial situation of the Tenderer or in case of JV member, and not an affiliated entity (such as parent company or group member).
- (b) be independently audited or certified in accordance with local legislation.
- (c) be complete, including all notes to the financial statements.
- (d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements<sup>1</sup> for the \_\_\_\_\_ years required above; and complying with the requirements

<sup>1</sup> If the most recent set of financial statements is for a period earlier than 12 months from the date of Tender, the reason for this should be justified.

#### 4.5 FORM FIN – 3.2:

##### Average Annual Construction Turnover

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Annual turnover data (construction only)			
Year	Amount Currency	Exchange rate	Kenya Shilling equivalent
<i>[indicate year]</i>	<i>[insert amount and indicate currency]</i>		
Average Annual Construction Turnover *			

\* See Section III, Evaluation and Qualification Criteria, Sub-Factor 3.2.

#### 4.6 FORM FIN – 3.3:

##### Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section III, Evaluation and Qualification Criteria

Financial Resources		
No.	Source of financing	Amount (Kenya Shilling equivalent)
1		
2		
3		

#### 4.7 FORM FIN – 3.4:

##### Current Contract Commitments / Works in Progress

Tenderers and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
	Name of Contract	Procuring Entity's Contact Address, Tel,	Value of Outstanding Work [Current Kenya Shilling /month Equivalent]	Estimated Completion Date	Average Monthly Invoicing Over Last Six Months [Kenya Shilling /month]
1					
2					
3					
4					
5					

## 4.8 FORM EXP - 4.1

### General Construction Experience

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Page \_\_\_\_\_ of \_\_\_\_\_ pages

Starting Year	Ending Year	Contract Identification	Role of Tenderer
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Tenderer: _____ Amount of contract: _____ Name of Procuring Entity: _____ Address: _____	



**4.9 FORM EXP - 4.2(a)****Specific Construction and Contract Management Experience**

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member's Name \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

Similar Contract No.	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount	<b>Kenya Shilling</b>			
If member in a JV or sub-contractor, specify participation in total Contract amount				
Procuring Entity's Name:				
Address:				
Telephone/fax number				
E-mail:				

**4.10 FORM EXP - 4.2 (a) (cont.)****Specific Construction and Contract Management Experience (cont.)**

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

#### 4.11 FORM EXP - 4.2(b)

### Construction Experience in Key Activities

Tenderer's Name: \_\_\_\_\_

Date: \_\_\_\_\_

Tenderer's JV Member Name: \_\_\_\_\_

Sub-contractor's Name<sup>2</sup> (as per ITT 34): \_\_\_\_\_

ITT No. and title: \_\_\_\_\_

All Sub-contractors for key activities must complete the information in this form as per ITT 34 and Section III, Evaluation and Qualification Criteria, Sub-Factor 4.2.

1. Key Activity No One: \_

Information				
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor <input type="checkbox"/>	Member in JV <input type="checkbox"/>	Management Contractor <input type="checkbox"/>	Sub-contractor <input type="checkbox"/>
Total Contract Amount	Kenya Shilling			
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)	Actual Quantity Performed (i) x (ii)	
Year 1				
Year 2				
Year 3				
Year 4				
Procuring Entity's Name:				
Address: Telephone/fax number E-mail:				

<sup>2</sup> If applicable

	Information
Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III:	

2. Activity No. Two

3. ....

## **OTHER FORMS**

### **5. FORM OF TENDER**

#### **INSTRUCTIONS TO TENDERERS**

- i) *The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address.*
- ii) *All italicized text is to help Tenderer in preparing this form.*
- iii) *Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION OF THE TENDERER attached to this Form of Tender.*
- iv) *The Form of Tender shall include the following Forms duly completed and signed by the Tenderer.*
  - *Tenderer's Eligibility- Confidential Business Questionnaire*
  - *Certificate of Independent Tender Determination*
  - *Self-Declaration of the Tenderer*

**Date of this Tender submission:** *[insert date (as day, month and year) of Tender submission]*

**Request for Tender No.:** *[insert identification]*

**Name and description of Tender** *[Insert as per ITT]*

**Alternative No.:** *[insert identification No if this is a Tender for an alternative]*

**To:** *[insert complete name of Procuring Entity]* Dear Sirs,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct and complete the Works and remedy any defects therein for the sum of Kenya Shillings *[[Amount in figures]* \_\_\_\_\_ Kenya Shillings *[amount in words]* \_\_\_\_\_.

The above amount includes foreign currency amount (s) of *[state figure or a percentage and currency]* *[figures]* \_\_\_\_\_ *[words]* \_\_\_\_\_.

The percentage or amount quoted above does not include provisional sums, and only allows not more than two foreign currencies.

2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Project Manager's notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Special Conditions of Contract.
3. We agree to adhere by this tender until \_\_\_\_\_ *[Insert date]*, and it shall remain binding upon us and may be accepted at any time before that date.
4. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us. We further understand that you are not bound to accept the lowest or any tender you may receive.
5. We, the undersigned, further declare that:
  - i) No reservations: We have examined and have no reservations to the tender document, including Addenda issued in accordance with ITT 28;
  - ii) Eligibility: We meet the eligibility requirements and have no conflict of interest in accordance with ITT 3 and 4;
  - iii) Tender-Securing Declaration: We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender-Securing or Proposal-Securing Declaration in the Procuring Entity's Country in accordance with ITT 19.8;
  - iv) Conformity: We offer to execute in conformity with the tendering documents and in accordance with the implementation and completion specified in the construction schedule, the following Works: *[insert a brief description of the Works]*;

- v) Tender Price: The total price of our Tender, excluding any discounts offered in item 1 above is: *[Insert one of the options below as appropriate]*
- vi) Option 1, in case of one lot: Total price is: *[insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies]*; Or
- Option 2, in case of multiple lots:
- a) Total price of each lot *[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*; and
- b) Total price of all lots (sum of all lots) *[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]*;
- vii) Discounts: The discounts offered and the methodology for their application are:
- viii) The discounts offered are: *[Specify in detail each discount offered.]*
- ix) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts]*;
- x) Tender Validity Period: Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- xi) Performance Security: If our Tender is accepted, we commit to obtain a Performance Security in accordance with the Tendering document;
- xii) One Tender Per Tender: We are not submitting any other Tender(s) as an individual Tender, and we are not participating in any other Tender(s) as a Joint Venture member or as a subcontractor, and meet the requirements of ITT 3.4, other than alternative Tenders submitted in accordance with ITT 13.3;
- xiii) Suspension and Debarment: We, along with any of our subcontractors, suppliers, Project Manager, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Public Procurement Regulatory Authority or any other entity of the Government of Kenya, or any international organization.
- xiv) State-owned enterprise or institution: *[select the appropriate option and delete the other]* *[We are not a state-owned enterprise or institution]* / *[We are a state-owned enterprise or institution but meet the requirements of ITT 3.8]*;
- xv) Commissions, gratuities, fees: We have paid, or will pay the following commissions, gratuities, or fees with respect to the tender process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*.

Name of Recipient	Address	Reason	Amount

*(If none has been paid or is to be paid, indicate "none.")*

- xvi) Binding Contract: We understand that this Tender, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- xvii) Not Bound to Accept: We understand that you are not bound to accept the lowest evaluated cost Tender, the Most Advantageous Tender or any other Tender that you may receive;
- xviii) Fraud and Corruption: We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption;

- xix) Collusive practices: We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the “Certificate of Independent Tender Determination” attached below.
- xx) We undertake to adhere by the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal, copy available from \_\_\_\_\_ (*specify website*) during the procurement process and the execution of any resulting contract.
- xxi) We, the Tenderer, have completed fully and signed the following Forms as part of our Tender:
- Tenderer's Eligibility; Confidential Business Questionnaire – to establish we are not in any conflict to interest.
  - Certificate of Independent Tender Determination – to declare that we completed the tender without colluding with other tenderers.
  - Self-Declaration of the Tenderer – to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.
  - Declaration and commitment to the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal

Further, we confirm that we have read and understood the full content and scope of fraud and corruption as informed in “**Appendix 1- Fraud and Corruption**” attached to the Form of Tender.

**Name of the Tenderer:** \*[insert complete name of person signing the Tender]

**Name of the person duly authorized to sign the Tender on behalf of the Tenderer:** \*\*[insert complete name of person duly authorized to sign the Tender]

**Title of the person signing the Tender:** [insert complete title of the person signing the Tender]

**Signature of the person named above:** [insert signature of person whose name and capacity are shown

above] **Date signed** [insert date of signing] day of [insert month], [insert year]

Date signed \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

**Notes**

\* In the case of the Tender submitted by joint venture specify the name of the Joint Venture as Tenderer

\*\* Person signing the Tender shall have the power of attorney given by the Tenderer to be attached with the Tender.

## A. TENDERER'S ELIGIBILITY- CONFIDENTIAL BUSINESS QUESTIONNAIRE

### Instruction to Tenderer

Tender is instructed to complete the particulars required in this Form, *one form for each entity if Tender is a JV*. Tenderer is further reminded that it is an offence to give false information on this Form.

#### (a) Tenderer's details

	ITEM	DESCRIPTION
1	Name of the Procuring Entity	
2	Reference Number of the Tender	
3	Date and Time of Tender Opening	
4	Name of the Tenderer	
5	Full Address and Contact Details of the Tenderer.	1. Country 2. City 3. Location 4. Building 5. Floor 6. Postal Address 7. Name, contacts and email of contact person.
6	Current Trade License Registration Number and Expiring date	
7	Name, country and full address ( <i>postal and physical addresses, email, and telephone number</i> ) of Registering Body/Agency	
8	Description of Nature of Business	
9	Maximum value of business which the Tenderer handles.	
10	State if Tenders Company is listed in stock exchange, give name and full address ( <i>postal and physical addresses, email, and telephone number</i> ) of state which stock exchange	



### General and Specific Details

b) **Sole Proprietor**, provide the following details.

Name in full \_\_\_\_\_ Age \_\_\_\_\_ Nationality \_\_\_\_\_  
Country of Origin \_\_\_\_\_ Citizenship \_\_\_\_\_

c) **Partnership**, provide the following details.

	Names of Partners	Nationality	Citizenship	% Shares owned
1				
2				
3				

d) **Registered Company**, provide the following details.

i) Private or public Company \_\_\_\_\_

ii) State the nominal and issued capital of the Company \_\_\_\_\_

Nominal Kenya Shillings (Equivalent)..... Issued

Kenya Shillings (Equivalent).....

iii) Give details of Directors as follows.

	Names of Director	Nationality	Citizenship	% Shares owned
1				
2				
3				

(e) **DISCLOSURE OF INTEREST- Interest of the Firm in the Procuring Entity.**

i) Are there any person/persons in ..... (*Name of Procuring Entity*) who has/have an interest or relationship in this firm? Yes/No.....

If yes, provide details as follows.

	Names of Person	Designation in the Procuring Entity	Interest or Relationship with Tenderer
1			
2			
3			

ii) **Conflict of interest disclosure**

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
1	Tenderer is directly or indirectly controls, is controlled by or is under common control with another tenderer.		
2	Tenderer receives or has received any direct or indirect subsidy from another tenderer.		
3	Tenderer has the same legal representative as another tenderer		
4	Tender has a relationship with another tenderer, directly or through common third parties, that puts it in a position to influence the tender of another tenderer, or influence the decisions of the Procuring Entity regarding this tendering process.		

	Type of Conflict	Disclosure YES OR NO	If YES provide details of the relationship with Tenderer
5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
6	Tenderer would be providing goods, works, non-consulting services or consulting services during implementation of the contract specified in this Tender Document.		
7	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract.		
8	Tenderer has a close business or family relationship with a professional staff of the Procuring Entity who would be involved in the implementation or supervision of the such Contract.		
9	Has the conflict stemming from such relationship stated in item 7 and 8 above been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.		

**f) Certification**

On behalf of the Tenderer, I certify that the information given above is complete, current and accurate as at the date of submission.

Full Name \_\_\_\_\_ Title or

Designation \_\_\_\_\_

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

## B. CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting the accompanying Letter of Tender to the \_\_\_\_\_ [Name of Procuring Entity] for: \_\_\_\_\_ [Name and number of tender] in response to the request for tenders made by: \_\_\_\_\_ [Name of Tenderer] do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of \_\_\_\_\_ [Name of Tenderer] that:

1. I have read and I understand the contents of this Certificate;
2. I understand that the Tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am the authorized representative of the Tenderer with authority to sign this Certificate, and to submit the Tender on behalf of the Tenderer;
4. For the purposes of this Certificate and the Tender, I understand that the word “competitor” shall include any individual or organization, other than the Tenderer, whether or not affiliated with the Tenderer, who:
  - a) has been requested to submit a Tender in response to this request for tenders;
  - b) could potentially submit a tender in response to this request for tenders, based on their qualifications, abilities or experience;
5. The Tenderer discloses that [check one of the following, as applicable:
  - a) The Tenderer has arrived at the Tender independently from, and without consultation, communication, agreement or arrangement with, any competitor;
  - b) the Tenderer has entered into consultations, communications, agreements or arrangements with one or more competitors regarding this request for tenders, and the Tenderer discloses, in the attached document(s), complete details thereof, including the names of the competitors and the nature of, and reasons for, such consultations, communications, agreements or arrangements;
6. In particular, without limiting the generality of paragraphs (5)(a) or (5)(b) above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
  - a) prices;
  - b) methods, factors or formulas used to calculate prices;
  - c) the intention or decision to submit, or not to submit, a tender; or
  - d) the submission of a tender which does not meet the specifications of the request for Tenders; except as specifically disclosed pursuant to paragraph (5)(b) above;
7. In addition, there has been no consultation, communication, agreement or arrangement with any competitor regarding the quality, quantity, specifications or delivery particulars of the works or services to which this request for tenders relates, except as specifically authorized by the procuring authority or as specifically disclosed pursuant to paragraph (5)(b) above;
8. the terms of the Tender have not been, and will not be, knowingly disclosed by the Tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening, or of the awarding of the Contract, whichever comes first, unless otherwise required by law or as specifically disclosed pursuant to paragraph (5)(b) above.

Name \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

*[Name, title and signature of authorized agent of Tenderer and Date].*

## C. SELF - DECLARATION FORMS

### FORM SD1

#### **SELF DECLARATION THAT THE PERSON/TENDERER IS NOT DEBARRED IN THE MATTER OF THE PUBLIC PROCUREMENT AND ASSET DISPOSAL ACT 2015.**

I, ....., of Post Office Box ..... being a resident of ..... in the Republic of ..... do hereby make a statement as follows: -

1. THAT I am the Company Secretary/ Chief Executive/Managing Director/Principal Officer/Director of ..... (*insert name of the Company*) who is a Bidder in respect of Tender No. .... for ..... (*insert tender title/description*) for ..... (*insert name of the Procuring entity*) and duly authorized and competent to make this statement.
2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement proceeding under Part IV of the Act.
3. THAT what is deposed to herein above is true to the best of my knowledge, information and belief.

..... (Title)  
..... (Signature) ..... (Date)

Bidder Official Stamp

## FORM SD2

### SELF DECLARATION THAT THE PERSON/TENDERER WILL NOT ENGAGE IN ANY CORRUPT OR FRAUDULENT PRACTICE

I, ..... of P. O. Box ..... being a resident of ..... in the Republic of ..... do hereby make a statement as follows: -

1. THAT I am the Chief Executive/Managing Director/Principal Officer/Director of ..... (*insert name of the Company*) who is a Bidder in respect of Tender No. .... for ..... (*insert tender title/description*) for ..... (*insert name of the Procuring entity*) and duly authorized and competent to make this statement.
2. THAT the aforesaid Bidder, its servants and/or agents /subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (*insert name of the Procuring entity*) which is the procuring entity.
3. THAT the aforesaid Bidder, its servants and/or agents /subcontractors have not offered any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (name of the procuring entity)
4. THAT the aforesaid Bidder will not engage /has not engaged in any corrosive practice with other bidders participating in the subject tender
5. THAT what is deponed to herein above is true to the best of my knowledge information and belief.

.....  
(Title)

.....  
(Signature)

.....  
(Date)

Bidder's Official Stamp

## DECLARATION AND COMMITMENT TO THE CODE OF ETHICS

I ..... (person) on behalf of (*Name of the Business/ Company/Firm*) ..... declare that I have read and fully understood the contents of the Public Procurement & Asset Disposal Act, 2015, Regulations and the Code of Ethics for persons participating in Public Procurement and Asset Disposal and my responsibilities under the Code.

I do hereby commit to abide by the provisions of the Code of Ethics for persons participating in Public Procurement and Asset Disposal.

Name of Authorized signatory..... Sign.....

Position.....

Office address..... Telephone.....

E-mail.....

Name of the Firm/Company.....

Date..... (Company Seal/ Rubber

Stamp where applicable)

Witness

Name ..... Sign.....

Date.....

## D. APPENDIX 1- FRAUD AND CORRUPTION

*(Appendix 1 shall not be modified)*

### 1. Purpose

2. The Government of Kenya's Anti-Corruption and Economic Crime laws and their sanction's policies and procedures, Public Procurement and Asset Disposal Act (*no. 33 of 2015*) and its Regulation, and any other Kenya's Acts or Regulations related to Fraud and Corruption, and similar offences, shall apply with respect to Public Procurement Processes and Contracts that are governed by the laws of Kenya.

### 3. Requirements

The Government of Kenya requires that all parties including Procuring Entities, Tenderers, (applicants/proposers), Consultants, Contractors and Suppliers; any Sub-contractors, Sub-consultants, Service providers or Suppliers; any Agents (whether declared or not); and any of their Personnel, involved and engaged in procurement under Kenya's Laws and Regulation, observe the highest standard of ethics during the procurement process, selection and contract execution of all contracts, and refrain from Fraud and Corruption and fully comply with Kenya's laws and Regulations as per paragraphs 1.1 above.

Kenya's public procurement and asset disposal act (*no. 33 of 2015*) under Section 66 describes rules to be followed and actions to be taken in dealing with Corrupt, Coercive, Obstructive, Collusive or Fraudulent practices, and Conflicts of Interest in procurement including consequences for offences committed. A few of the provisions noted below highlight Kenya's policy of no tolerance for such practices and behavior: -

- 1) a person to whom this Act applies shall not be involved in any corrupt, coercive, obstructive, collusive or fraudulent practice; or conflicts of interest in any procurement or asset disposal proceeding;
- 2) A person referred to under subsection (1) who contravenes the provisions of that sub-section commits an offence;
- 3) Without limiting the generality of the subsection (1) and (2), the person shall be: -
  - a) disqualified from entering into a contract for a procurement or asset disposal proceeding; or
  - b) if a contract has already been entered into with the person, the contract shall be voidable;
- 4) The voiding of a contract by the procuring entity under subsection (7) does not limit any legal remedy the procuring entity may have;
- 5) An employee or agent of the procuring entity or a member of the Board or committee of the procuring entity who has a conflict of interest with respect to a procurement: -
  - a) shall not take part in the procurement proceedings;
  - b) shall not, after a procurement contract has been entered into, take part in any decision relating to the procurement or contract; and
- c) shall not be a subcontractor for the bidder to whom was awarded contract, or a member of the group of bidders to whom the contract was awarded, but the subcontractor appointed shall meet all the requirements of this Act.
- 6) An employee, agent or member described in subsection (1) who refrains from doing anything prohibited under that subsection, but for that subsection, would have been within his or her duties shall disclose the conflict of interest to the procuring entity;
- 7) If a person contravenes subsection (1) with respect to a conflict of interest described in subsection (5)(a) and the contract is awarded to the person or his relative or to another person in whom one of them had a direct or indirect pecuniary interest, the contract shall be terminated and all costs incurred by the public entity shall be made good by the awarding officer. Etc.

In compliance with Kenya's laws, regulations and policies mentioned above, the Procuring Entity:

- a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:
  - i) "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - ii) "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;



- iii) “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - v) “obstructive practice” is:
    - deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
    - acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3 e. below.
- b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:
- "fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.
- c) Rejects a proposal for award<sup>1</sup> of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
  - d) Pursuant to the Kenya's above stated Acts and Regulations, may sanction or recommend to appropriate authority (ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;
  - e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring (i) Tenderers (applicants/proposers), Consultants, Contractors, and Suppliers, and their Sub-contractors, Sub-consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect<sup>2</sup> all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and
  - f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a “Self-Declaration Form” as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/will not engage in any corrupt or fraudulent practices.

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<sup>1</sup> For the avoidance of doubt, a party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and tendering, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

<sup>2</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.

**FORM OF TENDER SECURITY-[Option 1–Demand Bank Guarantee]**

**Beneficiary:** \_\_\_\_\_

**Request for Tenders No:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**TENDER GUARANTEE No.:** \_\_\_\_\_

**Guarantor:** \_\_\_\_\_

1. We have been informed that \_\_\_\_\_ (here inafter called "the Applicant") has submitted or will submit to the Beneficiary its Tender (here inafter called" the Tender") for the execution of \_\_\_\_\_ under Request for Tenders No. \_\_\_\_\_ ("the ITT").
2. Furthermore, we understand that, according to the Beneficiary's conditions, Tenders must be supported by a Tender guarantee.
3. At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_ (\_\_\_\_\_) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:
  - (a) has withdrawn its Tender during the period of Tender validity set forth in the Applicant's Letter of Tender ("the Tender Validity Period"), or any extension thereto provided by the Applicant; or
  - b) having been notified of the acceptance of its Tender by the Beneficiary during the Tender Validity Period or any extension there to provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance.
4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) thirty days after the end of the Tender Validity Period.
5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

\_\_\_\_\_  
[signature(s)]

*Note: All italicized text is for use in preparing this form and shall be deleted from the final product.*

## FORMAT OF TENDER SECURITY [Option 2–Insurance Guarantee]

TENDER GUARANTEE No.: \_\_\_\_\_

1. Whereas ..... [Name of the tenderer] (hereinafter called “the tenderer”) has submitted its tender dated ..... [Date of submission of tender] for the ..... [Name and/or description of the tender] (hereinafter called “the Tender”) for the execution of \_\_\_\_\_ under Request for Tenders No. \_\_\_\_\_ (“the ITT”).
2. KNOW ALL PEOPLE by these presents that WE ..... of ..... [Name of Insurance Company] having our registered office at ..... (hereinafter called “the Guarantor”), are bound unto ..... [Name of Procuring Entity] (hereinafter called “the Procuring Entity”) in the sum of ..... (Currency and guarantee amount) for which payment well and truly to be made to the said Procuring Entity, the Guarantor binds itself, its successors and assigns, jointly and severally, firmly by these presents.

Sealed with the Common Seal of the said Guarantor this \_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_.

3. NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Applicant:
  - a) has withdrawn its Tender during the period of Tender validity set forth in the Principal's Letter of Tender (“the Tender Validity Period”), or any extension thereto provided by the Principal; or
  - b) having been notified of the acceptance of its Tender by the Procuring Entity during the Tender Validity Period or any extension thereto provided by the Principal; (i) failed to execute the Contract agreement; or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to tenderers (“ITT”) of the Procuring Entity's Tendering document.

then the guarantee undertakes to immediately pay to the Procuring Entity up to the above amount upon receipt of the Procuring Entity's first written demand, without the Procuring Entity having to substantiate its demand, provided that in its demand the Procuring Entity shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

4. This guarantee will expire: (a) if the Applicant is the successful Tenderer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, or (b) if the Applicant is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Tendering process; or (ii) twenty-eight days after the end of the Tender Validity Period.
5. Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

\_\_\_\_\_  
[Date]  
\_\_\_\_\_  
[Witness]

\_\_\_\_\_  
[Signature of the Guarantor]  
\_\_\_\_\_  
[Seal]

*Note: All italicized text is for use in preparing this form and shall be deleted from the final product.*

## TENDER-SECURING DECLARATION FORM

*[The Bidder shall complete this Form in accordance with the instructions indicated]*

Date:.....*[insert date (as day, month and year) of Tender Submission]*

Tender No.:.....*[insert number of tendering process]*

To:.....*[insert complete name of Purchaser]* I/We, the undersigned, declare that:

1. I/We understand that, according to your conditions, bids must be supported by a Tender-Securing Declaration.
2. I/We accept that I/we will automatically be suspended from being eligible for tendering in any contract with the Purchaser for the period of time of *[insert number of months or years]* starting on *[insert date]*, if we are in breach of our obligation(s) under the bid conditions, because we – (a) have withdrawn our tender during the period of tender validity specified by us in the Tendering Data Sheet; or (b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the instructions to tenders.
3. I/We understand that this Tender Securing Declaration shall expire if we are not the successful Tenderer(s), upon the earlier of:
  - a) our receipt of a copy of your notification of the name of the successful Tenderer; or
  - b) thirty days after the expiration of our Tender.
4. I/We understand that if I am/we are/in a Joint Venture, the Tender Securing Declaration must be in the name of the Joint Venture that submits the bid, and the Joint Venture has not been legally constituted at the time of bidding, the Tender Securing Declaration shall be in the names of all future partners as named in the letter of intent.

Signed:..... Capacity / title (director

or partner or sole proprietor, etc.) ..... Name:

..... Duly authorized to sign the bid

for and on behalf of: *[insert complete name of Tenderer]*

Dated on ..... day of ..... *[Insert date of signing]* Seal or stamp

## Appendix to Tender

### Schedule of Currency requirements

Summary of currencies of the Tender for \_\_\_\_\_ *[insert name of Section of the Works]*

<i>Name of currency</i>	<i>Amounts payable</i>
Local currency: _____	
Foreign currency #1: _____	
Foreign currency #2: _____	
Foreign currency #3: _____	
Provisional sums expressed in local currency _____	[To be entered by the Procuring Entity]

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## **PART II - WORK REQUIREMENTS**

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## SECTION V – DRAWINGS



20181214 Architectural Drawings - Client Presentation.pdf (Command Line)



20181221 THIWASCO Structural Drawings.pdf (Command Line)

## **SECTION VI-SPECIFICATIONS**



## **TRADE PREAMBLES & SPECIFICATIONS**

### **EXCAVATION AND EARTHWORK**

- A. The Contractor shall comply with the requirement of the following codes of Practice.

#### **Codes of Practice**

- |    |                                |           |
|----|--------------------------------|-----------|
| B. | Site investigations            | C.P. 2001 |
| C. | Earthworks                     | C.P. 2003 |
| D. | Foundations                    | C.P. 2004 |
| E. | Protection of building against |           |

Water from the ground	C.P. 102
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**Note:** The Contractor's attention is drawn to section "D" of the Standard Method of Measurements.

- F. The Contractor shall visit the site and ascertain for himself the nature of the soil to be excavated. The rates for excavation shall include excavation in any type of material or made up ground excluding rock as defined below. No claim will be allowed for want of knowledge in this respect.
- G. Setting out shall be approved before work is commenced.
- H. Generally clear the site of all shrubs and trees, grub up roots and fill the holes with red earth. Trees and shrubs shall only be cut as directed on site, and any damage caused to such trees and shrubs not directed to be made good at the Contractor's expense.
- I. Excavation for bases and strip foundation shall be to the widths, depth, and levels shown on the Architect's and/or Engineer's drawings. Rates shall be deemed to include for whatsoever alternative method the Contractor chooses to adopt.
- J. The Engineer shall be called to inspect the completed excavations. The Contractor shall keep all excavations dry and free from rain or other surface water.
- K. Excavations made below required levels shall be filled with Mass Concrete (1:3:6) at the Contractor's expense.
-

- L. Rates for filling or disposal of earth shall include for any double handling, except that resulting from a written order by the Architect and/or Engineer to deposit earth in temporary soil heaps pending its final disposal. Filling shall be in approved filling material to required levels in specified layers carefully rammed and consolidated. Disposal of all surplus excavated material

shall be as instructed and rates shall include for loading and wheeling off the site to a pit to be provided by the Contractor.

- A. Hardcore shall be stone, coarse gravel or other inert material yielding, when thoroughly consolidated, a freely porous bed and blinded with fine hardcore, ashes and similar materials shall include for all temporary retaining boards and for rolling with an 8 10 tonne roller unless otherwise described, in layers not exceeding 150mm deep.
- B. Anti-termite treatment shall be fine sprayed using an approved environmentally safe insecticide. A guarantee of ten (10) years minimum shall be supplied.
- C. The Contractor shall at his own expense and before commencing excavations ascertain in writing from the Postal and Power Authorities, Municipal Council and other public bodies, companies and persons who may be affected, the position and depths of their respective ducts, cables, mains, or piles and appurtenances.

The Contractor shall there upon search and locate such services in order to appropriately prop, protect, underpin, alter, divert, restore and make good all pipes, cables or ducts, poles or wires and their appurtenances disturbed or damaged during the progress of the works or consequent thereof.

Such services as required to be removed or altered by virtue of the situation of the permanent work and not the manner in which the work is carried out, shall be so removed or altered at the expenses of the Employer.

- D. Rock excavation shall be deemed to mean excavating in such hard material as will necessitate the use of wedges or compressed air equipment or other special plant.
- E. Blasting will only be allowed with the prior express permission of the Architect and/or Engineer.

All blasting operations shall be carried out at the Contractor's sole risk and cost in accordance with any Government regulations in force for the time being, and any special regulations laid down by the Architect and/or Engineer governing the use and storage of explosives.

- F. 'Rates are to include also for destroying any white ants' nests found in the vicinity of the buildings, destroying queen ants, depositing cyanide lumps in hole and tunnels and filling with hardcore and murram well rammed and sealed.

## **CONCRETE WORK**

### **GENERAL**

#### **Definitions**

- A. The term "**ARCHITECT**" or "**ENGINEER**" wherever used hereinafter shall have the same meaning as stated in the Preliminaries.
- B. The Engineer is authorised to act on behalf of the Architect in all relevant matters in the contract price.
- C. The terms "**APPROVED**", "**DIRECTED**" AND "**SELECTED**" wherever used hereinafter shall mean upon approval, direction and selection of or the Engineer, in writing, at their absolute discretion.
- D. The Engineer is authorised to act on behalf of the Architect after due consultations in all relevant matters in the contract approvals.

## **CONCRETE WORK SPECIFICATIONS**

### **GENERAL**

#### **Authoritative Standards and Codes of Practice**

The following authoritative standards are referred to hereinafter:

	<b>B.S.</b>	<b>Date</b>	<b>Title</b>
A.	12	1989	Portland cement (Ordinary and rapid hardening).
B.	812	1967	Methods for sampling and testing of mineral aggregates, sand and fillers.
C.	882	1983	Aggregates from natural sources for concrete (including granolithics).
D.	1881	1970/71	Methods of testing concrete.
E.	5328	1981	Methods for specifying concrete
F.	2499	1973	Hot applied joint sealants for concrete pavements.
G.	3148	1980	Tests for water making concrete.
H.	3921	1985	Clay bricks
I.	4251	1974	Truck type concrete mixers. (1980)

J.	4449	1988	Carbon steel bars for the reinforcement of concrete.
K.	4466	1981	Bending dimensions and scheduling of bars for the reinforcement of concrete (old edition).
L.	4483	1985	Steel fabric for the reinforcement of concrete.
M.	5075		Concrete Admixtures.
N.	6073:Pt.1	1981	Precast concrete blocks.

#### **Authoritative Standards and Codes of Practice (C'td.)**

	<b>B.S.</b>	<b>Date</b>	<b>Title</b>
A.	8110:Pt.1 & 2	1985	the structural use of concrete.
B.	5950		the use of structural steel in buildings.
C.	5400:Pt.5	1979	Steel, concrete and composite Bridge.
D.	8007	1987	the structural use of concrete for retaining aqueous liquids.

American Society for Testing and Materials Standards as published by the American Society for Testing and Materials, 1916 Race St., Philadelphia pa. 19103 U.S.A. (Abbreviated in Test to ASTM).

	<b>ASTM</b>	<b>Date</b>	<b>Title</b>
E.	C88	73	Soundness of aggregates by use of Sodium sulphate
F.	C234	71	Comparing concrete on the Basis of the Bond developed with Reinforcing steel.
G.	C289	71	Potential Reactivity of Aggregates (Chemical Method)

The following codes of practice are referred to hereinafter:

British Standard Codes of Practice published by the Council for Codes of practice British Institution, 2 Park Street, London W1A 2BS, England (abbreviated in text to C.P).

	<b>C.P.</b>	<b>Date</b>	<b>Title</b>
H.	CP.117:pt.1:	1965	Composite construction in structural steel and concrete
I.	BS.3110	1972	Safe use of cranes (mobile cranes, tower cranes and derrick cranes)

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **Authoritative Standards and Codes of Practice**

- A. Should the contractor wish to substitute any of the authoritative standards or code of practice for any listed above he should submit details of any such together with two complete copies of the same to the Engineer for approval with his tender. Approval will only be given to the use of such standard where the Engineer considers the proposed standard or code of practice will give a quality of finished work equal to or better than specified standard.
- B. All in situ concrete shall be in accordance with BS 8110 except where superseded by this specification.
- C. All precast concrete shall be in accordance with BS 8110 except where superseded by this specification.

**NOTE:** The Contractor's attention is drawn to section 'F' of the standard method of measurement of building works.

### **Samples and Materials Generally**

- D. The Contractor shall, when required, provide for approval samples of all materials to be incorporated in the works. Such samples when approved shall be retained by the Engineer and shall form the standard for all such materials incorporated. No deliveries to the site should commence before such approval is obtained.
- E. No materials of any description will be used without prior sanction by the engineer and any condemned as unfit for use in the works must be removed immediately from site by and without recompense to the Contractor.

### **Test Certificate**

- F. The Contractor shall provide the Engineer with three copies of all test reports or certificates that are or may be required by this Specification.

### **Suppliers**

- G. As soon as possible after the contract has been awarded and before finalizing any order for materials to be incorporated in the works, the contractor shall submit the names of any proposed suppliers to the Engineers for approval.
- H. Each supplier must be willing to admit the Engineer, or his representative, to his premises during working hours for the purposes of obtaining samples of the materials in question.
- I. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply will be changed without proper approval.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **Drawings**

- A. The Contractor should check all drawings carefully before any part of the work is carried out. Any discrepancy should be reported to the Engineer immediately for his clarification. The contractor shall be responsible for any costs arising out of his failure to report such discrepancies to the Engineer, in good time.
- B. The Contractor shall ensure that he has all relevant drawings and bar bending schedules for any part of the works, well in advance of the execution of that part of the works. Any costs arising out of the contractor's failure to ask for related drawings, or bending schedules in writing, in good time, shall be the responsibility of the contractor. The same shall hold true even if the contractor has submitted a programme of works at commencement.
- C. Bending Schedules

The Engineer will issue bar bending schedules in accordance with B.S. 4466 (1981). The contractor should check these against the drawings before any cutting; bending or construction involving the schedules is started. Any discrepancy should be reported to the Engineer immediately for his clarification. The contractor shall be responsible for any delays or additional work caused solely by his failure to check the schedules.

### **Approval**

- D. Well before construction commences the contractor shall supply to the Engineer for his approval details of his proposed layouts of concreting plant and on site workshop, details of formwork system and the construction devises e.g., cranes, chutes, scaffolding, which he proposes using for the structural work. The information is to be sufficiently detailed to enable the Engineer to approve or otherwise.
- E. The Contractor should note that further approvals are required by the specification before construction starts. The contractor is wholly responsible for obtaining these approvals and no claim for delays will be entertained due to the contractor's failure to obtain such approvals in adequate time.

### **Cement**

- A. Cement, unless otherwise specified, shall be ordinary Portland cement complying with B.S. 12.
- B. The Contractor shall obtain a manufacturer's certificate of test in accordance with the appropriate standard for each consignment of cement delivered to the site and shall immediately forward copies of the same to the Engineer for his retention.
- C. Notwithstanding the manufacturer's certificate the Engineer may require that any cement delivered to the site be sampled and tested. Any batch of cement so tested which fails to comply with this specification will be rejected.
- D. All cement unless delivered in bulk, shall be stored in a weatherproof shed, the floor of which shall be raised at least 150mm above the ground to allow free air circulation. Cement delivered in bulk shall be stored in a weatherproof silo. All cement shall at all times be protected from deterioration.
- E. All cement shall be delivered to the site in the original sealed bags of the manufacturer or in approved bulk containers.
- F. Each consignment of cement shall be kept separate. Identified and used in order of delivery. No two types of cement shall be used in combination.
- G. Any cement which upon inspection is considered by the Engineer to have deteriorated in any way will be rejected.

### **Aggregate for Concrete**

- H. Any aggregate for concrete shall, unless otherwise specified, be aggregate from natural sources complying with B.S.882. Additionally, the flakiness index when determined by the sieve method described in B.S.812 shall not exceed 35 for any size of concrete aggregate. Fine aggregate within or finer than zone 4 of B.S. 882 shall not be used.
- I. When tested for soundness in accordance with ASTM Test C88 73 the loss of weight after 5 cycles shall not exceed 5% (percent) for any aggregate.
- J. Aggregate which is potentially reactive when tested in accordance with ASTM Test C.289 71 for the alkali aggregate reaction shall not be used. The Standard for acceptance being that test results shall plot to the left of the solid line which is shown in Figure 2 of the test standard.



## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **MATERIALS (CTD)**

#### **Aggregate for Concrete (C'td.)**

- A. Well before any concreting work, the contractor shall forward to the Engineer for approval details of his proposed source of supply of aggregates giving the aggregate group classification and typical physical properties as required by B.S.882.
- B. The Contractor shall provide the Engineer with a certificate for his retention showing that all aggregates regularly comply with the requirements of this specification.
- C. The Engineer may require that any aggregate be tested for soundness in accordance with ASTM Test C88 73 before giving approval to any proposed source of supply.
- D. The Engineer may require that any aggregate be tested for potential reactivity in accordance with ASTM Test C.289 71
- E. Notwithstanding any certificate of compliance, the Engineer may at any time require that any aggregate delivered to the site be sampled and tested. Any aggregate so tested which fails to comply with this specification will be rejected.
- F. Coarse aggregate shall be delivered ready screened or screened on site into separate nominal single sizes within limits given in B.S.882
- G. Aggregate of different sizes or typical shall be stored in different hoppers or different stockpiles on approved well drained paved areas which shall be separated from each other. Stockpiles shall be protected against contamination from any source.
- H. Any aggregate which has become contaminated or which does not conform to the above requirements may be rejected by the Engineer.

#### **Water for use with cement**

- I. Water for use in mixing with cement or for curing concrete shall be from an approved source, clean, fresh and free from organic and other deleterious matter.
- J. The Engineer may require that any water sampled and tested by the method given in B.S.3148. Water failing the criteria given in the Appendix to B.S. 3148 will be rejected.
- K. Water for use in mixing with cement shall neither be hotter than 25deg. C (77deg.F) or colder than 5deg. (41deg. F) at the time of mixing.

## **MATERIALS (CTD.)**

### **Steel Rod Reinforcement**

- A. Steel Rod Reinforcement shall consist of:
- a) Mild steel bars complying with B.S 4449
  - b) Hot rolled high yield bars complying with B.S.4449
  - c) Cold worked high yield bars complying with B.S.4449 as described in the drawings.

Where cold worked high yield bars are to be used these shall be square twisted bars formed by atorsion-controlled process.

- B. The contractor shall obtain a manufacturer's certificate of test in accordance with the appropriate standard for each steel batch relating to reinforcement delivered to site and shall immediately forward copies of the same to the Engineer for his retention.
- C. Where hot rolled high yield deformed bars are to be used, the results of bond tests to ASTM 234 71 using concrete of the same quality as that to be used in the works, shall be forwarded to the Engineer.
- D. Notwithstanding the manufacturer's certificate, the Engineer may require that any reinforcement delivered to the site be sampled and tested. Any reinforcement so sampled and tested which fails to comply with this specification will be rejected.
- E. All reinforcement shall be delivered to the site either as straight bars or ready cut and bent to shape.
- F. All reinforcement shall be stored in clean conditions in an orderly manner to the satisfaction of the Engineer such that the batch to which each piece belongs can be readily identified.

### **Steel Fabric Reinforcement**

- G. Steel fabric reinforcement shall be electrically cross welded steel mesh reinforcement complying with B.S.4483.

### **Tying Wires**

- H. Tying wires for fixing reinforcement shall be either:
- a) No. 16 gauge soft annealed iron wire.

Or

- b) No. 18 gauge stainless steel wire.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **MATERIALS (CTD.)**

#### **Spacers**

- A. Spacer blocks required for ensuring that the reinforcement is correctly positioned shall be as small as possible consistent with their purpose, of a shape acceptable to the Engineer, and designed so that they will not overturn when the concrete is placed, unless otherwise approved they shall be made of concrete with 10mm maximum aggregate size and mix proportions to produce the same strength as the adjacent concrete S.W.G. 18 wire shall be cast in the block for the purpose of tying it to the reinforcement.
- B. Space blocks of concrete shall not be used until at least 7 days old.
- C. No admixtures or cement containing additives shall be used in concrete unless specified or approved by the Engineer. Such approval will not be given unless in the Engineer's opinion specific benefit to the density or quality of the concrete will result.
- D. Wall Ties

Wall ties between concrete and adjoining block or brick walling shall be "Abbey" slots and anchors as supplied Abbey Building Suppliers Limited. or similar approved. Wall ties must be provided at concrete and block or brick wall butting surface.

#### **Joint Fillers**

- E. Joint fillers unless otherwise stated shall be "Flexcel" as manufactured by Expandite Ltd. or similar approved and placed in accordance with the manufacturer's instructions.

#### **Joint Sealants**

- F. Shall be as described in the drawings and approved by the Engineer. Sealants shall be used strictly in accordance with the manufacturer's instructions.
- G. Poured joint sealing compound shall be a hot poured rubber bitumen compound complying with the requirement of B.S.2499.

#### **Water stops**

- H. Water stops unless otherwise stated shall be "Sika waterbar" as manufactured by Sika International or similar approved and placed and jointed in accordance with the manufacturer's

instructions. In addition, the method of holding water bar in position, while concreting, must be to the approval of the Engineer.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT**

#### **Workmanship**

- A. Reinforcement shall be bent accurately in accordance with B.S. 4466 to the shapes and dimensions shown in the schedules. All reinforcement shall be at temperatures in range of 5deg.C and 100deg. C.
- B. Cold worked or any high yield bars shall not be straightened or bent again once having been bent. When it is necessary to bend mild steel reinforcement already cast in the concrete the internal radius of such bends shall be not less than twice the diameter of the bar.
- C. No welding of reinforcement shall be carried out without the approval of the Engineer.
- D. All reinforcement shall at the time of concreting be free from mud, oil mortar droppings, loose rust, paint, grease, mill scale or other deleterious matter. Reinforcement still 'blue' from the mill shall not be used.
- E. All reinforcement shall be fixed in the position shown on the drawings by adequate use of spacers, tying wires, chairs, stools, etc. and shall be so maintained during the concreting operations.
- F. Lap in all reinforcement shall be where indicated on the drawings or approved by the Engineer. Unless otherwise indicated the minimum lap length for rod reinforcement shall be 40 diameters for mild steel and 50 diameter for high tensile twisted bars.
- G. A steel-fixer shall be in attendance at all times when concreting is in progress to correct any errors, omissions or movement in the reinforcement.
- H. In severe heat conditions reinforcement shall be shaded from direct sunlight and hosed down with clean water prior to concreting to keep the reinforcement below 25deg.C (77deg.F).
- I. Notwithstanding any inspections, approvals regarding reinforcement, it shall be the contractor's sole responsibility to ensure that the reinforcement complies exactly with the details on the Drawings or Schedule or other written instructions by the Engineer.

#### **Composite floor slabs**

- J. Concrete hollow pots for use in the composite floor slabs are to be of the sizes required as shown on the drawings and with 25mm wall thickness and are to be true to shape, free from cracks or distortion of adequate strength to support the concrete during placing and

consolidation by vibration. Stocks are to be manufactured in accordance with the procedure specified in B.S.2028 and to be of mix not weaker than 1:4:8 cement; sand; stone using maximum 10mm size aggregate. Samples must be approved before incorporation into the works.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Composite floor slabs (C'td)**

- A. Concrete hollow pots are to be cured for at least 28 days before use on site. During the first seven days of curing, pots are to be kept permanently damp and protected from exposure to sun and wind.
- B. Hollow clay pots where indicated for use in the composite floor slabs are to be the sizes shown on the drawings and to be of adequate strength to support the concrete during placing and consolidation by vibration. They shall be obtained from an approved manufacturer. Before any orders are placed, at least 6 sample clay blocks shall be provided for the approval of the Engineer. Any clay blocks subsequently delivered to site which in the opinion of the Engineer are not of equal standard to the approved samples shall be rejected.
- C. Rejected pots shall immediately be removed from site and shall not be used in the works. Clay blocks are to be fully cured before delivery or use on site.
- D. Defective or damaged pots are to be removed immediately from site.
- E. The hollow pot floor construction is generally to be as shown on the Engineer's drawings.
- F. Care shall be taken in planning pots to ensure that they are set out in accordance with the details shown on the Drawings and that they run truly in line without encroaching on the width of the insitu ribs.
- G. The open ends of hollow pots, if adjacent to concrete to be placed insitu, are to be plugged or stopped to prevent the concrete from flowing into the void and the contractor is to include for this in his prices.
- H. The contractor should note that slip tiles are not to be used to the soffit of ribs and he is to take this into consideration in pricing the items of formwork to the soffit of hollow pot floor construction.
- I. Before concreting is carried out the pots are to be thoroughly wetted.
- J. Care should be taken during concreting that the width of ribs between the rows of pots and the solid insitu concrete shown on the Drawings adjacent to stopping beams is not encroached upon by the pots.

- K. Where holes for service occur, the necessary holes or pockets shall be accommodated by replacing of a hollow pot by insitu concrete or the widening of a rib.
- L. Prices for such holes through hollow pots slab construction are to include for the re arrangement or substitution of the hollow pot with solid concrete or the widening of a rib.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Composite floor slabs (C'td)**

- A. The concrete topping shall be poured at the same time as the ribs between hollow pots.
- B. Reinforcement shall be positioned accurately with the specified cover in accordance with the Drawings and using the particular spacer blocks as previously described.
- C. Spacer blocks shall be provided at no more than 1.2m centres.
- D. Care must be taken during concreting that the reinforcement is not displaced.

#### **Composite Construction of Beams and Columns**

- E. The contractor shall provide a method statement for construction of concrete encased steel columns and beams. Notwithstanding the Engineer's approval of this method statement, the responsibility of producing workmanship of the specified quality shall rest entirely with the contractor. In addition the contractor shall construct a sample of a concrete encased column and beam, on site, in accordance with the method statement for approval. If approved, all composite construction for the works shall be of a similar quality. The contractor should allow for hoisting of steel beams and columns in his rates.
- F. The contractor shall maintain on site for the duration of the contract, all equipment required for modifications to 'in position' steel beams and columns.
- G. The contractor is to note that steel grade 43 shall be used in composite beams steel grade 50 will be used in composite columns.
- H. All connections of steel beams to columns and column splice connection details shall be as specified on the structural drawings.

## **FORM WORK**

### **Definition**

- I. "Forms falsework or shuttering" shall include all temporary moulds forming the concrete to the required shape together with any special lining that may be required to produce the concrete finish specified.

- J. "Falsework or Centering" shall consist of furnishing, placing and removal of all temporary construction such as framing, props and struts required for the support of forms.
- K. All timber for formwork, falsework and centering shall be sound wood, well-seasoned and free from loose knots, shakes, large cracks, warping and other defects. Before use on the work, it shall be properly stacked and protected from injury from any source. Any timber which becomes badly warped or cracked, prior to the placing of concrete, shall be rejected.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Form Work (C'td)**

- A. If the contractor proposes to use steel shuttering, he shall submit to the Architect/ Engineer dimensioned drawings of all the component parts, and give details of the manner in which he proposes to assemble or use them. Steel shuttering will only be permitted if it is sturdy in construction and if the manner of its use is approved by the Architect/Engineer.
- B. Struts and props shall, where required by the Architect, be fitted with double hardwood wedges or other approved devices so that the moulds may be adjusted as required and eased gradually when required. Wedges shall be spiked into position and any adjusting devices locked before the concrete is cast.
- C. All forms shall be wood or metal and shall be built grout tight and of sufficient rigidity to prevent distortion due to the pressure of the concrete and other loads incident to the construction operations. Form shall be constructed and maintained so as to prevent warping and the opening of joints due to shrinkage of the timber.
- D. All formwork shall be approved by the Architect/Engineer before concrete is placed within it. The contractor shall if required by the Architect provide the latter with copies of his calculations of strength and stability of the formwork or falsework but notwithstanding the Engineer's approval of these calculations, nothing shall relieve the contractor of his responsibilities for the safety or adequacy of the formwork.

#### **Falsework and centering**

- E. Detailed plans for falsework or centering shall be supplied by the contractor to the Architect at least 14 days in advance of the time the contractor begins construction of the falsework. Notwithstanding the approval of the Architect of any designs for falsework submitted by the Contractor, the Contractor shall solely be responsible for the safety and adequacy of the falsework or centering.
- F. All falsework shall be constructed to provide the necessary rigidity and to support the loads from the weight of green concrete and shutting and incidental construction loads.

- G. Falsework or centering shall be founded upon a solid footing safe against undermining and protected from softening. Falsework which cannot be founded on satisfactory footings shall be supported on piling which shall be spaced driven and removed in a manner approved by the Architect. The Architect may require the contractor to employ screw jacks, or hard wood wedges to take up any settlement in the formwork either before or during the placing of concrete.
- H. Falsework shall be set to give the finished structure the required grade and camber shown on the Drawings.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Form of Construction Joints (C'td)**

- A. Where permanent or temporary joints are to be made in horizontal or inclined members, stout stopping off boards shall be securely fixed across the moulds to form a grouting joint. The form of the permanent construction joints shall be as shown on the Drawings.
- B. Where reinforcement or water stops pass through the face of construction joint the stopping off boards shall be drilled so that the bars or water stop can pass through or the board shall be made in sections with a half round indentation in the joint faces for each bar so that when placed, the board is a neat and accurate fit and not grout leaks from the concrete through the bar holes, joints, or around the water stops.
- C. The forms shall be restrained and unyielding and shall be so designed that the finished concrete will conform to the proper dimensions and contours. The design of the forms shall take into account the effect of vibration of concrete as it is placed.
- D. All sharp edges inside the forms shall be provided with 25mm by 25mm triangular fillets, unless otherwise shown on the drawings or directed by the Architect.
- E. Openings for the inspection and cleaning of the inside of shuttering for walls, piers and columns shall be formed in such a way that they can be closed conveniently before commencing to concrete.
- F. When concrete is to be deposited to a steeper slope than 15deg. to the horizontal, top forms shall be used to enable the concrete to be properly compacted.
- G. Form clamps tie bolts and anchors shall be used to fasten forms. The use of wire ties to hold forms in position during placing of concrete will not be permitted. Tie bolts and clamps shall be positive in action and of sufficient strength and number to prevent spreading or springing of the forms. They shall be of such type that no metal part shall be left within the specified concrete.



- H. The cavities shall be filled with grout or mortar and the surface left sound, smooth, even and uniform in colour. All forms for outside surfaces shall be constructed with stiff wales at right angles to the studs and all form clamps shall extend through and fasten such wales.
- I. The shapes, strength, rigidity, water tightness and surface smoothness of re used forms shall be maintained at all times. Any warped or bulged timber must be replaced. Forms which are unsatisfactory in any respect shall not be re used.
- J. All forms shall be treated with approved moulds or similar oil or be soaked with water immediately before placing concrete to prevent adherence of concrete. Any materials which adhere to or discolour concrete shall not be used.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Form of Construction Joints C'td**

- A. All forms shall be set and maintained true to the line designed until the concrete is sufficiently hardened. Forms shall remain in place for periods which shall be as specified hereinafter. When forms appears to be unsatisfactory in any way, either before or during the placing of concrete, the Architect shall order the work stopped until the defect have been corrected.

#### **Release Agents**

- B. Only approved chemical release agents, mould creams (emulsions of water in oil) or oils containing a proportion of surfactant not exceeding 2% will be permitted. Water soluble emulsion and oils without surfactant shall not be used. Oil based release agents shall be applied at a ratio of 7m2/litre 24 hours in advance of concreting, preferably by spray or roller. Chemical release agents shall be applied in accordance with the manufacturer's recommendations.
- C. The greatest care must be taken that all sawdust shavings, chips and other debris is removed from the formwork before concrete is placed in position and the necessary arrangements must be made by leaving out a board in the bottom of the formwork or otherwise as required.
- D. The erection, easing, striking and removal of all formwork must be done under the personal supervision of a competent foreman, and any damage occurring through faulty formwork or its incorrect removal shall be made good by the contractor at his own expense.
- E. All projecting fins on the concrete surfaces after removal of formwork shall be chipped off, and any voids or honeycombing to any surface made good to the requirements of the Architect.
- F. No patching of the concrete is to be done before inspection of the concrete surfaces as stripped.
- G. Traffic or loading must not be allowed on the concrete until the concrete is sufficiently matured and in no case shall traffic or loading be of such magnitude as to cause deflection or other

movement in the formwork or damage to the concrete members. Where directed by the Architect/Engineer props may be required to be left in position under slabs and other members for greater period than those specified hereinafter.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Striking Times**

- A. It shall be the Contractor's responsibility that no distortion, damage overloading or undue deflection is caused to the structure by the striking of formwork, but the Engineer reserves the right to delay the time of striking in the interest of the work. Formwork shall not be struck until the concrete has sufficiently hardened. Approval of the Engineer shall not relieve the Contractor of his liability to make good any concrete damage by premature removal or collapse of forms. In no circumstances shall forms be struck until the concrete reaches cube strength of at least twice the stress to which the concrete may be subjected at the time of striking. The following times given in day (24 hours) are the absolute minimum that will be permitted:

<b>FORMS</b>	<b>ORDINARY PORTLAND CEMENT</b>	<b>RAPID HARDENING CEMENT</b>
Walls, columns (unloaded), beams sides	2	2
Slabs - props left under	7	2
Beams soffites - props left under	14	5
Slabs – props	14	5
Beams – props	18	8

The time for removal of forms as set out shall not apply to slabs and beams spanning more than 10 metres. For such spans appropriate times shall be recommended or advised by the Engineer.

The periods given above based on the removal of all props and formwork using ordinary Portland cement under average weather conditions. Adverse weather conditions or different cement may cause the above periods to be increased. Should the contractor wish to make use of reduced striking times then he must satisfy the Engineer that the strength of the concrete at such

time and the structural system is adequate to withstand the dead and imposed loads applied to it. Before making use of reduced striking times the Engineer's agreement must be obtained in writing.

- B. Where the structure is of multi storey construction props with head trees and braces shall be provided to distribute the imposed load below the floor being cast. This will normally be 3 storey heights below the floor being cast unless otherwise stated.

## **REINFORCEMENT (CTD)**

### **Finish to Concrete Shuttered Surface**

- A. Sawn finish. The shuttering shall consist of sawn boards, sheet metal or other suitable material to give a support to the concrete. Appearance is not of primary importance for this class of formwork. It shall be used for surface against which backfill or further concrete is to be placed. The treatment of the shuttering or concrete to provide a bond for the further surface treatment of the concrete shall be directed or approved by the Architect. Masonry or similar material used for facing concrete shall only be used as shuttering where directed by the Architect.

The Architect's approval shall be obtained to the use of blocks or slabs when used as permanent forms in foundation and other similar location.

- B. Wrought finish. The shuttering shall be wrought with boards arranged in a uniform pattern. Alternatively, plywood, metal panels or other approved materials may be used, subject to the Architect's approval. Joints between boards or panel shall be horizontal or vertical unless otherwise directed. This shuttering shall give a good finish to the concrete and will normally be used for all faces where a high class finish is not necessary.
- C. Fair-faced finishing. Standard steel panels, hardboard and boarding will not be permitted for the face of this shuttering. The shuttering shall be faced with resin bonded plywood, faced with matt finished plastic or equivalent material in large sheets which shall be arranged in an approved uniform pattern. Wherever possible, joints between sheets shall be arranged to coincide with features such as sills, heads, jambs or changes in direction or the surface areas of formwork between features in walls, between beams in horizontal surface or other similar arrangement, shall where possible, be divided into panels of uniform dimensions, without the use of make-up pieces. All joints between panels on vertical or inclined surfaces shall be vertical or horizontal unless otherwise directed by the Architect; those on horizontal surfaces shall be at right angles and wherever possible they shall be parallel to walls and beams. The shuttering shall give a high class finish to the concrete with no lips, fins, or irregularities, and shall give a completely true and even surface which will be prominently exposed to view where good alignment is of special importance. It is for use in both in situ and precast concrete.
- D. Texture finish. This is an all over finish of high quality as may be directed by the Architect. Sample panels may be constructed on site prior to commencement of the works, to compare

different textures. The shuttering shall be such that the concrete finish has not lips, fins, or irregularities and shall give a surface which will be prominently exposed to view where good appearance and alignment are of special importance.

- E. Chisel dressed finish. This finish consists of cutting a maximum of 10mm of concrete surfaces to expose the aggregate. This work is to be carried out after the concrete is at least 30 days old and is to be executed by hand. Mechanical means will not be permitted.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Finish to Concrete Shuttered Surface (C'td)**

- A. Where other finishes, apart from the above are specified, the contractor shall provide a sample panel at least 2.4m x 1.2m in vertical surface area including a typical horizontal and vertical joint in the shuttering. The sample panel shall be constructed using the systems of shuttering and the construction techniques that the contractor proposes for the actual works. This sample when approved will form the standard for the entire works. All unsuccessful samples shall be removed from the site.

#### **Tamped Floor Finish**

- B. Where "tamped finish" is specified it will be obtained by an edge board to the Architect's approval. Board works are to be made to a true pattern and will generally be at right angles to the traffic flow. Haphazard or diagonal tamping will not be accepted.

### **Concrete Mixes (General)**

#### **Works Cubes**

- C. For all structural concrete the following representative samples shall be taken and in accordance with B.S. 1881.

One each day on which less than 50cu.m. of concrete is being poured.

- a) Six 150mm cubes three for test 7 days and three for test 28 days.  
and
- b) Two slump test  
or
- c) Two compacting factor tests.

On any day when greater quantities of concrete are being poured then six additional cube tests and two additional slump or compacting factor test shall be carried out for each 50M3 or part thereof.

- D. All cubes shall be marked with the date of casting and a reference number. For each cube a record shall be kept of the position in which the batch of concrete from which it was sampled was placed. All cubes shall be tested by an approved testing authority.
- E. The concrete cubes tested at 7 days are intended to be indicative only and the target works strengths at 7 days given in Table 1 or II are not mandatory. It should be noted however that it is unlikely that cubes failing the 7 days target will subsequently pass the 28 days cube strength.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **REINFORCEMENT (CTD)**

#### **Work cubes (C'td.)**

- A. The concrete cubes tested at 28 days shall be taken to represent the concrete placed in the works. The standard of acceptance for cube strength tests shall be as follows:
- B. The cube strength shall be calculated from the maximum load sustained by the cube failure. One test result shall be the average of two test specimens taken from the same sample. The appropriate strength requirement, as given in Table 1 or 11 shall be considered to be satisfactory if:
  - a) None of the strengths of the three cubes is below the specified cube strength, or if
  - b) The average strength of three cubes is not less than the specified cube strength and the difference between the greatest and the least strengths is not more than 20% of that average.
- C. The standard of acceptance for the slumps test during the production of concrete shall be the design slump  $\pm 25\text{mm}$ .
- D. The standard of acceptance for the compacting factor test during the production of concrete shall be design compacting factor  $\pm 0.03$ .
- E. Any concrete which fails to meet the above standard of acceptance shall be either further tested or condemned at the Engineer's sole discretion. Any such tests or the removal of condemned concrete, replacement and associated costs shall be at the Contractor's expense.
- F. If the strength required are not attained or maintained throughout the contract, the contractor will also be required to redesign the mix and submit trial mixes in accordance with the specification so as to give a concrete which does comply with the requirements of this specification.

### **Concrete Mixes (Nominal Mixes)**

- G. Mixes for each class of concrete specified or shown on the drawings shall be used by the contractor. They shall be mixed to achieve high density combined with adequate workability for the purpose.
- H. Details of any proposed mix shall be forwarded to the Engineer not less than 7 days before that class of concrete is required to be used on the works for his approval in principle.
- I. Classes of concrete will be referred to by their nominal mix proportions. Classes of concrete shall meet the criteria shown in Table I.
- J. The workability of the concrete shall be the minimum consistent with producing a dense, well compacted mass. Due regard shall be paid to the size and shape of the section together with any congestion of reinforcement.

### **CONCRETE WORK SPECIFICATIONS (CTD)**

#### **REINFORCEMENT (CTD)**

### **Concrete Mixes (Design Mixes)**

- A. Mixes for each class of concrete specified or shown on the drawings shall be designed by the contractor to achieve the specified minimum cube strength combined with high density and adequate workability for the purpose. In order to allow for unavoidable variation the mean design strength should exceed the specified works cube strength by twice the expected standard deviation. In the absence of previous information a standard deviation of 7N/MM<sup>2</sup> should be assumed.
- B. Details of any proposed mix design shall be forwarded to the Engineer not less than 7 days before that class of concrete is required to be used on the works for his approval in principle. The details shall include at least the following information.
  - a) Source, nature and grading of coarse and fine aggregates
  - b) Source of cement.
  - c) Nominal maximum size of aggregate.
  - d) Cement content.
  - e) Aggregate/cement ratio.
  - f) Water/cement ratio.
  - g) Design density

- h) Design slump or compacting factor,
  - i) Design strength.
- C. Classes of concrete will be referred to by the minimum 28 days' work cube strength and the maximum size of aggregate. Classes of concrete shall meet the criteria shown in Table II. The maximum water/cement ratio is herein defined as the ratio of the weight of the "free" water to the available weight of the cement. The "freewater" is that quantity of water available to combine with the cement. Any required to be absorbed by aggregate is excluded.
- D. The workability of the concrete shall be the minimum consistent with producing a dense well compacted mass. Due regard shall be paid to the size and shape of the section together with any congestion of reinforcement.
- E. After the Engineer has approved a design mix in principle the contractor shall prepare a trial mix on site using plant and materials intended for the works. Three batches of concrete shall be sampled and the following prepared, from each batch in accordance with B.S.1881

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **Tolerance**

- A. All in-situ concrete shall be dimensionally accurate to within the following non-accumulative tolerances:
- a) between the centre lines of principal members columns or beams  $\pm 5\text{mm}$  up to 15metres c/c  $\pm 10\text{mm}$  over 15metres c/c Note the  $\pm 10\text{mm}$  tolerance shall not be accumulative
  - b) In storey height  $\pm 5\text{mm}$  floor to floor
  - c) In plumpness of columns and walls  $\pm 10\text{mm}$  on any storey or overall the structure
  - d) In level of floors  $+ 5\text{mm}/ - 3\text{mm}$  of the true prescribed horizontal surface level
  - e) In cross sectional dimensions of column beams and walls  $+5\text{mm}/ - 3\text{mm}$  in any dimension up to 2 metres overall  $+10\text{mm}/ - 3\text{mm}$  in any dimension over 2 metres
  - f) Cover to reinforcement  $+5\text{ mm} / - 0$  of the stated covers.

### **Miscellaneous Items**

- B. Holes chase indentations and the like shall be provided where indicated on the drawings. All such shall be formed in the concrete and not cut after the concrete has hardened.
- C. Should the contractor or any sub-contractor require additional holes or the like these requirements shall be submitted to the Engineer at least two days prior to concreting, for his approval.
- D. Pipes, conduits, fixing bolts and other such cast-in items shall be provided where indicated on the drawings.
- E. Should the contractor or any sub-contractor require additional cast-in items these requirements shall be submitted to the Engineer at least two days prior to concreting, for his approval.

### **Ready Mixed Concrete**

- F. Ready Mixed Concrete shall be used only with the approval of the Engineer. When such approval is given it shall be supplied in accordance with B.S. 5328 except where this conflicts with this specification when this specification shall prevail.



## CONCRETE WORK SPECIFICATIONS (CTD)

### Ready Mixed Concrete (C'td.)

- A. Truck mixer units and their mixing and discharge performance shall comply with the requirement of B.S.4251.
- B. The use of ready mixed concrete shall not relieve the Contractor of any of his obligations and the appropriate clauses of this specification shall apply equally to the ready mixed concrete.
- C. Concrete test cubes and slump tests shall be taken on site at the point and time of discharge in accordance with this specification irrespective of any cubes that the supplier may take at his own risk.

### Mixing and Transporting Concrete

- D. All materials for concrete shall be measured by weight in approved weight batching equipment. Such equipment shall be checked at weekly intervals at the Contractor's expense and shall be accurate to within 2%. Certificate of accuracy shall be submitted immediately to the Engineer.
- E. All concrete shall be mixed in approved power driven mixers of a type and capacity suitable for the work. The mixer shall be equipped with an accurate water measuring device which shall be checked at weekly intervals at the contractor's expense. Certificates of accuracy shall be submitted immediately to the Engineer.
- F. All materials shall be thoroughly mixed dry before water is added and the mixing of each batch shall continue for a period not less than two minutes after the water is added or such longer period are recommended by the manufacturer of the mixer. The mixture shall be of uniform colour and distribution on discharge and the entire contents of the mixer shall be discharged before recharging. The volume of mixed materials shall not exceed the rated capacity of the mixer.
- G. Mixers shall be at all times kept in a clean condition. prior to the first mix each day being agitated in the mixer a rich cement sand mix shall be used to coat the inside of the drum, the surplus material being emptied away and not used in the works.
- H. The moisture contents of the coarse and fine aggregate shall be checked by the contractor at frequent intervals and the amount of water added to the mix adjusted to maintain the design workability.
- I. Concrete shall be discharged from the mixer onto a clean, level watertight platform or into a clean watertight container. It shall be transported in a manner which ensures that it is of the correct quality and consistency at the point of deposition. All platforms and containers shall be cleaned of the old concrete before the fresh concrete is discharged onto them.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **Mixing and Transporting Concrete (C'td)**

- A. Concrete shall not be dropped from a height, thrown or otherwise treated so that segregation, undesirable finish, or defective structural quality results. In any case concrete shall not be dropped from a height greater than 3.0m
- B. No extra water shall be added to the concrete mix after it has left the mixer.
- C. The Contractor shall take adequate precautions to protect concrete in transit from the effects of the weather.
- D. Pumping of concrete, which will require a special design mix, will only be permitted with the approval of the Engineer.
- E. Should the concreting be stopped due to mechanical malfunction, accident or other similar cause then the contractor shall inform the Engineer immediately so that necessary measures and precautions can be taken. The cost of any additional work caused by these stoppages shall be the responsibility of the Contractor.
- F. No concreting shall be commenced until the formwork and reinforcement have been inspected by the Engineer. The Contractor shall give the Engineer two clear days' notice of his intention to concrete.

### **Placing and Compacting Concrete**

- G. All concrete shall be vibrated unless otherwise specified. The vibration shall be carried out by experienced operators and with immersion type vibrations to the Engineer's satisfaction.
- H. Placing of concrete shall be carried out in layers not exceeding 500mm deep and in sequence from one end of the form to the other.
- I. Concrete in foundations and other underground work shall be protected from contamination with falling earth or rock during and after placing.
- J. Any concrete which shows signs of initial setting before or during placing shall not be used and it shall be removed at the contractor's expense.
- K. Sufficient vibrators shall be provided to correspond with the rate of deposition of concrete. The vibration shall be continuous throughout the placing of the concrete. Standby vibrators shall be on site during all concrete placing.
- L. Vibration must not be allowed to disturb any recently placed concrete that has begun to set. Any water accumulating on the surface of newly placed concrete shall be removed by approved means and no further concrete shall be placed thereon until such water is removed.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **Placing and Compacting Concrete (C'td).**

- A. Suitable means shall be provided to ensure that the temperature of the concrete on placing does not exceed 30 deg.C (86 deg.F). All surfaces shall be thoroughly dampened immediately prior to placing fresh concrete to prevent excessive absorption of water.

### **Unformed finishes for Concrete**

- B. Where a concrete surface is specified as suitable for receiving a further applied finish or in all cases where no other finish is specified the concrete shall be uniformly leveled and screeded to produce a ridge surface. No further work shall be applied to the surface.
- C. Where a concrete surface is specified as exposed with no further applied finish the concrete shall be uniformly levelled and screeded to produce a plain surface. After the concrete has hardened sufficiently the surface shall be hand or machine floated sufficiently only to produce a uniform surface free from screed marks.

### **Construction, Contraction and Expansion Joints**

- D. Construction joints will be permitted only at the positions shown on the drawings and as instructed on the site by the Engineer. These joints will in general be spaced to allow a maximum plan area for any bay of 100 sq.m. maximum length of 12m in any one dimension.
- E. Vertical construction joints shall be properly made to form a vertical grout tight joint. Where reinforcement passes through the face of the joint the stopping off board shall be drilled so that the bars pass through or the board shall be made in sections with half round indentation in the joint.
- F. Under no circumstances shall concrete when being deposited be allowed to 'tail off'. Construction joints formed with expanded metal or similar or will not be permitted for reinforced concrete work.
- G. At all construction joints, both horizontal and vertical the surface of the already placed concrete shall be suitably roughened to remove laitance and by exposing the coarse aggregate to form a key for adjacent concrete. This work shall be carried out to the satisfaction of the Engineer by the following or other approved methods:
- a) After the initial set has taken place but before final set the coarse aggregate shall be exposed by the use of a water jet brushing.
  - b) After final set has taken place the laitance shall be removed and coarse aggregate shall be exposed by bush hammering or chiseling.

In both cases the surface is to be thoroughly cleaned after roughening.

### **Construction, Contraction and Expansion Joints**

- A. At least 72 hours shall be left between completion of concreting one bay and the start of concreting any adjacent bay if the Engineer deems fit.
- B. Construction joints shall be formed as detailed where shown on the drawings.
- C. Expansion joints shall be formed as detailed at the position on the drawings.

### **Curing and protecting Concrete**

- D. Immediately after compacting and for 7 days thereafter concrete shall be protected against harmful effects of weather including rain rapid temperature changes and from drying out. The methods of protection used shall be subject to the approval of the Engineer. The method of curing used shall prevent loss of moisture from the concrete.
- E. During the curing period horizontal surface shall be protected by the following or other approved means:
  - a) Covering with damp hessian canvas sacks or similar absorbent materials kept constantly damp and wholly covering the exposed concrete surface or
  - b) Covering with an impermeable material raised approximately 50mm over the surface so as to prevent loss of moisture.
  - c) An approved membrane curing compound.
- F. During the curing period other surfaces shall be protected by the following or other approved means:
  - a) Formwork in close application of water preferably in the form of a mist so as not to damage the surface.
  - b) Direct and continuous application of water preferably in the form of a mist so as not to damage the surface.
  - c) Covering as described for horizontal surfaces.
- G. All concrete faces or edges, particularly those which are exposed without rendering in the final structure, shall be adequately protected from damage and discolouration at all times.
- H. Concrete structure shall be loaded until the concrete is at least 21 days old or 28 days in the case of cantilevers. With the prior approval of the Engineer the structure may be loaded before this time but in no case will loading greater than the final design loading be permitted.

## CONCRETE WORK SPECIFICATIONS (CTD)

### Test of Defective Concrete

- A. Additional tests may be necessary when there are physical defects in the finished concrete. These defects may be in the form of cracking while the member is still under props, excessive deflection or segregation and insufficient strength of concrete test cubes. If in the opinion of the Engineer these defects are as a result of the Contractor's bad workmanship, then the contractor will be required to carry out additional tests which the Engineer may deem necessary to establish the load carrying capacity of the member. All costs for the test or incurred thereof as a consequence of the test shall be chargeable to the contractor. Costs for tests shall be borne by the contractor immaterial of the outcome of such tests.

### Concrete for Water Retaining Structures

- B. Concrete and its constituents for water retaining structures, in addition to the general and particular provisions in this specification, shall comply with the following requirements in this section.
- C. In addition to the requirements of clauses pages concrete in water retaining structures shall have a low drying shrinkage and absorption, as measured in accordance with B.S.812 or not greater than 3%.
- D. The Engineer may before approval is given to an aggregate or at any time thereafter require that the aggregate be tested for absorption in accordance with B.S.812. Any aggregate failing to comply with this specification will be rejected.
- E. In addition to the requirements of clauses page, concrete for the water retaining structures shall have a maximum cement content of 400kg/M3
- F. Blinking concrete under water retaining structures shall be a minimum of 75mm thick and shall be in class 15/40 concrete.
- G. Class 15/40 concrete shall comply with the following requirements:
- (i) Minimum works cube strength at 28 days 15N/MM2
  - (ii) Maximum size of aggregate 40mm
  - (iii) Mix proportions 1 cement: 2.5 fine aggregate: 5 coarse aggregate.
  - (iv) This is a nominal mix and no cubes will be required to be taken.
- H. For water retaining structures the provisions of clause page are modified. The construction joints will in general be spaced to allow a maximum plan area for any bay of 40sq.m. Or maximum lengths of 7.5m in any one dimension.
- I. A waterproofing additives - plastocrete DM by Sika or other similar approved shall be used for all reinforced concrete in water tank structures.

## CONCRETE WORK SPECIFICATIONS (CTD)

### Concrete for Water Retaining Structures (C'td.)

- A. All additives shall be incorporated into the mix according to the manufacturer's instructions.
- B. For water retaining structures the provisions of the clause are modified. At least 96 hours shall be left between completion of concreting any adjacent bay if the Engineer deems fit.
- C. A kicker of minimum height 150mm shall be cast integrally with the base slab for all water retaining structures.
- D. The surface of all concrete for water retaining structures shall not be permitted to dry out even after the 7 day curing period specified in clause.
- E. All pipes passing through concrete walls or slabs for water retaining structures shall be cast in at the time of concreting and not subsequently fitted. All such pipes shall be provided with a puddle flange fitted to form a seal against the pipe and of an outside diameter 2.00mm greater than the outside diameter of the pipes.
- F. Joint sealants shall be applied not less than 7 days after completion of the structure.
- G. On completion of water retaining structure at a time decided by the Engineer it shall be tested for water tightness in the following manner. Structures which are elevated shall be filled at a uniform rate not exceeding 1 meter rise in head per 24 hours and allowed to absorb water for 3 days. After this period the water level shall be brought up to the top water level and left for 7 days. During this period the exposed faces shall show no signs of leakage and shall remain apparently dry. Structures founded on or in the ground shall be tested prior to backfilling unless otherwise stated. The structure shall be filled as specified above. After filling to top water level no further water shall be introduced for the next 7 days. The structure will be deemed to be watertight if at the expiration of this time the total drop in surface level does not exceed 100mm after making due allowance for evaporation and absorption and no sign of leakage are observed.
- H. Water for testing shall be provided at the contractor's expense.
- I. If the structure fails the test above any defects shall be made good or such action taken to eliminate leakage as the Engineer shall direct. All such work shall be at the Contractors expense.
- J. After completion of any repairs the structure shall be tested using the procedure specified above.
- K. Swimming pool should be tested prior to applying internal finishes.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **Precast Concrete**

- A. The material for precast work shall be similar to the materials for insitu work. The workmanship for precast work shall comply with C.P.116 except where this conflicts with this specification when the specification shall prevail.
- B. The contractor shall prepare for any type of precast units, a drawing indicating his proposed formwork construction, casting methods de-moulding and handling procedure for the Engineer's approval.
- C. Moulds and formwork shall be so constructed that the dimensions of the finished concrete members are within the specified permissible tolerances given in Clause 407 of BS 8110.
- D. Where precast concrete is described as "Fair Faced" the moulds shall be metal, or are to have metal or hardboard linings, or are to be other approved moulds which will produce a smooth, dense fair face to the finished concrete and free from all shutter marks, holes, pitting, etc.
- E. Precast concrete shall be made of the mixes described on the Engineer's drawings in suitable mould, true in form of the shapes required, thoroughly tamped into the moulds and around reinforcement and vibrated.
- F. All precast work shall be carried out under cover and the period before removal from forms and the period of storing shall be determined and agreed by the Engineer and Contractor with due regard to the type of unit, i.e. load bearing or non-load bearing, difficulties of casting, projections, holes and other points which require particular attention.
- G. The method of lifting, positions of lifting points and Curing time before lifting shall be agreed with the Engineer before casting of any units.
- H. Extreme care shall be taken when handling precast units and any units damaged during transportation and/or positioning shall be replaced at the Contractor's expense.

## **General**

A. Concrete work shall be measured generally in accordance with the method of measurements stated in the contract. The rates shall be deemed to include for complying with the specification in all respects. All testing and samples required by the Specification, whether covered by a particular item below or not, shall be deemed to be included within the rates or sums in the Bill of Quantities. Where the Engineer may instruct the contractor to test (such test not being mandatory) the materials or workmanship in accordance with the provisions of the Specifications the test of such costs will be borne by the employer, if the test result proves satisfactory and by the Contractor if the test result proves unsatisfactory. In either case no consequential costs or delay will be allowed, it being considered that testing covered by this Specification is of a usual or expected nature.

## **Concrete**

- B. The rate for concrete shall include for all costs associated with the following:
- C. Supply concrete of the required strength, manufactured with materials complying with the Specification.
- D. Mixing, transporting placing, compacting, curing and protecting the concrete all as specified.
- E. Forming construction joints and complying with the specified requirements for maximum bay size and interval between casting adjacent bays.
- F. Designing the concrete mix (where applicable) and carrying out trial mixes and preliminary tests.
- G. Carrying out routine sampling and testing of concrete and its constituents.
- H. Keeping on site sufficient cube moulds, slump cones and associated test equipment to comply with the Specification.

## **Mass Concrete**

- I. The rate for mass concrete in blinding shall, in addition to \*B\* to \*H\* above, include, for concreting the sub base.
- J. The rate for mass concrete shall, in addition to \*B\* to \*H\* above, included for any formwork necessary unless otherwise stated in the item description.

## **Rod Reinforcement**

- K. The rate for rod reinforcement shall include all costs associated with the following:
- L. Supply rod reinforcement complying with the Specifications.
- M. Providing test certificates
- N. Cutting, bending and fixing reinforcement including any welding where this is approved.
- O. Providing and fixing all spacers, tying wire, chairs and stools.

## **CONCRETE WORK SPECIFICATIONS (CTD)**



## **MEASUREMENTS PREAMBLES (CTD)**

### **Fabric Reinforcement**

- A. The rate for fabric reinforcement shall include for all costs associated with the following:
- a) Supplying fabric reinforcement complying with the specifications.
  - b) Providing test certificates.
  - c) Cutting and fixing fabric reinforcement.
  - d) Providing and fixing all spacers, tying wire, chairs and stools.
  - e) Providing the specified laps, fabric will be measured as the net plan area.

### **Sawn Formwork**

- B. The rate for sawn formwork shall include for all costs associated with the following:
- a) Supplying, fixing, easing and striking all temporary forms as specified together with all temporary construction required for their support.
  - b) Supplying details or calculations for formwork.
  - c) Coating with material to prevent adhesion of the concrete.
  - d) Complying with specified minimum period before removal of forms.
  - e) Back propping for multi-storey construction.

### **Wrought Formwork**

- C. The rate for wrought formwork shall include for all costs associated with the following:
- a) Supplying, fixing, easing and striking all temporary forms as specified together with all temporary construction required for their support.
  - b) Supplying details or calculations for formwork.
  - c) Coating with material to prevent adhesion of the concrete.
  - d) Complying with specified minimum period before removal of forms.
  - e) Back propping for multi storey construction.
  - f) Providing sample panels of concrete as specified and removing on completion of the works.

## **CONCRETE WORK SPECIFICATIONS (CTD)**

### **MEASUREMENTS PREAMBLES (CTD)**

#### **Precast Concrete**

- A. The rate of supply of precast concrete shall include for all costs associated with the following:
- a) Supplying concrete including item on clause page.
  - b) Supplying rod reinforcement including on page above.
  - c) Supplying fabric reinforcement (if applicable) items on page above.
  - d) Supplying, fixing, easing and striking moulds and formwork as specified including replacement after multiple use.
  - e) Producing drawings and details as specified.
  - f) Coating moulds with material to prevent adhesion of the concrete.
  - g) Complying with specified minimum period before removal of forms or handling.
  - h) Providing and fixing any additional reinforcement required for lifting or handling.
  - i) All handling, lifting and fixing of precast units.

#### **Composite floor Construction**

- B. The rate for composite floor construction is to include for all moulds, materials and all unspecified items necessary for the manufacturer of hollow concrete block by the contractor.
- C. Another rate will be applicable in the vent of the contractor purchasing the block as specified from independent suppliers or manufacturers.

#### **Waffle Floor Construction**

- D. The rate for waffle floor construction is to include for all moulds, materials and all items necessary for complying with the specification. The rate shall also be deemed to include for solid concrete margins, and bearing.

## **STRUCTURAL STEEL**

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

A. The quality of all materials and workmanship used in the execution of this Contract shall comply with the requirements of the most recent issues of the following British Standards and Codes of Practice, including all amendments to date of calling for Tenders.

BS.4 (Part 1)	-	Hot Rolled Sections	
BS.4 (Part 2)	-	Hot Rolled Hollow Sections	
BS.449	-	The use of Structural Steel in building	
BS.638	-	Arc Welding plant, equipment and accessories	
BS.916	-	Black Bolts, screws and nuts	
BS.1449	-	Steel plate, sheet and strip	
BS.2994	-	Cold Rolled Steel Sections	
BS.4190	-	ISO metric black hexagon bolts, screws and nuts	
BS.4320	-	Metal Washers for general engineering purposes	
BS.4360	-	Weldable structural Steel	
BS.4848	-	Hot rolled structural steel sections	
BS.4872 not required	-	Approval testing of welders when welding procedure approval	is

## **QUALITY OF MATERIALS AND WORKMANSHIP (CTD)**

- A. The Engineer may at any time require any materials to be tested in accordance with the requirements of the Standards listed above. The cost of all successful tests shall be borne by the Client, but the Sub-Contractor shall if required promptly supply at his own expense test pieces as required by the Engineer. The costs of tests on materials failing to comply with this Standard shall be borne by the Sub-Contractor. If in the opinion of the Engineer, faulty materials and /or workmanship have been used in the Works, the Sub-Contractor may be directed to dismantle and cut out the parts concerned and remove them for examination and testing. The cost of dismantling, cutting out and making good to the approval of the Engineer shall be borne by the Sub-Contractor.

## **FABRICATION**

### **B. Cutting and Bending**

All members, plates, brackets, etc., shall be neatly and accurately sheared sawn or profiled to the required shape as shown on the drawings. Where steel is oxy-cut to shape, care shall be taken to preserve the full finished sizes required. If the members or plates are bent or set, the bends or sets shall be correctly made to the radii or angles specified without leaving hammer marks. The material may be heated to permit this. Material that has been heated shall be annealed to approval.

### **C. Punching and Drilling**

Holes for black bolts shall be drilled or punched 2mm larger in diameter than the bolt used. Holes for high tensile friction grip bolts shall be drilled or sub-punched and reamed to 2mm larger in diameter than the specified bolts sizes. All drilled holes shall be parallel sided and shall be drilled with the axis of the holes perpendicular to the surface. Badly drilled holes shall either be reamed out to approval and larger bolts fitted or otherwise as directed. All rough arises shall be ground off. Holes for bolts in material thicker than 15mm must be drilled. When holes are drilled in one operation through two or more thicknesses of material, the parts shall be separated after drilling and all burrs removed before assembly. Holes for bolts shall not be formed by a gas cutting process.

### **D. Tolerances**

All members shall be fabricated with a tolerance in length of + 0mm and -3mm, all shall not deviate from straightness by more than 1 in 400.

## **STRUCTURAL STEEL (CTD)**

## **QUALITY OF MATERIALS AND WORKMANSHIP (CTD)**

### **A Tolerances (C'td)**

The allowance for angular twist shall be  $(3+0.6L)$  mm where L is the length of the member under consideration in metres. Twist shall be measured by placing the member as fabricated against a flat surface measuring the difference between the two corners of the opposite end.

The above tolerances shall be adhered to unless otherwise specified on the Engineer's drawing.

## **FASTENING**

### **B. Bolting**

All bolts used shall be of such length that at least one full thread is exposed beyond the nut after the nut has been tightened. Where a nut or bolt head would bear on an inclined surface, a bevelled washer of the correct shape shall be interposed between the two surfaces. Bevelled washers shall not be allowed to get out of position during fabrication and erection and for this purpose may be spot welded to the steel surface. Bevelled washers for use with high tensile bolts may not be welded.

### **C. Black Bolts, Nuts and Washers**

All black Bolts, Nuts and Washers shall comply with the requirements of BS.916 or alternatively BS.4190 ISO metric black hexagonal bolts screws and nuts.

### **D. High Tensile Bolts, Nuts and Washers, Friction Grip Bolts**

All High Tensile steel bolts, nuts and washers used in joints shall comply with the requirements of BS.3139 and shall be used in accordance with BS.3294.

## **ELECTRIC WELDING**

- E. All welding shall be carried out in strict accordance with the requirements of BS.1856 and 938 and electrodes shall comply with BS.639.
- F. Fusion faces shall be free from irregularities such as tears, fins, etc., which would interfere with the deposition of weld metal.
- G. Fusion faces shall be smooth and uniform and shall be free from loose scale, slag, rust, grease, paint, and/or other deleterious material.

## **ELECTRIC WELDING (CTD)**

- A. All welds shall be of acceptable types, shall be of the finished sizes specified, and shall be carried out in such sequence that minimum distortion of the parts welded results.
- B. Preparation of edges for welding shall be carried out by planning or machine flame cutting. Manual flame cutting may be permitted in certain circumstances.
- C. Parts to be welded shall be maintained in their correct relative positions during welding, preferably by jigs.
- D. Multiple run welds shall be carried out with each run closely following the previous run but allowing sufficient time for the proper removal of slag.
- E. The Sub-Contractor shall ensure that each run is inspected and any unsatisfactory weld cut out and remade to approval.
- F. Welds in material 25mm or greater in thickness shall be made by the Argon arc or similar approved process, and special precautions shall be taken to prevent weld cracking.
- G. Unless otherwise shown, the minimum size of fillet shall be 6mm.
- H. On completion, welds shall present a smooth and regular finish. Weld metal should be solid throughout with complete fusion between weld metal and parent metal and between successive runs throughout the joint.
- I. Defects shall be cut out and made good to approval in sound weld metal.
- J. The external faces of butt welds are to be ground smooth on completion and to be to the approval of the Engineer.

## **STRUCTURAL STEEL (CTD)**

### **SHOP AND FIELD CONNECTIONS**

#### **ROLLED SECTIONS**

- A. All shop connections shall be electric welded or bolted with high tensile friction grip bolts.
- B. No bolts used shall be less than 12mm diameter and no weld less than 40mm in length. At least two bolts shall be used in connections transmitting loads unless otherwise indicated by the Engineer.
- C. No weld of length less than four times the nominal fillet size shall be deemed capable of carrying a load.
- D. Beam to column connections not detailed shall be on "Standard" top and bottom cleat connections with the load carried on the bottom cleat. "Standard" web connections shall be used for connecting beams to beams.
- E. Field connections shall be as detailed, i.e. bolted with high tensile or black bolts in drilled holes. Black bolts in punched holes will only be permitted for connections carrying a designed load or for connections to timber members.
- F. Structural Hollow Sections - Circular and Rectangular
- G. Hollow sections shall be connected by electric welding unless shown otherwise.
- H. The design of welds shall be in accordance with Clause 53 and 54 and Appendix C of BS.449.
- I. Butt welds shall be made with the fusion surfaces of the ends of each member properly prepared and the members properly aligned.

#### **ASSEMBLY**

##### **Trusses and Portal Frames**

- A. Trusses shall be carefully set out to the dimensions shown on the drawings.
- B. Where it is required that trusses be cambered, such camber shall be provided by bending the bottom chord to the arc of a circle.
- C. Notwithstanding any dimensioned spacing of purlin cleats, the Sub-Contractor shall ensure that purlin cleat spacing is satisfactory for the available stock lengths of roof sheeting. However, the Engineer's approval must first be obtained before any alteration is made in purlin spacing or sheeting sizes.
- D. Splices in portal and other frames shall be made where shown on the details or where indicated.

##### **Boxed Members**

- E. Abutting edges of boxed members shall be connected and sealed with a continuous weld to exclude the entrance of moisture. Where specified such welds shall be ground flush to approval.

##### **Shop Assembly**

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- F. Such assembly of units in the shop as is specified or necessary before transporting to the site will be inspected by the Engineer before painting. The work will be laid out in the shop or yard so that all parts are accessible for inspection and testing of the work.
- G. The Sub-Contractor shall furnish all facilities for inspection and testing of the work and he must notify the Engineer on each occasion when the material is ready for inspection.

**Marking**

- H. All members of the structure to be site assembled shall be match marked in accordance with the shop details and marking plans submitted for approval.



## **STRUCTURAL STEEL (CTD)**

### **ERECTION**

#### **Site Dimensions**

- A. No erection shall commence before accurate Site Dimensions have been taken by the Sub-Contractor, and no claim will be considered should final dimension differ from those on the drawings. Any modifications to the structural steel required in order to comply with Site Dimensions shall be made on the ground to the Engineer's approval before erection is commenced.

**B. General Setting Out-Tolerances**

The temporary Bench Mark (TBM) which shall be located at the Structural Ground Floor Level (S.G.F.L.) having been agreed on site between the Architect, Engineer and Main Contractor, shall be considered as the site datum.

The datum points for the setting out of the datum lines passing through the T.B.M. at all floor and roof levels; plus or minus 0m.

The permissible Deviation (P.D.) from the T.B.M. and D.L. shall be as follows:

- a) Setting out on Plan at S.G.F.L.

All setting out dimensions with respect to each datum line (i.e. P.D. from "x" and "y" plan axes) plus or minus 10mm per 30 metres.

## **ERECTION (CTD.)**

- b) Transfer of T.B.M. to Structural First Floor, intermediate Floors and Roof Levels.

With respect to the T.B.M. at S.G.F.L. the T.B.M. at:

First Floor Level	-	Plus or minus 5mm
Intermediate Floor Levels	-	Plus or minus 10mm
Roof Level	-	Plus or minus 15mm

- c) Setting out on Plan of Upper Floors with Respect to the Transferred T.B.M.

All setting out of dimensions with respect of each datum line plus or minus 10mm per 30 metres.

- d) The clear distance between adjacent elements at any level where accuracy is required for doors, windows, services, secondary steelwork etc.:- plus or minus 5mm.
- e) The P.D. with respect to the relevant T.B.M. of the upper or lower surface of any truss or element, taking into account specified cambers. plus or minus 10mm.
- f) The Plumb vertical members plus 10mm per storey.

### **A. Equipment**

All erection shall be carried out by competent and experienced men and the Sub-Contractor shall take every care to safeguard the public, workmen, and adjoining property.

All gear used shall be of adequate strength and shall comply with all Regulations current at the time.

The Sub-Contractor shall be held responsible for all damage caused to the structure, workmen, or buildings during erection.

## **STRUCTURAL STEEL (CTD)**

### **ERECTION (CTD.)**

#### **A. Storing and Handling**

Steel shall be stored and handled and erected in such a manner that no member is subjected to excessive stresses which could have an adverse effect on the properties of the steel. If in the opinion of the Engineer, the steel work has been subjected to such treatment, the contractor shall remove this steel from the site and replace it at his own expense.

#### **B. Erection Details**

No member or part of a member which has been bent or distorted shall be erected in that condition. All straightening shall be done in the ground.

Columns shall be wedged to line and level on steel or cast iron wedges and checked by the Engineer. After acceptance, column bases shall be grouted to approval before wedges are removed. Unless shown on the drawing, all columns shall be left truly vertical and correct to line and level. Beams, girders, etc., shall be erected level unless otherwise shown, and correctly positioned.

Trusses and open web joists shall be carefully handled at all times and when being erected shall be lifted at such points and in such a manner as will preclude any possibility of damage from erection stresses.

Immediately after erection, each truss shall be made secure by purlins, bracing, or guys to approval. Bracing shall be placed in position as soon as dependent work will permit.

#### **C. Field Connections**

In making connections, drifting of unfair holes will not be permitted and holes not matching properly shall either be reamed or drilled out and a larger bolt inserted or otherwise as directed.

Holes formed or enlarged by oxy-cutting will be condemned and must be filled to approval by electric welding and re-drilled.

Tightening and testing High Tensile Friction Grip Bolts.

Before assembly, the contact surface, including those adjacent to the washers, shall be descaled or carry normal tight mill scale. They shall be free from dirt, oil, loose scale, burrs, paint (except priming paint) pits and other defects that would prevent solid seating of the parts.

**A. Field Connections C'td**

Bolts shall be assembled with approved hardened flat or tapered washers as required between the bolt head and nut and the softer mild steel.

When bearing faces of the bolted parts have a slope of more than 1 in 20 with respect to a plane normal to the bolt axis, square smooth bevelled washers shall be used to compensate for the lack of parallelism.

All bolts shall be tightened by the "Turn of Nut" method. This method shall generally be as approved by the Engineer to achieve in all bolts a minimum tension equal to the proof load.

**B. Grouting**

Unless otherwise detailed on the drawings, a space of not less than twenty (20) mm and not more than forty (40) mm shall be provided between undersides of column base plates and footings, and between all beam and roof truss bearings and concrete pads, etc.

After each column, beam, or roof truss has been wedged up to a line and level and fixed in position to approval, the space between footing or pad and the underside of the base plates or steel member shall be grouted with a mixture of Portland cement and approved washed sand.

The Portland cement and sand shall be thoroughly mixed to approval in equal proportions by volume with only sufficient water to produce a mixture of "damp earth" consistency and shall be used within twenty minutes of mixing. The caulking mixture shall be packed to approval into the space between base plate and foundation and protected from damage until set.

**PAINTING**

**C. Painting Material**

All paints are to be supplied by a Supplier approved in writing by the Architect.

Paints are to be delivered to the site or the Structural Contractor's works in the original containers as supplied by the Manufacturer with seals unbroken and are to be used in strict accordance with the manufacturer's instructions.

## **STRUCTURAL STEEL (CTD)**

### **PAINTING (CTD.)**

#### **A. Painting Material C'td**

Manufacturer's representatives are to be free to visit the site and inspect materials and workmanship, and if necessary take samples of materials for laboratory analysis.

Paints are not to be thinned unless instructed by the Engineer.

No external painting is to be carried out during rain or when rain is likely to occur before the paint has had time to dry. All surfaces are to be dry and free from moisture at the time of painting.

#### **B. Preparation for painting**

All structural steel shall be thoroughly scraped and wire brushed to remove mill scale and rust. Dirt and grease or oil shall be washed off with white spirit and the steel allowed to dry.

#### **C. Painting process**

A first coat of Red Oxide Zinc Chromate primer shall be applied in the works immediately the steel preparation has been completed. A minimum of 24 hours shall elapse before the steel is moved from its position whilst painting has been carried out. After delivery to site, the steel shall be carefully examined and all areas where the priming coat has been damaged and/or where rust has developed shall be washed with white spirit and wire brushed as necessary and further priming coat as for the first applied to completely cover the damaged areas.

During erection, surface of steel which are to be in contact shall be painted with one further coat of primer as previously described and the surfaces brought together whilst the paint is still wet.

Bolts, Nuts, Washers, etc., shall, after erection is completed to approval, be carefully degreased with white spirit and painted as for steelwork.

Steel purlins and sheeting rails shall generally be painted as for steelwork except for purlins and rails supporting aluminium sheeting when the following specification shall be used.

1st coat - Red Oxide Zinc Chromate Primer 2nd Coat

- An approved Aluminium paint

The interiors of mild steel gutters shall be prepared as previously described for structural steelwork.

## **WALLING**

A. Requirements of the following British Standards and Codes of practice and equivalent Kenya Bureau of Standards shall be observed:-

### **British Standard**

B.	B.S. 3921 part 2	Bricks and blocks of fired brickwork clay or
C.	B.S. 1180	Concrete bricks and fixing bricks
D.	B.S. 4729	Shapes and dimensions of special bricks
G.	B.S. 1200 table 1 and 2	Sand for mortar for plain and reinforced brickwork, block walling and masonry
H.	B.S. 890 part 2	Building limes (Hydrated lime)
I.	B.S. 4721	Ready Mixed lime: sand for mortar
J.	B.S. 4887	Mortar plasticizers
K.	B.S. 4551	Methods of testing mortars and Specification for mortar testing sand
L.	B.S. 743	Materials for damp proof courses
M.	B.S. 1178	Milled sheet lead and strip for building purposes
N.	B.S. 1243 Fig. 1	Metal ties for cavity wall construction (vertical twist type)

### **Codes of Practice**

P.	C.P. 121 part 1	Walling
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## WALLING (CTD.)

### Codes of Practice (C'td.)

- A. C.P. 121, 202 part 1 Masonry - rubble walls
- B. Walls and partitions of blocks and slabs C.P. 122
- C. **NOTE:** The contractor's attention is drawn to Section "G" of the Standard method of Measurements
- D. **WATER** Shall be as specified in "concrete work"
- E. **CEMENT** shall be as specified in "concrete work"
- F. **SAND** Shall be as specified in "concrete work"
- G. **Lime** shall be non-hydraulic quick lime or hydrated limes for cement/lime mortars and comply with B.S. 890, semi-hydraulic class "B" calcium limes.
- H. **Concrete blocks** shall be solid or hollow blocks to comply with the relevant standard as previously mentioned and shall be solid hard, true to size and shape and sharp arises in accordance with Ministry of Works Standard Specification for Metric sized concrete blocks for building dated September, 1972.

They shall be obtained from an approved manufacturer or manufactured on site in approved block making machines. The mix used shall be less than (1:9) by volume and maximum size of aggregate shall be 12mm size. The blocks on removal from the machine shall be laid on edge or racks under sheds erected by the Contractor and left for 3 days during which period they shall be kept constantly wet.

After this initial period they shall be placed on edge in the open racks and protected by sacking or other approved covering and kept wet for further 5 days.

Thereafter the blocks shall be left in the same position without wetting for a further 20 days. No blocks shall be used in the Works until 28 days old and until samples have been tested and approved by the Engineer.

The Contractor shall ensure that the blocks are stocked separately in their respective categories in the structure in the position shown on the drawings.

- A. Stone for walling shall be good hard local stone equal in standard and quality to "Nairobi Blue Stone". Stone shall be squared, dressed and joints chisel dressed on the face. Stone to receive render, shall be so dressed to reduce dubbing-out to a minimum.

The coursed stone shall not be less than 150mm deep and 305mm long. All stones shall be laid on their natural or quarry bed lines.

## **MORTARS**

- B. Gauged mortar shall be used for walling and shall be composed of one part Portland cement to two parts non-hydrated lime and nine parts sand. (1:2:9) measured in gauge boxes and thoroughly mixed dry preferably with an approved mechanical mixer or on a clean and approved mixing platform with water added afterwards until all parts are completely incorporated and brought to a proper consistency and used within the hour of mixing.

No partially or wholly set mortar will be allowed to be reused or re-mixed.

- C. Cement Mortar Cement mortar (1:3) shall be composed of 42.5 Kgs. of Portland Cement to 0.085 cubic metres of sand. The cement mortar (1:6) shall be composed of 42.5 Kgs of Portland cement to 0.17 cubic metres of sand measured in specially prepared gauge boxes and thoroughly mixed in an approved mechanical mixer or mixed dry until all parts are completely incorporated and brought to a proper consistency. The use of rettempering of wholly or partly set mortar will not be allowed.
- D. All Stone shall be wetted before laying and the top of walling where left off, shall be wetted before re-commencing buildings, walls to be kept wet minimum 3 days after building.
- E. All blocks and walling to be kept true, plump and level with all perpend vertical and in line and work shall not rise more than three courses above the adjoining Work and all such rising are to be properly racked back.
- F. The Contractor must provide proper setting out or storey rods so that all work is coursed to cills, lintels and underside of beams thus reducing horizontal cutting to a minimum.
- G. All walling must be carefully bonded together so that no vertical joint in any one course is nearer than 10mm from the joint in the course above or below.



## WALLING (CTD.)

### MORTARS (CTD)

- A. All walling must be bedded in solid mortar with cross-joints well flushes up at each course as the work proceeds.
- B. To walls less than 190mm thick the reinforcement shall consist of gauge 24 "Expamet" wall reinforcement horizontally in bed joints every alternate course and lapped over "Expamet" from column where abutting same.
- C. Rates for walling are to include for reinforcement strips.
- D. Labours on stone walling stated in the Standard Method of Measurement as to be included shall be deemed to include for redressing the beds of stones on site to the minimum extent necessary to obtain uniformly of coursing and for any redressing of faces necessary to bring the thickness within the tolerance specified.
- E. Rates for walling of any description are to include for all expenses in connection with the provision and conveyance of samples of walling materials to the Ministry of Works, Materials Testing Laboratory, Kenya.

A. The requirements of the following British Standards shall be observed:-

**British Standards**

B. B.S.1162, 1410                      Mastic asphalt for tanking and damp-  
And 1418                                  proof courses (Natural rock asphalt  
Aggregate)

C. B.S.988, 1097,                      Mastic asphalt for tanking and damp  
1076 and 1451                          course (limestone aggregate)

**Code of Practice**

D. C.P.102                                  Protection of building against water from ground

E. Note:                                  The Contractor's attention is drawn to Section "J" of the Standard                      Method                      of  
Measurement.

All asphalt shall comply with the requirements of subsections B.S. 1418 and 1097 and C.P. 102 specifically dealing with tanking operations.

**F. Mastic asphalt for tanking**

- (i) The Contractor shall arrange for the work to be executed by an approved Sub-Contractor. No other Sub-Contractor will then be permitted to be employed without the written authority of the Architect.
- (ii) Tropicalised Mastic Asphalt is to comply with B.S. 1097/1966 and B.S. 1418 applied in three coats, in the case of horizontal work on and including sheathing felt; in the case of vertical work without. The third and final coat is to have a polished finish. All tanking operations to comply with C.P.102.
- (iii) The Contractor is to take all necessary precautions to protect finished work, and it is his responsibility to ensure that no damage occurs to surfaces during subsequent building operations or any reasons whatsoever.

G. For tanking to basement lay over the whole area of the basement concrete floor horizontal damp proof course in three thicknesses laid with 150mm laps to a course of foundations on outer face of wall to cement with vertical damp proof course with a double angle fillet.

**ASPHALT WORKS (CTD.)**

- A. Vertical face of basement walls shall then be covered with damp proof course applied in three thicknesses with 75mm laps to a total thickness of not less than 20mm.
- B. Vertical damp-proof course shall be carried up to a minimum height of 150mm above ground level and connected at bottom to horizontal damp-proof coursed in walls with double fillet formed on top of foundations to form a complete tank to basement.
- C. All junctions between horizontal and vertical asphalt shall be warmed, cleaned and properly made good with two-coat angle fillets at all internal angles.
- D. Properly made good joints between lining pits and horizontal damp-proof course to floor shall be effected and double angle fillets to all internal angles maintained.
- E. It is essential that continuity of tanking be maintained. Care must be exercised to see that such continuity is not destroyed by stanchions, pits, sumps etc.
- F. Protect asphalt by the application of loading coats immediately each section of work is complete. Pumping of any water gaining access shall be continued until not only the asphalt work is complete, but also until loading coats are thoroughly set.
- G. If the water level is near, such water level shall be maintained at not less than 0.3m below the level of the base concrete during the progress of tanking work to avoid the application of asphalt on wet surfaces and this pumping operation shall be maintained until the temporary sump has been filled and sealed.

## **ROOFING**

### **BITUMEN BUILT-UP FELT ROOFING**

#### **A. Bitumen Felt**

Bitumen felt where specified shall be to B.S. 747 part 2 and in addition shall be suitable for use on tropical conditions and from approved manufacturers. Types of bitumen felt shall be as specified on the working drawing.

#### **B. Fibre Base Bitumen Felt**

Shall comply to B.S. 747 part 2, Class 1, when fibre based bitumen felt is specified the roofing shall consist of two self-finished bitumen felt under layers to B.S. 747, Class IC each weighing 13 Kg per 10 M<sup>2</sup> and one mineral surfaces bitumen felt to same B.S. Class 1E weighing 36 Kg per 10 M<sup>2</sup>. All layers shall be completely bonded to one another and to the base with approved bitumen bonding compound or hot bitumen.

#### **C. Asbestos Base Bitumen Felts**

Asbestos base bitumen felts where specified shall comply with B.S. 747 Part 2, Class 2. Asbestos base bitumen felt when specified shall consist of two self-finished bitumen asbestos under layers to B.S. 747, Part 2, Class 2C each weighing 13 Kg per 10 M<sup>2</sup> and one mineral surfaced bitumen asbestos to same B.S. Class 2 E weighing 36 Kg per 10 M<sup>2</sup>. All layers shall be completely bitumen bonding compound or hot bitumen.

#### **D. Edge Trim**

Edge trims shall be of either aluminium to B.S. 1470 or 24 gauge galvanised mild steel sheet to B.S. 3033 of the sizes and patterns specified or shown on the drawings, and shall be approved gauges and manufacturer.

#### **E. Concrete Paving Tiles**

Concrete paving tiles shall comply with B.S. 1197, Part 2, nominal size 225 x 225 x 20mm, thick or other approved sizes. Tiles shall be bonded to built-up roofing with hot bitumen bonding compound but joints shall normally be 13mm wide, filled with hot bitumen.

#### **F. Cement**

As specified in the concrete section.

#### **G. Sand**

As specified in concrete section.

#### **H. Coarse Aggregate**

Shall be as specified in concrete section. However, when mineral aggregate chippings are specified, they shall be of approved colour, hard, angular and of a size to pass a 10mm sieve and be retained on a 6mm sieve.

## **ROOFING (CTD.)**

### **BITUMEN BUILT-UP FELT ROOFING (CTD.)**

#### **Coarse Aggregate C'td**

Chipping shall be bonded over top layer of flat roofs with hot bitumen dressing compound. Chippings shall be bedded on the roof at the rate of 16Kg/M<sup>2</sup>.

**A. Bitumen Primer**

Bitumen primer for priming base shall be of either cut-back bitumen, maximum volatile solvent 60% by weight or bitumen emulsion of a type recommended by the manufacturer for priming purposes.

**B. Bitumen Bonding Compound**

Bitumen bonding compound for bitumen felt shall be to B.S. 3940m Type B and shall be of approved manufacturer.

**C. Bitumen dressing compound**

Bitumen dressing compound for bedding chippings shall be cutback bitumen to B.S.D. 3690 Grade 25.

**D. Approved Sub-Contractor**

Bitumen felt roofing work, unless otherwise directed, shall be carried out by an approved Sub-contractor. Laying shall be carried out generally in accordance with C/P.144.101. Bitumen built up felt roofing shall be guaranteed for one year from the end of the defects Liability period and such guarantee shall be given to the Architect in an approved form.

**E. Falls**

Before laying bitumen felt, the Contractor shall check and certify that the roof is laid to the correct falls. Minimum falls are:-

- |    |                                 |      |
|----|---------------------------------|------|
| 1. | For mineral surfaced felt roofs | 1:30 |
| 2. | For protected felt roofs        | 1:60 |

**F. Preparation of Base**

Before laying bituminous roofing felt, the Contractor shall ensure that the base is dry and clean to the approval of the Architect. All pipes and outlets passing through the roof, formation of grooved, chases fillets and gutters must be completed and approved before any roof covering commences being laid. When reinforced wood wool slabs form roof base, all joints shall be filled flush with approved strips.

Minor movement joints shall be formed with 150mm strip of damp proof course laid over joints and bonded at edges only. Movement joints shall be formed with rubber or plastic piping inserted into joints or with twin kerbs all in general accordance with Code of Practice. 144 part 3.

## **ROOFING (CTD.)**

### **A. Laying Bitumen Felt Sheet**

Hot bonding compound shall not be heated to more than 220 degrees centigrade and shall be laid at 200 degrees centigrade.

### **B. Partial Bonding**

Partial bonding shall not be allowed without prior written approval of the Architect.

### **C. Full Bonding**

The first and subsequent layers of bituminous roofing felt shall be laid with a minimum of 50mm, side laps and 75mm end laps. The first layer shall be fully bonded with bituminous bonding compound in similar manner to the first layer and to one another. Bitumen bonding compound shall be rolled to remove any trapped air and surplus or squeezed out bonding compound shall be wiped clean.

### **D. Upstand and Flashings**

Upstands shall be at least 150mm high and must be fully bonded to the structure. Top edges of flat flashings shall be tucked into chase, wedged at 600mm centres and fully bonded to upstand. Ends of upstands and flashings shall be lapped at least 100mm and shall be sealed and bonded with hot bonding compound. The chase shall thereafter be pointed in cement mortar (1:3)

### **E. Felt Eaves and Verges**

When felt eaves and verges are specified on the drawings, the Contractor shall nail one edge of 225mm wide felt strip at 150mm centres to the roof base. The felt strip shall then be folded to form welt 50mm deep and sealed with bonding compound. The remainder of the felt shall be fully bonded to the base and covered with full thickness of built up roofing.

Pipes, Vent pipes, Etc., piercing the roof shall be primed with bitumen priming solution and a collar of hot bitumen shall then be formed up round them 45deg. Roofing felt shall then be dressed over the hot bitumen collar to the pipes etc., and secured tight with stout copper wire. Such collars shall not be less than 150mm high and shall be made completely water tight.

## **ROOFING C'TD**

### **ASPHALT ROOFING**

#### **F. Rainwater Outlets**

Built up roofing felt shall be carefully dressed into all rain water outlets and sealed in hot bitumen bonding compound. The Contractor shall seal completely and make tight, all such outlets to the approval of the Architect.

#### **G. Protection**

After built up felt roofing has been complete, the Contractor, shall protect it from any damage whatsoever and no storage materials on the roof will be allowed. Mixing of concrete mortar or heating materials on the roof will not be permitted whatsoever.

#### **A. Butyl Sheet Damp Roofing**

Butyl sheet shall be laid in accordance with the manufacturers printed instructions  
*Limited* and shall be bonded in hot bitumen

*M/S Dunlop Kenya*

#### **B. Generally**

The covering shall be executed complete by an approved roofing Sub-Contractor.

#### **C. Asphalt Roofing**

The mastic asphalt to be used shall comply with B.S. 988/1966 Table 3 column III Tropical Mastic Asphalt laid in two coats to a total thickness of 20mm on and including black sheathing felt.

#### **D. Felt Underlay**

The underlay shall be impregnated flax sheathing felt complying with B.S. 747 (Type 4A) (I) and shall be supplied by the Sub-Contractor and with 75mm laps at joints.

#### **E. Preparation of Surfaces**

All surfaces to receive asphalt are to be dry and roughened, grooved or otherwise prepared and finished to the entire satisfaction of the Architect.

**A. Melting Asphalt**

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

**B. 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.

**C. Laying Asphalt**

Asphalt shall be laid in bays generally not exceeding 2m 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, stains on the asphalt work shall not ring hollow over any parts of its surface.

Joints in all asphalt work shall be carefully made and complete fusion obtained to make them watertight joints shall be made around pipes passing through roofs etc.

**"Resincot" Pre-painted mild steel sheeting G.C.I.**  
**Sheeting**

**D. Generally**

Pre-painted corrugated mild steel sheeting shall be No.24 Gauge of best quality in accordance with B.S. 3083, and shall conform to Kenya Bureau of Standards KS06-02: Part II 1976.

**E. laps**

Sheets shall be laid with 150mm end laps and side laps of 30mm corrugations on the side away from the prevailing wind.

**F. Fixing to steel and timber**

The sheets shall be fixed to mild steel angle purlins with 6mm diameter pre-painted mild steel hook bolts 50mm longer in the shank than the depth of the steel purlins to which they are fixed each with one diamond shaped bitumen washer one pre-painted steel washer, and one pre-painted steel nut. The sheets shall be fixed to timber purlins by using 14 gauge drive screws with bituminous felt washer backed by a cranked diamond shaped aluminium washer.



## **ROOFING (CTD.)**

### **A. Holes**

Holes for bolts or screws shall be punched from the inside of the sheet and through the ridges of corrugations not in the hollows. A clearance of 0.80mm on the bolt or screw must be allowed.

### **B. Ridges, Valleys, Flashings**

The ridges, valleys and flashing etc., shall be formed of No.24 gauge pre-painted mild steel sheeting of a quality equal to the sheeting on each side at 450mm centres maximum with 6mm diameter seam bolts 20mm long each with one diamond shaped bitumen washer one pre-painted steel washer and one pre-painted steel nut.

Ridges and valleys shall be not less than 375mm girth.

### **C. Bolts and Screw**

All fixing bolts and screws shall comply with B.S. 1494.

### **D. Square Abutments**

At square abutments the last two corrugations of the corrugated iron sheets next to walls shall be flattened and turned up against wall and covered with 24 gauge pre-painted sheet iron apron flashing.

### **E. Bat proofing**

Bat proofing shall consist of "Perspex" or other equal and approved translucent plastic corrugated sheetings.

## **TILED ROOFING**

### **F. Concrete single-pin tiles and fittings**

Shall comply with B.S. 473 and 550: Part 2 group B. Tiles are to be 381 x 229mm nominal unless otherwise specified.

Surface coating when specified must be firmly bonded. A full range of fittings are available from the manufacturer and must match the tiles with which they are laid.

## **TILED ROOFING**

### **Concrete single-pin tiles and fittings C'td**

- A. Mangalore Tiles where specified they shall be interlocking clay tiles as manufactured by M/S Clayworks Ltd. or other equal and approved. They shall be uniform in size, shape and colour, hard, well burnt and free from defects.

They shall be laid in accordance with the manufacturer's printed instructions.

Polythene shall conform to B.S. 3012: 500 gauge and of approved manufacture.

- B. Nails for underlay: to B.S. 1202: Part 1
- C. Tying wire - to B.S. 443, 1.6mm diameter (16 S.W.G.) iron wire.

### **D. HERTALAN EPDM SHEETING SYSTEM**

Hertalan EPDM rubber sheeting roofing work, unless otherwise directed shall be laid by M/S Rooftech Kenya Limited P.O. BOX 75282, Nairobi, Telephone No.725697, Nairobi. Laying shall be carried out in strict adherence of manufacturer's instructions.

### **E. Preparation of Substrate**

Before laying Hertalan EPDM sheeting, the Contractor shall ensure that the surface is cleaned of all loose particles such as stones, gravels, nails, and free of sharp-edged foreign materials etc. and that the substrate is dry and clean oil/free to the approval of the Architect. All pipes and outlets and gutters must be completed and approved before any Hertalan EPDM sheeting is laid.

When reinforced wood wool slabs form roof base, all joints shall be filled flush with approved strips.

## **ROOFING (CTD.)**

### **A. Hertalan EPDM**

The Hertalan EPDM sheeting shall be free from pinholes and blisters. The edges of the sheeting shall be straight with a sharply defined cut.

When rolled out on a flat horizontal surface, the sheeting shall exhibit no wrinkling. The sheeting shall show no porosity between plies. Neither shall porosity develop when sheeting is heat-aged at 121 deg. C for a period of 7 days.

The sheeting shall be such that when bonding adhesive, type KS 143 or other approved adhesive is applied to the four edges of a one square metre piece of sheeting, these edges shall not ripple or deform in any way so that a similar one square metre of sheeting, prepared in same way, can be totally bonded along all four edges without the formation of "fish mouths". A period of 20 minutes (maximum) is allowed for the adhesives to dry.

### **B. Upstands and Flashings**

Upstands shall be at least 300mm high and must be fully bonded to the structure. Top edges of EPDM flashing shall be tucked into chase, wedged at 600mm centres and fully bonded to upstand. Ends of upstands and flashings shall be lapped at least 100mm and shall be sealed and bonded. The chase shall thereafter be pointed in cement mortar (1:3).

### **C. Pipes, Vent Pipes, Flues etc. Piercing the Roof**

Pipes, vent pipes, flues etc. piercing the roof shall be rapped with Hertalan EPDM rubber using Conta adhesive and finally sealed with KS 87.

### **D. Rainwater Outlets**

Hertalan sheeting shall be dressed around a PE-outlet-pipe with clamping tube. For details check working manual sheet No. 2.61.2.9g.

### **E. Protection and Painting**

After the Hertalan EPDM single ply system has been installed, two coats of rubberized paint should be applied to give a grey finish. The Contractor should then protect it from any damage whatsoever and no storage of materials on the roof will be allowed. Mixing of concrete mortar or heating materials on the roof will not be permitted under any circumstances.

**A. Guarantee**

The Nominated Sub-Contractor shall be required to give a ten-year guarantee on Hertalan EPDM sheeting roofing.

**VANDEX WATER-PROOFING**

**Specification for Waterproofing Concrete Structures**

**B. Preparatory work**

All areas shall be examined for structural defects.

Shrinkage cracks exceeding 0.33mm (0.01”) in width shall be cut or chiselled out at least 10mm wide and 15mm deep and washed out. Then a slurry coat of VANDEX Super shall be applied. Following this the groove is filled with a mixture of 3 to 1 sand and cement in stiff mortar consistency.

Over-poured forms, around columns and/or inverted beams, form grooves shall be cleaned out, rinsed with water and slurry coated with Vandex super. These grooves shall then be filled flush with a mixture of 3 to 1 sand and cement.

Any honeycombed concrete found in walls and/or inverted beams/columns shall be raked out to solid concrete, washed out with water, coated with a slurry coat of Vandex Super and filled out flush with a 3 to 1 mixture of sand and cement.

**C. Cleaning**

Concrete surfaces must be free from all form scale, laitance, algae growth, mould, oil, curing agents and any other foreign materials. The finish of the surfaces shall be a brush finish.

All laitance (cement scum) shall be removed as soon after pouring as possible.

**D. Pre watering**

Concrete shall be thoroughly wetted down in order to achieve the penetration of the activated chemicals, and thereby starting the crystalline growth throughout the capillary tracts.

All free lying water must be removed from surface, leaving the concrete in a damp condition just prior to Vandex application

**ROOFING (CTD.)**

## **VANDEX WATER-PROOFING C'TD**

### **A. Mixing**

Vandex super is mixed to slurry consistency. Add approximately 0.8 parts water to 2.0 parts powder or 9 litres to 25Kg when mixing full bags, and mix thoroughly until the mixture is free from lumps.

### **B. Application**

The application should be as even as possible trying to avoid thick and thin spots. Areas applied too thick will not cure right and when drying cracks and subsequently peeling may form.

The second coat may be applied when the first coat has set and is not drawn off by the second coat.

### **C. Curing and protection**

Vandex applications must be protected against sun and rain. After the application is dry to the touch, cover with polyethylene sheet (hessian cloth) or wet sand for five days. If this is not possible, sprinkle with water several times a day for five days. Do not apply Vandex materials at temperature below 5 degrees C or on super cooled structures.

### **D. Additional information**

When concrete is poured in sections, it is recommended that each section is keyed. After keyed form is removed and just prior to pouring the next section the construction joint shall receive a slurry coat of Vandex Super (1.5Kg/sq.m).

This does not apply to control or expansion joints.

### **E. Master Hyseal 501**

Master Hyseal 501 chemical crystalline waterproofing to be applied strictly as directed by the Engineer.

### **F. Index Fidia Spunbond**

Index Fidia Spunbond polyester mineral surfaces waterproofing ditto.

## **CARPENTRY**

- A. The requirements of the following British Standards and Codes of Practice shall be observed:

### **British Standards**

- |    |                  |  |
|----|------------------|--|
| B. | B.S. 565         | Glossary of terms relating to timber and woodwork                                |
| C. | B.S. 1860 part 1 | Structural timber. Measurements of characteristics affecting strength (softwood) |
| D. | B.S. 4471        | Dimensions for softwood  |
| E. | B.S. 373         | Methods of testing small clear specimens of timber                               |
| F. | B.S. 1202 part 1 | Nails  |
| G. | B.S. 1579        | Connectors for timber  |
| H. | B.S. 4169        | Glued laminated structural members   |
| I. | B.S. 916         | Black bolts  |

### **Codes of practice**

- |    |   |   |
|----|---|---|
| J. | C.P. 112  | The structural use of timber  |
| K. | C.P. 98   | Preservative treatment for construction timber  |
| L. | <u>NOTE:</u>  | The Contractor's attention is drawn to Section "L" of the Standard Method of Measurement. |
| M. | <u>All timber</u> 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. |   |

## **CARPENTRY (CTD.)**

A. Timber used for carpentry shall be in accordance with the latest approved Grading Rules issued by the Government of Kenya. Timber used structurally shall comply with the requirements of the Export Grading Rules and also with B.S. 1860.

B. The following timber shall be used:

Podocarpus (podocarpus spp) Cedar  
(Juniperus Procera) Elgon Olive

## **TIMBER**

C. All timber as it arrives on site shall be inspected by the Contractor, and any timber found not to comply with the specification or not approved must be removed forthwith from the site and only timber which has been approved shall be used.

D. Tolerances shall conform to the following extracts from the Government of Kenya Grading Rules:-

Softwood Grading: - Strength Grades, first and second grades.

Undersize: All timber to be sawn by 1.6mm per 25mm of thickness and width. Not more than 3mm in thickness and not more than 6mm in width.

E. All timber shall be free of live borer beetle or other insect attack when brought upon on site. The Contractor shall be responsible to the end of maintenance period for executing at his own cost all the work necessary to eradicate insect attack of timber attacked or suspected to be attacked, notwithstanding that the timber concerned may have already been inspected and passed as fit for use.

F. Timber shall be seasoned to a moisture content of not more than 22%.

## TIMBER (CTD.)

- A. All carpentry timbers shall be treated with pressure impregnated "Celcure" or Tenalith" solution with a minimum wet retention of 5.46 KG. of dry salt per m3. If so required "charge sheets" issued after treatment with "Celcure" or "Tenalith" shall be submitted by the Contractor to the Architect for his retention. All out ends and other cut faces or timbers sawn after treatment shall be treated before fixing with "Celcure B" or "Wolmanol" solution brushed on.
- B. The Contractor's rates for such timber hereinafter must allow for the above treatment.
- C. All grounds shall be podocarpus or other light and approved hardwood.
- D. Nails shall comply with the relevant standard as above.
- E. Black bolts shall comply with B.S. 916. Rag bolts, coach screws and others shall comply with B.S 1494. Where used externally nails and screws shall be sherardized.
- F. Timber shall be delivered early to the site, stored under cover clear of the ground and protected from the sun and dampness.
- G. The Architect shall be given facilities and reserves the right for inspection of all works in progress whether in workshop or on site. The Contractor is to allow for testing of proto-types of special construction units and the Architect shall be at liberty to select any samples he may require for the purpose of testing i.e. for moisture content or identification, species strength etc., such tests will be carried out by the Forestry Department.
- H. The Contractor is to clear out and destroy or remove all cut ends, shavings and other wood waste from all parts of the building and the site generally, as the work proceeds and at conclusions of the work.

This is to prevent accidental borer infestation and to discourage termites and decay.

- I. All carpentry's work shall be accurately set out in strict accordance with the Drawings and shall be framed together and securely fixed in the best possible manner with properly made joints, all brads, nails, and screws etc., shall be provided as necessary directed and approved and the rates shall be deemed to allow for these.
- J. All carpenter's work shall be left with sawn faces except where specified to be wrot.



## **CARPENTRY (CTD.)**

- A. All timber shall be as long as possible in order to minimise joints. Where joints are unavoidable surfaces shall be in contact over the whole area of the joint before fastenings are applied.

No nails, screws and bolts are to be fixed in any split end. If splitting is likely, or is encountered in the course of the work, holes for nails are to be prepared at diameter not exceeding 4/5th of the diameter of the nails. Clenched nails must be bent at right angles to the grain.

- B. Lead Holes are to be bored for all screws. When the use of bolts is specified the holes are to be bored from both sides of the timber and are to be of the diameter D/16 where D is the diameter of the bolt. Nuts must be brought up tight but care must be taken to avoid crushing of the timber under washers.

## **JOINERY**

- A. The requirements of the following British standards and Codes of practice shall be observed:-

### **British Standards**

B.	B.S. 565	Glossary of terms relating to timber and woodwork
C.	B.S. 4471	Dimensions for softwood
D.	B.S. 1186 parts 1+2	Quality of timber and workmanship in joinery
E.	B.S. 373	Methods of testing small clear specimen of timber
F.	B.S. 4512	Methods of test for clear plywood
G.	B.S. 1142 part 3	Fibre building board (Insulation board softwood)
H.	B.S. 3444	Block board and laminated board
I.	B.S. 459 part 1	Panelled and Glazed wood door
J.	B.S. 1455	Plywood manufactured from tropical hardwoods
K.	B.S. 3794	Decorative laminated plastics sheet
L.	B.S. 459 part 2	Flush doors
M.	B.S. 459 part 3	Fire check flush doors and wood and metal frame (1.5. hour and 1 hour types)
N.	B.S. 1567	Wood door frame and linings
O.	B.S. 584	Wood trims (softwood architrave's skirting, quadrants etc)

### **British Standards**

- |    |                 |  |
|----|-----------------|--|
| A. | B.S. 1210       | Wood Screws  |
| B. | B.S. 1494 part2 | Fixing accessories for building purposes (bolts, screws, staples etc.) |
| C. | B.S. 4174       | Felt tapping screws and metallic drive screws                          |

### **Codes of Practice**

- |    |   |   |
|----|---|---|
| D. | C.P. 201  | Timber flooring   |
| E. | C.P. 201 parts 1+2  | Flooring of wood and wood products  |
| F. | C.P. 151  | Doors and windows including frames and linings  |
| G. | NOTE:   | The Contractor's attention is drawn to Section "M" of the Standard Method of Measurements |
| H. | <u>The timber for joinery</u> shall be as specified in the Export Timber Ordinance of 1951 and obtained from an approved sawmill. All such timber shall be Prime Grade and reasonably straight grained and shall be purchased immediately the Contract is signed and is to be open stacked for such further seasoning as may be required. |   |

Timber which in the opinion of the Architect does not satisfy the specification in character or condition is not suitable for the requirements of the work because of the blemishes it contains shall not be used.

#### **I. The following timber shall be used:-**

Podocarpus Mvuli  
Cedar Elgon Olive  
Camphor Mahogany

## **JOINERY (CTD.)**

- A. All timber shall be wrot by machine dressings non exposed faces and machine marks shall be removed with hand plane and sanded out, unless otherwise specified.

The dimensions and thickness stated in the Bills of Quantities are the finished size (unless otherwise stated) and the Contractor will allow for all necessary waste.

- B. The joinery shall be worked strictly in accordance with detail Drawings, and is to be framed up and put together as soon as possible and stored in the drying room, 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, warp, wind or deflect unduly before the end of the maintenance period of the Contract, the work is to be taken down and rectified at the Contractor's sole expense.

- C. Tolerance in thickness shall conform to the following extracts from the Government of Kenya Grading Rules:

Hardwood Grading: (First and Second Grades)

The following tolerances in thickness will be admitted:-

- (i) 1.6mm over size on pieces up to 25mm in thickness
- (ii) 3mm over size on pieces over 25mm and up to 51mm in thickness
- (iii) 6mm over size on pieces over 51mm in thickness undersize will not be permitted.

Softwood Grading: Appearance Grades (first and Second Grades) Undersize not allowed.

Oversize: All timber to be sawn oversize by 1.6mm per 25mm of thickness and width. Not more than 3mm in thickness and not more than 6mm in width.

- A. Seasoning of timber shall be to moisture content of not more than 15%.
- B. Pressure impregnation treatment shall be as for "Carpentry".
- C. Where joinery is described as screwed this is deemed to include sinking the head of the screw and pelleting with similar timber, and to grain in with the finished joinery.
- D. All hardwood joinery shall be finished for oil paint, unless otherwise stated.
- E. The rates shall be deemed to allow for all nails and screws and fixing all labour cuttings, notching, halving, morticing, tenoning and wedges except where otherwise provided.
- F. All work described as plugged shall be fixed with screws to plugs formed by drilling concrete walls, etc., with the proper tool of suitable size at 750mm spacing and filling the holes completely with "Phil plug" rawl plastic or rawl plugs in accordance with the manufacturer's instructions. Alternatively and where so agreed by the Architect, hardwood dovetailed fixing slips in preservative and cut and primed or bedded in cement mortar (1:3) may be used.
- G. The rates are to allow for all surfaces of joinery where in contact with walling or plaster, or where otherwise unexpected, being treated before fixing with two coats of approved wood preservative.
- H. Laminated plastic sheeting shall be "Formica" manufactured by Thomas de la Rue and Co. or other equal and approved, 1.6mm thick and accurately fixed with approved typed waterproof impact adhesive and in the colours selected by the Architect.
- I. Blockboard shall comply with the Standard as mentioned above.
- J. Plywood shall comply with the standard as mentioned above. Bond M.R. Birch faced both sides unless otherwise stated.
- K. Fibre board shall be 12.7 "Celotex" or other equal approved softboard.

## **JOINERY (CTD.)**

- A. **All joiners' work** shall be accurately set out and framed together as soon after commencement of the building as is practicable but not to be wedged up or glued until the building is ready for fixing same. Any portions that warp, wind or develop shapes or other defects within the maintenance period shall be removed and new fixed in their place together with other work which may be affected thereby, all at Contractor's expense.

All work shall be properly mortised, tennoned, housed, shouldered, dovetailed, notched primed, bradded, etc., as directed and to the satisfaction of the Architect and all glued up with the best quality glue.

- B. Joints in joinery shall be as specified or detailed, and so designed and secured as to resist or compensate for any stresses to which they may be subjected. All nails strings, etc. are to be punched and puttied. Loose joints are to be where provisions for shrinkage are necessary; glued joints where shrinkage need not be considered and where conditions may be damp must be of the resin type. For non-load-bearing joints or where dry conditions may be guaranteed resin or organic glues may be used. All exposed surfaces for joinery shall wrot and all arises "cased off" by planing and sand papering to an approved finish suitable to the specified treatment.
- C. 3mm reduction of specified sizes will be allowed to each wrot face except in members 25mm thick or less or where, described as finished sizes in which case joinery shall hold up the full dimensions.
- D. In fixing all beads, fillets and small members shall be fixed with round or oval brads or nails well punched in and stopped. All large members shall be fixed with screws. Brass screws shall be used for fixing of all hardwoods, to the heads in and pelltated over with wood pellets to match the grain.
- E. Rates shall include for bedding frames, sills etc., in mortar or dressing surfaces of walls etc. in lieu.
- F. Round wood plugs shall not be used, and screws or plugs shall be spaced at 750mm centres.
- G. All fixed joinery which in the opinion of the Architect is liable to become bruised or damaged in any shall be completely cased and protected by the Contractor at his own expense until completion of works.
- H. Bottom edges of doors shall be painted or polished with two coats of approved primer before fixing.

## ALUMINIUM WORKS

### A. STANDARDS AND DIRECTIVES

All aluminium works are to be executed according to the valid standards, directives, government codes and building regulations, fire regulations and any other such applicable regulations as:-

DIN 107	-	Methods of testing windows; mechanical tests
DIN 1055	-	Design loads for buildings
DIN 1249	-	Flat glass for building construction
DIN 1745	-	Wrought aluminium and aluminium alloy plates, sheet and strip greater than 0.35mm thickness; properties, technical delivery conditions
DIN 1748	-	Wrought aluminium and aluminium-extruded sections; design, permissible deviations
DIN 1783	-	Strips, plates and sheets of aluminium and wrought aluminium alloys with thickness over 0.35mm, cold rolled; dimensions
DIN 4102	-	Fire behaviour of building materials and building components
DIN 4108	-	Heat insulation in buildings
DIN 4109	-	Noise control in buildings
DIN 4113	-	Aluminium constructions under predominantly static loading, static analysis and structural design
DIN 7863	-	Non-cellular elastomer glazing and panel gaskets
DIN 16935	-	Sheets of polyisobutylene used for damp-proofing
DIN 17611	-	Anodized wrought products of aluminium and aluminium alloys with layer thickness
DIN 17615	-	AlMgSi 0.5 precision profiles
DIN 18000	-	Modular co-ordination in building
DIN 18055	-	Windows; air permeability joints, water tightness and mechanical strain
DIN 18056	-	Window walls; design construction
DIN 18103	-	(Burglar resistant) Doors
DIN 18201	-	Tolerances in building; terminology, principles, application, verification
DIN 18202	-	Dimension tolerance; in building construction
DIN 18203	-	Dimension tolerance; precast /reinforced/ prestressed concrete
DIN 18335	-	Contract procedure for building works; general technical specification for steel construction works
DIN 18357	-	Contract procedure for mounting aluminium fittings
DIN 18358	-	Contract procedure for rolling shutter works
DIN 18360	-	Contract procedure for locksmith works
DIN 18361	-	Contract procedure for glazing works

## ALUMINIUM WORKS (CTD.)

### A. STANDARDS AND DIRECTIVES (CTD.)

DIN 18364 aluminium structures	-	Contract procedure for works for protection against corrosion of steel and
DIN 18540 joint sealants	-	Sealing of exterior wall joints in building construction using
DIN 18801	-	Steel construction in buildings; dimensioning, design, construction
DIN 18808	-	Steel structures consisting of hollow sections predominantly static loaded
DIN 55928	-	Protection of steel structures from corrosion by organic metallic coatings
VDI 2719	-	Sound insulation of windows or comparable British codes and standards
CP3	-	Code of basic data for the design of building
CP 118	-	The structural use of aluminium
CP 158	-	Windows and roof lighting
DD 22	-	Tolerance and fits for building
BS 1470 plate, sheet and strip	-	Wrought aluminium and aluminium alloys for general engineering purposes,
BS 1474 bars, extruded round tubes	-	Wrought aluminium and aluminium alloys for general engineering purposes,
BS 3987 architectural applications	-	Specification for anodic oxide coatings on wrought aluminium for external
BS 4873	-	Aluminium alloy windows, specification
BS 5950	-	Structural use of steelwork in building
BS 6262	-	Code of practice for glazing for buildings
BS 6375	-	Performance of windows
BS 6496	-	Specification for external architectural purposes etc.

The directives and guidelines of insulating glass suppliers. The guidelines of accident insurers for local authorities. The guidelines of window/facade system manufacturers.

## **ALUMINIUM WORKS (CTD.)**

### **A. ALUMINIUM**

Extruded aluminium profiles of alloy AlMgSi 0.5F22 in anodizing quality according to DIN 1748 and DIN 17615 are to be used, for anodized sheets ALMg1, for colour-coated ALMg1 or A199.5.

- 01 Special anodizing processes to be taken into account, if determined by the bill of quantities.
- 02 The aluminium system shall be capable of achieving different colours and finishes on the external/internal facade and within the same element.

### **B. STEEL**

Steel parts for anchoring or bracing must either be non-corrosive or galvanized. During mounting all necessary welding points have to be painted with cold zinc galvanizing.

### **C. SELECTION OF PROFILES**

All required sections are to be chosen according to foreseen application and data given by the system manufacturer. Thermally insulated outer and inner profiles must be continuously connected and shear-resistant by insulating bars.

The profiles must safely support all loads as described in DIN 1055. The effective moments of inertia given by the system manufacturer are to be considered when selecting the optimal profile. The principle of thermal break is to be respected in all points of construction. All thermally insulated profiles are determined by the groups of DIN 4108.

Ventilation and drainage of rebate base and front chamber must be foreseen in the aluminium construction system in order to drain off moisture to the outside. The insulating connection of outer and inner section must be water-proof and water-resistant without additional sealing if the connection uses the rebate or front chamber. When using insulating glass the ventilation of the rebate base is to be guaranteed as the insulating glass supplier specifies.

- 01 All minimum and maximum vent sizes and weights as listed in all B.S. profile system are binding.
- 02 The glazing guidelines of the insulating glass supplier and DIN 18056 determining the allowed deflection of mullions and transoms are to be observed.



## **ALUMINIUM WORKS (CTD.)**

### **A. PROFILE CONNECTIONS**

Corner cleats must have a cross section which corresponds to the interior profile contours. At the mitres a perfect sealing and gluing is required. In T-joints the seeping of water into the construction must be prevented by corresponding packing and elastic sealing.

### **B. VENT GASKETS**

All gaskets are to be inserted in order to fulfil the specific window requirements (type, building height etc.) permanently. The gaskets are to be exchangeable.

01                      Side hung, turn-tilt, bottom hung and double vent windows must have a middle gasket.

### **C. WIND LOADING**

The system shall be so designed to suffer no permanent distortion or other damage. Deflections of longer pane edge are not to exceed 1/250 for double glazed units and 1/200 for single glazing. When subjected to positive and negative pressures as determined by and in accordance with BSCP 3 Chapter 5 part 2.

### **D. THERMAL MOVEMENT**

The aluminium framework and glazing assemblies shall be constructed and installed in the prepared locations with sufficient tolerance and, where necessary, expansion joints incorporated within the couplings, to provide for expansion and contraction as will be caused by the climatic conditions and temperature changes, winter, summer, day to night, without buckling, distortion of joints, damage to the sealants or other detrimental effects over the temperature range - 15 deg. C. to 35 deg. C. The design shall accommodate, noiselessly, the thermal movement within the combination units and the curtain walling without distortion. Details shall be prepared based upon the dimensions at 20 deg. C. and take account of the ambient temperatures at the time of assembly and installation.

**A. DRAINAGE AND VENTILATION OF CONSTRUCTION**

All profile rebates where water or condensate could seep in are to be drained off and ventilated by wind-protected slots or through cavities to the outside.

The system shall incorporate an integral and internal condensate collection drainage channel to remove the condensate from within the assembly to the external drainage system.

Provision for the continuity of drainage from the transom to the mullion is to be provided. No

perforation of the internal structural members within areas of drainage will be permitted. All internal

section junctions are to be adequately sealed.

Transom members within sloped glazed areas shall permit water to drain from one area to another without inhibiting the flow and creating pooling.

**B. FITTINGS**

Construction systems of B.S. are to be assembled or completed by compatible system fittings as specified. Other fittings may be selected but only if fulfilling DIN standards.

- 01 If not specified in the bill of quantities all fittings except handle and hinges are to be concealed.
- 02 The fittings are to be attached in its rebates tension and pressure-proof. If required because of profile wall thickness screw connections need nuts and washers.

**B. GLAZING AND PANELS**

Glass supply and glazing is described separately for each position of the bill of quantities. 01

The glazing is to be executed by permanently elastic, EPDM-gasket.

- 02 Guidelines and directives of insulating glass suppliers are to be strictly followed.

## **ALUMINIUM WORKS (CTD.)**

### **GLAZING AND PANELS C'TD**

- 03 Supply and installation for fixed panels is always described in the position concerned.
- 04 All glass assemblies shall be tape sealed between the units and within the structural unit zone and prior to the installation of the external gasket and pressure plate.

#### **A. BUILDING DIMENSIONS**

The exact measurement must be produced by the tenderer himself on site.

01 If the client requests the construction to be ready for mounting before the measurement on site can be carried out the tenderer shall determine the assembly dimension together with the client taking into account the tolerance of the building according to DIN.

#### **B. WORKING DRAWINGS**

After award of contract the contractor must submit working drawings for specific positions and details as requested by the architect or resident engineer.

#### **C. INSTALLATION OF ELEMENTS**

The anchoring of all aluminium elements must neutralize all movements of structure and the elements attached without loading or stress the aluminium construction.

- 01 All mounting of aluminium elements is to be executed exactly in horizontal and vertical alignment according to the measurement points provided by the client.
- 02 All attachment accessories necessary for mounting are to be calculated by the tenderer.

If described in the bill of quantities some anchor rails for attachments will be provided or will be fixed to the structure. In this case the contractor is requested to provide a location plan of required anchoring in time.

- 03 All connecting means, e.g. screws or bolts, must be non-corrosive zinc plated steel.
- 04 All attachments to neighbouring building parts are to be considered when calculating the positions in the bill of quantities.

**A. GASKETRY AND SEALING**

Appropriate EPDM - gaskets or seals are to be inserted according to design, dimensions and its range of application. The gaskets or seals and their elasticity must fulfil all temperature requirements. The contractor shall ensure total alignment of the gasketry in all visible locations.

01 Permanent elastic sealing compounds on silicone or thiocol basis are to be applied for sealings. Joints within any area of the system are to be adequately bonded together to produce a watertight joint. The sealing must stick to the construction parts taking into account the shape of elements and the range of existing temperature without loosening when elements move caused by tension to be considered before. All guidelines or sealing compound suppliers are to be respected.

**B. ANODIC OXIDATION**

The aluminium profiles and sheets are to be anodized according to DIN 17611. Surface treatment, coating and protection is determined by the specifications as described in the bill of quantities.

01 After all of contract, the tone of colour is to be defined according to colour samples.

02 All visible fittings must suit the profile colour if available.

**IRONMONGERY**

A. The requirements of the following British Standards shall be observed:-

**British Standards**

B. B.S. 1227 part 1A Hinges

C. B.S. 2088 Performance test for locks

D. B.S. 2911 Letter plates

E. B.S.4112 Performance requirements for hardware for domestic furniture

F. NOTE: The Contractor's attention is drawn to Section "M" of the Standard Method of Measurement.

G. All locks and ironmongery shall be fixed with screws etc. to match, before woodwork is painted, handles shall be removed, carefully stored and refixed after completion of painting and locks oiled and left in perfect working order.

All keys shall be labelled with the door reference on labels before handing to the Architect on completion. All ironmongery shall be carefully protected until completion of the work and any damage is to be made good at the Contractor's expense.

- H. Rates shall allow for easing and adjusting all doors etc. and for lubricating all locks, hinges etc. and leave in perfect working order.
- I. Where descriptions fixing ironmongery include catalogue numbers, such items shall be obtained from the specified manufacturers if at all possible.
- J. Rates shall include for labelling all keys with door reference as directed by the Architect.

## **METALWORK**

- A. The requirements of the following British Standards and Codes of practice shall be observed:-

### **British Standards**

- B. B.S. 4 part 1 Structural steel, Hot rolled screws
- C. B.S. 4 part 2 Structural steel, Hot rolled hollow sections
- D. B.S. 325 Black cup and countersunk bolts and nuts
- E. B.S. 916 Black Bolts, screws and nuts
- F. B.S. 4174 Self tapping screws and metallic drive screws
- G. B.S. 405 Metal washers for general engineering purposes
- H. 1161 and Aluminium and aluminium alloy Sections  
Addendum for general engineering purposes
- I. B.S. 938 Metal ore welding of structural steel tubes
- J. B.S. 1856 Metal or welding of mild steel
- K. B.S. 729 part 1 Hot dip galvanised coating iron and steel articles
- L. B.S. 1474 Wrot aluminium and aluminium alloy
- M. B.S. 990 parts 1+2 Steel windows (Domestic and similar buildings)

### **Codes of Practice**

- N. C.P.499 Metal railings and balustrades
- O. C.P.117 Composite construction in structural steel and concrete
- P. C.P. 2008 Protection of iron and steel structures from corrosion
- Q. C.P. 3012 Cleaning and preparation of metal surfaces.

NOTE: The Contractor's attention is drawn to Section "P" of the Standard Method of Measurements.

**METALWORK (CTD.)**

- A. Iron and steel where galvanised shall comply with the requirements of B.S 729, part 1 entirely coated with fine fabrication by complete immersion in a zinc bath in one operation and all excess carefully removed.

The finished surfaces shall be clean and uniform.

- B. All work in aluminium shall comply with the requirements of the standard mentioned above.
- C. All smithing and bending shall be soundly and neatly executed care being taken not to overheat.
- D. All strap, bolts and similar work shall be forged neat and clean from the anvil.
- E. All welded connections shall be ground to a smooth finish and rates shall be deemed to allow for this.
- F. Steel windows shall comply with the requirements of the Standard mentioned above and shall be fixed in accordance with manufacturer's instructions.
- G. All mild steel except galvanised shall be cleaned of rust and scale, painted one coat red lead priming paint before deliver to site and the rates shall include for this.

**PLUMBING AND ENGINEERING INSTALLATIONS**

- A. The requirements of the following British Standards and Codes of practice shall be observed:-

**British Standards**

- |    |                |  |
|----|----------------|--|
| B. | B.S 416        | Cast iron spigot and socket soil, waste and ventilating pipes (sand cast and spun) and fittings. |
| C. | B.S. 2871 part | Copper and copper alloy tubes (for water, gas and sanitation)                                    |
| D. | B.S. 864 part  | Capillary and compression fittings of copper and copper alloy                                    |
| E. | B.S 1184       | Copper and copper alloy traps  |
| F. | B.S. 4576      | Unplasticised P.V.C. rainwater goods   |
| G. | B.S 3974       | Pipe supports  |
| H. | B.S 1494       | Fixing accessories for building purposes (gutter bolts, pipe brackets)                           |
| I. | B.S. 1010      | Draw-off taps and stop valves for water services (screw down pattern)                            |

J.	B.S 1212	part 1 & 2 Ball valves (excluding floats)
K.	B.S 2456	Floats for ball valves (plastic) for cold water
L.	B.S 1125	W.C flushing cisterns
M.	B.S 417 Part 1 & 2	Galvanised mild steel cisterns, covers tanks and cylinders
N.	B.S 2760	Pitch-impregnated fibre pipes and fittings
O.	B.S 1387	Steel cubes and tubulars
P.	B.S 4514	Unplasticised P.V.C. soil and ventilating pipe, fittings and accessories
Q.	B.S 3505	Unplasticised P.V.C. pipes for cold water services

### **PLUMBING AND ENGINEERING INSTALLATIONS (CTD)**

#### **British Standards (C'td.)**

A.	B.S 143 and 1256	Malleable cast iron and cast copper alloy, screwed pipe fittings
B.	B.S. 78 part 2 and	Cast iron spigot and socket pipes
C.	B.S. 1130	(vertically cast) and spigot and socket fittings
D.	B.S 1010 parts 1+2	Draw-off taps and stop valves for water services

#### **Codes of practice**

E.	C.P. 304	Sanitary pipework above ground
F.	C.P. 310	Water supply
G.	C.P. 305	Sanitary appliances

**NOTE** 01. The Contractor's attention is drawn to Section "Q" of the Standard Method of Measurements.

02. The whole of the work shall be executed by an approved licensed Sub- Contractor.

- H. Galvanised mild steel pipes and fittings shall comply with the requirements of B.S 1387 Class "B". The pipes shall be screwed and socketed and put together in hemp and red lead.

Pitched-fibre pipes shall generally comply with requirements of B.S 2760 and shall be obtained from approved manufacturers. The pipes are to be jointed with couplings and fixed to walls with clips, strictly in accordance with the manufacturer's instruction 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.

## FLOOR, WALL AND CEILING FINISHES (CTD.)

### A. Internal Lime Plaster

- i. To be applied in minimum two coats to finish not less than 12mm total thickness. The rendering coat shall be in the proportion of cement and sand (1:4) and the finishing coat not less than 1.50mm thick shall consist of fine sieved lime putty with 10% of cement thoroughly incorporated immediately before use, trowelled hard and smooth with a steel trowel and sprinkled with water during the process.
- ii. The first coat must be well scored to form a key and at least fourteen days must elapse between the completion of any portion of the rendering coat and application of the finishing coat.

B. External cement and sand rendering shall consist of cement and sand (1:4) applied in two coats and finished with a wood float.

C. If required the Contractor shall prepare samples of the screeds, pavings and plastering as directed until the quality, texture and finish required is obtained and approved by the Architect, after which all work executed shall conform with the respective approved samples.

D. All screeds and pavings shall be finished smooth, even and truly level, unless otherwise specified and paving shall be steel trowelled.

E. Rendering and plastering shall be finished plumb, square, smooth, hard and even and junctions between surfaces shall be perfectly true straight and square.

All work not found to be of satisfactory standard shall be hacked away and made good at the Contractor's expense.

F. Partially or wholly set materials will not be allowed to be used or re-mixed. The plaster etc., mixes must be used within two hours of being combined with water.

G. Granolithic topping is to be in two layers to the total thickness shown on the Drawings and the topping shall consist of one part coloured cement to two parts aggregate shall be 70% black trap and remainder approved local coloured stones.

Colours shall be as selected by the Architect.

Paving shall be rolled and trowelled to a dense even surface and rubbed down at completion, to a grit finished surface free from holes and blemishes. The paving shall be laid in squares divided by plastic strips anchored securely in the screed and having their top edge truly level with the finished floor surface. The granolithic work shall be laid and polished complete to the approval of the Architect.



## **FLOOR, WALL AND CEILING FINISHES (CTD.)**

- A. Wood block flooring shall comply with the requirements of B.S.1187 mentioned above and shall be dipped in a cold latex bitumen emulsion adhesive before laying. Any one package or bundle shall contain wood blocks of a single species, thickness, width length and type of manufacture only. The pattern shall be approved by the Architect.
- B. Wood parquet flooring shall comply with relevant standards and shall be laid using an approved adhesive in accordance with manufacturer's instructions.
- C. P.V.C. coverings shall satisfy the Standard mentioned above and shall be obtained from an approved manufacturer's agent. Floor tiles shall be Dunlop or other equal and approved. Rates shall include for two of an approved emulsion floor polish or other protective coating.
- D. Glazed wall tiles shall be cushion edged and satisfy the relevant Standard as mentioned earlier. Tiles shall be well soaked in water laid with straight horizontal and vertical joints painted in white cement and cleared down at completion.

Tiles joints of 2mm width shall be formed and filled with the redding mix but using very fine, well screened sand, care shall be taken that tiles are not over soaked and water sheen shall be avoided during fixing.

The fixed tiles shall be kept damp for 4 days. Tiles as splash backs to lavatory basins, sinks, and baths shall be fixed with necessary rounded-edge and corner tiles.

Rates for linear items shall allow for all special fittings and cutting at angles and intersections.

- E. Rates for insitu work shall allow for raking out joints walling or hacking of treating with an approved bonding fluid, hacking concrete to form key, dubbing out irregular surfaces of base to provide a finished surface in the same plane as the surrounding surface, cutting out cracks, making good and leaving the whole of the work sound and perfect on completion.
- F. Rates shall also allow for fair edges, whether square, splayed or rounded, arises, chamfered external angles not exceeding 25mm wide, rounded external angles not exceeding 25mm radius coved internal angles not exceeding 25mm radius, intersections to groins and the like, and for making good around pipe, brackets, floor spring boxes and all other items of a like nature.
- G. Rates for all linear items shall allow for all short lengths, angles, end and arrises, metres and intersections and the like.

A. Rates for all paving shall allow for adequate covering protection during the progress of the works to ensure that the floors are handed over in perfect condition on completion.

B. Rates for external rendering shall allow for work at any height and for any scaffolding, ladders, cradles etc. required.

C. Terrazzo pavings: Aggregate for terrazzo shall be good quality marble or other natural stone of similar characteristics, hard angular in shape, free from clay, iron oxide and other foreign matter, graded from 10mm to 6mm unless otherwise specified and without excessive content of fines or dust. The source of supply and the colour are to be approved by the Architect before bulk ordering.

Terrazzo flooring must be laid and finished by an approved specialist Sub-Contractor.

All base surfaces must be thoroughly cleaned to remove dust, dirt, rust, oil and loose material. Terrazzo

shall be laid in two courses as follows:

- (a) Base course: cement- sand screed 1:3, not less than 20mm thick, followed immediately by
- (b) Topping terrazzo mix as specified, not less than 20mm finished thickness.
- (c) Skirtings are to be 6mm thick on a screed not less than 10mm thick.

Terrazzo bays shall not be more than 1M2 and joints shall be formed with plastic or aluminium strips set out to an approved pattern. Strips must be carried through the backings screed and finish flush with the floor surface.

Tamp lightly immediately after laying and compaction trowel lightly, taking care to avoid excessive laitance on the surface. Not less than 3 days after laying, rough polish by an approved mechanical means using water. Grout with a fine mix reserved from the initial mix. Not less than 8 days after grouting, fine polish by an approved mechanical means using water to a texture approved by the Architect.

## **FLOOR, WALL AND CEILING FINISHES (CTD.)**

- A. Terrazzo floor tiles shall be to B.S. 4131 of approved manufacturer. The faces of tiles must be free from projections, depressions, flakes and crazes. The overall colour must be practically uniform in any one delivery. The facing level must not be less than 6mm thick after grinding.

Unless otherwise specified or approved by the Architect, tiles are to be 197mm x 197mm x 22mm.

- B. Mosaic finishes: Mosaic finishes shall comply with the requirements of B.S Code of practice CP 212 part 2.
- C. Quarry tile finishes: Quarry tile finishes shall comply with the requirements of B.S 1286
- D. Granite cladding and flooring: Granite cladding and flooring shall be strictly in accordance with the requirements of CP 202 and CP 298.

Flooring granite shall have an abrasion factor not higher than 11%.

The exposed surfaces shall be finished in accordance with an approved sample at each situation.

## **GLAZING**

- A. The Contractor's attention is drawn to Section "T" of the Standard Method of Measurements and the requirements of the following British Standards and Code of Practice shall be observed:-

### **British Standard**

- B. B.S 952                      Glass for glazing
- C. B.S. 544                      Linseed oil putty for use in wooden frames

### **Codes of Practice**

- D. C.P. 152                      Glazing and fixing of glass for buildings
- E. The whole of the glass shall be of the best quality and be free from bubbles, specks, waves flaws or any other defects and shall comply with the requirements of the standard mentioned above.
- F. All glass is to be accurately cut to fit easily into rebates. Glass shall be well puttied and sprigged with copper springs.
- G. Glazing to wood frames shall be secured with glazing beads fixed with brass caps and screws and wash leather or approved "Neoprene" beading strips. Putty for glazing in wood frames shall be composed of pure linseed oil and powdered whiting, free from grittiness all in accordance with the standard mentioned above.
- H. Glazing to metal frames shall be with clips, glass shall be properly backputtied and the front putty finished neatly and cleanly.

Putty for glazing in metal frames shall be quick hard setting tropical putty specially manufactured for use with steel windows.

Rebates of metal frames receiving glass shall be prepared and treated with primer for putty prior to glazing and putty shall be primed 10 days after glazing.

- I. Rates for glazing Georgian wired glass shall include for aligning lines in adjoining panes both ways.
- J. Glass panes shall be cut to sizes to fit the openings with not more than 1.6mm play all round. Clear sheet shall be ordinary glazing (O Q) quality and polished plate shall be (GG) quality.

### **GLAZING (CTD.)**

#### **A. Mirrors**

To be selected glazing (S.G) quality plate glass mirrors of approved manufacturer with bevelled edge and fixed at all corners to walls with raw plugs and brass screws with removable chromium plated dome heads.

- B. Cut out all cracked or broken glass re-glazed to match and leave perfect on completion. On no account shall windows be cleaned by scraping with glass.

### **PAINTING AND DECORATING**

- A. The Contractor's attention is drawn to Section "U" of the Standard Method of Measurement and the requirements of the following British Standards and Codes of Practice shall be observed:-

#### **British Standards**

- |    |                 |   |
|----|-----------------|---|
| B. | B.S 2521 + 2523 | Lead based joint                                  |
| C. | B.S. 3698       | Calcium plumbate priming paints                   |
| D. | B.S. 4756       | Ready mixed aluminium priming paints for woodwork |
| E. | B.S. 1336       | Knotting  |
| F. | B.S. 3842       | Treatment of plywood with preservatives           |
| G. | B.S 4800        | Paint colours for building purposes               |
| H. | B.S. 2660       | Colours for building and decorative paints        |
| I. | B.S. 2524       | Red-Oxide-Linseed oil priming paint               |
| J. | B.S. 2525-7     | Undercoating and finishing paints                 |
| K. | B.S. 1215       | Oil stains  |

## Codes of Practice

- L. C.P. 231 Painting for buildings
- M. C.P. 3012 Cleaning and preparations of metal surfaces
- N. All work under this trade must be executed by an approved specialist unless otherwise permitted.
- O. The Contractor's Programme in this area shall be so arranged that all other trades are completed and away from the area to be painted prior to the commencement of painting. Before painting the Contractor must remove all concrete and mortar droppings and the like from all work to be decorated and remove all strains from and obtain uniform colour to work to be oiled and polished.

## PAINTING AND DECORATING (CTD.)

- A. All plaster, metal, wood or other surfaces which are to receive finishes of paint, stain, polish, distemper or paint work of any description are to be carefully inspected by the Contractor before he allows any of his painters to commence work. The Contractor will be held solely responsible for all defective work as a result of his painters' failure to insist on receiving from the other trades surfaces in the proper condition to allow first class finishes to the various kinds specified being applied to them.
- B. All painting and decorating schemes shall be carried out in colours selected by the Architects.
- C. Paints shall be ready mixed, oil based priming paint shall comply with the requirements of the relevant standards mentioned earlier.
- D. The oil shall comply with the requirements of B.S 1215.
- E. All materials shall be of the best quality and shall be of an approved proprietary brand selected from the latest Schedule of Approved Paints issued by the Ministry of Works.
- F. Materials to be applied externally shall be of exterior quality and/or recommended by the manufacturers for external use.
- G. Materials shall be delivered to site intact in the original sealed drums or tins and shall be mixed and applied strictly in accordance with the manufacturer's instructions and to the approval of the Architect.

Unless specifically instructed or approved by the Architect, no paints, distemper etc. are to be thinned or otherwise adulterated, but are to be used as supplied by the manufacturers and direct from the tins.

- H. If required by the Architect the Contractor shall provide at his own expense samples of paints etc. with containers and cases to be forwarded, carriage paid, by the Contractor for analysis to a laboratory.
- I. The priming, undercoat, and finishing coats shall each be of differing tints, and the priming and undercoat shall be the correct brands and tins to suit the respective finishing coats, in accordance with the manufacturer's instructions. All finishing coats shall be of colours and tints selected by the Architect. Each coat must be approved by the Architect before the next coat is applied.

- J. Each coat shall be properly dry and in the case of oil or enamel paints shall be well rubbed down with fine glass paper before the next is applied. The paintwork shall be finished smooth and free from brush marks.

#### **PAINTING AND DECORATING (CTD.)**

- A. Colour cards of all paints etc. shall be submitted to, and samples prepared for approval of the Architect before laying on, and such samples, when approved, shall become the standard for the works.
- B. All paints, emulsion paints, and distempers shall be applied by means of a brush or spray gun or rollers of an approved type, where so agreed by the Architect.
- C. No painting is to be done in wet weather or on surfaces which are not thoroughly dry.
- D. Woodwork to be painted shall be rubbed down and all knots and resin pockets shall be scorched back and coated with knotting. After priming all nail holes and other imperfections shall be stopped and the whole surface be rubbed down and all dust brushed off. The surface of woodwork shall be lightly sand prepared between the coats.
- E. All woodwork in contact with walling or plaster shall be treated after cutting and preparations but before assembly or fixing with one coat of "Timside" wood preservative manufactured by Timsales, P.O. BOX 18080, Nairobi. The solution is to be brushed on all faces of all timbers, unless exposed to view and painted. The Contractor shall note that this solution is poisonous and shall take all necessary precautions and instruct his workmen accordingly.
- F. Wax polish shall be furniture polish of an approved brand, and wood surfaces shall be clean smooth free from oil or grease or any other blemishes. A minimum of two coats shall be applied to approval.
- G. Plaster surfaces shall be perfectly smooth free from defects and ready for decorations. All such surfaces shall be allowed to dry a minimum period of six weeks, stopped with approved plaster compound stopping and rubbed down flush as necessary, and then thoroughly, immediately prior to decorating.
- H. Plaster Surfaces which are to be finished with emulsion, oil or enamel paint, shall be primed with an alkali resisting primer complying with the particular paint manufacturer's specifications and applied in accordance with their instructions.
- I. Fibre board or similar surfaces shall be lightly brushed down to remove all dirt, dust and loose particles and have all nail holes or other defects stopped with an approved plaster compound stopping rubbed down flush and left with a texture to match surrounding materials and shall receive one coat petrifying liquid at last or two coats polyurethane or clear laquaire.

## **PAINING AND DECORATING (CTD.)**

- A. All metal surfaces shall be thoroughly brushed down with wire brushes and scraped where necessary to remove all scale, rust etc. immediately prior to decorating. Where severe rust exists and if approved by the Architect a proprietary de-rusting solution may be used in accordance with the manufacturer's instructions.
- B. Shop primed and unprimed surfaces shall be given one coat of metal chromate primer.
- C. Galvanised surfaces shall be treated before painting with an approved proprietary or de-greasing solution before priming.
- D. Coated surfaces already treated with bituminous solution shall be scrapped to remove soft parts and then receive two isolating coats of aluminium primer or other approved antitar primer.
- E. Existing painted and decorated surfaces shall be prepared as described above. Painted plaster, metal or wood surfaces shall then be rubbed down to expose the material beneath and old paint burnt off with blow torches if necessary in the Architect's opinion.
- F. Emulsion paint on ceilings and all undercoats of emulsions paint and complete oil painting on walls shall be completed before PVC floorings are laid. Final coats of emulsion paints on walls shall be applied after such flooring has been laid complete.
- G. Three coats of emulsion paints shall be applied to receiving surfaces using a thinning medium or water only if and as recommended by the manufacturer. An approved plaster primer tinted to match may be substituted for the first coat.
- H. Enamel paint shall be applied in two undercoats and one finishing coat after preparation and priming as specified above.
- I. All ironmongery shall be removed from joinery steel windows and louvre before painting is commenced and shall be cleaned and renovated if necessary and refixed after completion of painting.
- J. Rates for painting shall be deemed to include for preparing and priming surfaces above described.
- K. Rates for paints, distemper etc. shall allow for covering up all floors, fittings, etc. with dust sheets when executing the work and for removing, covering when no longer required and for cleaning off, touching up and leaving perfect at completion.

## **DRAINAGE**

- A. The contractor's attention is drawn to Section "V" of the Standard Method of Measurement and the requirements of the following British Standards and Codes of Practice shall be observed:-

### **British Standards**

- |    |                   |  |
|----|-------------------|--|
| B. | B.S 556 Parts 1+2 | Concrete cylindrical pipes and fittings (including manholes, inspection chambers and street gullies) |
| C. | B.S. 4101         | Concrete unreinforced tubes and fittings (with ogee joints for surface water drainage)               |
| D. | B.S. 437 part 1   | Cast iron spigot and socket drain pipes and fittings   |
| E. | B.S. 1247         | Manhole step irons (in malleable cast iron)  |
| F. | B.S. 2760         | Pitch-impregnated fibre drainage pipes and fittings  |
| G. | B.S 1211          | Centrifugally cast (spun) iron pressure pipes for water, gas and sewage                              |
| H. | B.S. 1130         | Cast iron drain fittings   |

### **Codes of practice**

- |    |           |                   |
|----|-----------|-------------------|
| I. | C.P.301   | Building drainage |
| J. | C.P. 2005 | Sewerage          |
| K. | C.P. 2010 | Pipelines         |
- L. The preambles and other clauses as directed to "Excavating" "concreting" "Walling" and paving are to apply where relevant to the items of this Bill.
- M. Cast iron drain pipes shall be coated cast spigot and socket pipes conforming to B.S 437 in all respects and with fittings of B.S 1130 referred to above. Pipes shall be jointed with asbestos yarn and caulked with molten lead or jointed with special jointing compound all to approval.
- N. Concrete drain pipes shall be spigot and socket pipes of approved local manufacturer and complying with the requirements of the relevant Standard mentioned above. Pipes shall be jointed with tarred spun yarn and cement and sand (1:2) neatly haunched.



## **DRAINAGE (CTD.)**

- A. Pitch-impregnated fibre pipes shall comply with the requirements of B.S 2760 and of approved manufacturer. Joints shall be made with straight couplings in accordance with the Standard and the laying, cutting and jointing shall be carried out, strictly in accordance with manufacturer's printed instructions.

The pipes are obtainable from Key Terrain Limited. (UK) or Crown Paints Limited, Nairobi.

- B. Drainpipes have been measured over all bends, junctions and other fittings and the Contractor shall include in his prices for all joints, short lengths, cutting and waste. Rates for bends, junctions etc. shall include for the extra joints, cutting and waste and any labour required.
- C. Lines of drains shall be accurately set out and trenches excavated and bottom trimmed to accurate gradients to approval before pipe laying commences.
- D. Generally the drainage is to be executed in suitable sections to cause the minimum interference to the continual use of any existing drains. The location and depths of any existing drains shall be ascertained before other work is commenced and the rates are to include for all costs of complying with this requirement.
- E. Excavations for drain trenches shall be not less than 300mm wider than the external diameter of the pipes and rates shall include for grading ground under beds, carefully filling in earth to avoid damaging pipes, ramming and carting away surplus excavated material, keeping excavations free from water, if necessary executing such works and installing such pumps as may be required to keep the excavations dry at all times, and any necessary planking and strutting.
- F. No subsoil water shall be discharged into the sewers without the written permission of the architect.
- G. Excavations shall be made to such depths and dimensions as may be required by the Architect to obtain proper falls and firm foundations. No permanent construction shall be commenced on any bottom until the excavation has been examined and approved by the architect. Should Contractor in error or without the instructions of the Architect, make any excavation below the required level of the drain or bed, as the case be, he will be required to refill such excavation to the correct levels with concrete (1:4:8 - 38mm gauge).

Rates shall include for excavating in all materials met with and for trimming bottoms to the necessary falls and working space.

- A. The first back filling of pipe trenches is to be soft material free from stone and shall be watered and carefully tamped over and around the pipes in 300mm layers until they are covered to a depth of 600mm. Subsequent filling is to be in 150mm layers watered and rammed, only materials approved by the Architect are to be used as backfilling.
- B. Where hardcore is used for backfilling it is not to exceed 150mm gauge and all interstices shall be properly filled with small pieces and fine binder. Surplus excavated materials are to be removed from site.

If in the opinion of the Architect care has not been exercised in refilling trenches, he may order a fresh test to be made on the drain. In the event of the drain failing to pass the test the contractor will be required to remedy the fault at his expense.

- C. Concrete beds and surrounds shall be of concrete 1:3:6 - 20mm gauge to the thickness falls, and widths specified. Hollows shall be left to receive the collar of the pipe, so that the pipes sufficiently wide to form hard-holds to permit the joining of pipes and after resting drains shall be haunched to both sides to half the diameter of the pipe in similar concrete.

Where pipes are specified to be surrounded, the concrete shall be carried up from the bed in a square section with a minimum of 150mm in thickness over the barrel of the pipe.

- D. Rates for beds and surrounds shall include for forming recesses and filling with concrete, for mortar layer etc. and for any necessary formwork.
- E. Each pipe shall be carefully examined on arrival; any defective pipes shall be removed immediately from the site and not used in the works. Minor damage to the protective coating of cast iron pipes shall be made good by painting with hot tar; if major defects in the coating exists such pipes shall be rejected and removed from the site.
- F. Drains are to be laid in a straight line from point to point and each pipe is to be properly bowed in so that the invert is a true and even gradient in order to achieve a fall giving a self-cleansing velocity. The Contractor shall provide suitable equipment and set up and maintain all sight rails, bowing rods, and bench marks etc. necessary for the purpose.
- G. All drains shall be kept free from earth Debris, superfluous cement and other obstructions or water during laying and until completion of the Contract when they shall be handed over in a clean condition.

## **DRAINAGE (CTD.)**

- A. Pipes shall be laid with sockets leading uphill and shall rest on solid and even foundations for the full lengths of the barrel, socket recesses shall be formed in the foundations, as short as practicable but sufficiently deep to allow the pipe jointer room to work right round the pipe. Such recesses shall be filled with cement mortar (1:4) on completion of laying.
- B. All joints are to be accurately made by butting the pipes together, caulking with tarred rope neat cement finished externally with a bold fillet neatly pointed. As each pipe is laid it is to be drawn with a badger and left free of all obstructions.
- C. Rates of bends junctions and other fittings in drains shall include all cutting and waste and extra joints.
- D. The testing of drains shall be done at completion and before the trenches are filled in. They shall be tested in the presence of the Architect and a representative of the Local Authority by filling with water having a head not less than 1.5m at the highest point of the section under test. A second and similar test may be applied, after the drain trenches are filled in and the work complete.
- E. Manholes shall be constructed in the positions indicated on the Drawings or as required by the Architects. Such chambers shall be to the depths required to obtain even gradients in the drain and of sufficient size to contain the requisite main channel and any branches thereto and all the entire satisfaction of the Architect and Local Authority.
- F. Rendering to manholes shall be trowelled smooth coved at all internal angles and rounded at arrises.
- G. Manholes are to be tested for water- tightness in the same way as to drains by filling with water but not exceeding 1.5m head. The contractor shall 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 and Local Authority.
- H. For connections to public drainage the Contractor shall make all arrangements with the Local Authority and pay all fees that may be required for connections to main sewers.

## **EXTERNAL WORKS**

A. Contractor's attention is drawn to the requirements of the following British Standards and shall be observed:-

### **British Standards**

- |    |  |  |
|----|--|--|
| B. | B.S 1621   | Bitumen Macadam (with crushed rock or slag aggregate)    |
| C. | B.S. 340   | Precast concrete kerbs, channels, edgings and quadrants. |
| D. | B.S. 368   | Precast Concrete flags                                   |
| E. | B.S. 4428  | General Landscape operations (excluding hard surfaces)   |
| F. | B.S. 3882  | Recommendations and classification for top soil          |
| G. | B.S 3936   | Nursery stock  |
| H. | B.S 3998   | Recommendations for tree work                            |
| I. | <u>Preamble to preceding trades</u> where applicable shall apply equally to the work contained herein. |  |

## **ELECTRICAL WORKS**

### **2.1 GENERAL**

This specification is to be read in conjunction with the drawings which are issued with it. Bills of quantities shall be the basis of all additions and omissions during the progress of the works.

### **2.2 STANDARD OF MATERIALS**

Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the contractor shall adhere.

Should the contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the contractor. All materials required for the works shall be new and the best of the respective kind and shall be of a uniform pattern.

### **2.3 WORKMANSHIP**

The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the contractor's expense.

Permits, Certificates or Licences must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licences exist under Government legislation.

### **2.4 PROCUREMENT OF MATERIALS**

The contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

Contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

### **2.5 SHOP DRAWINGS**

Before manufacture or Fabrication is commenced the contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information including sizes, capacities, construction details, etc, as may be required to determine the suitability of the equipment for the approval of the Engineer. Approval of the detailed drawings shall not relieve the contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

## **2.6 RECORD DRAWINGS**

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

## **2.7 REGULATIONS AND STANDARDS**

All work executed by the contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

## **2.8 SETTING OUT WORK**

The sub-contractor at his own expenses; is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his Tender for all such modifications and for the provision of any such sketches or drawings related thereto.

## **2.9 POSITIONS OF ELECTRICAL PLANT AND APPARATUS**

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

## **2.10 MCB DISTRIBUTION PANELS AND CONSUMER UNITS**

All cases of MCB Panels and consumer units shall be constructed in heavy gauge sheet with hinged covers.

Removable undrilled gland plates shall be provided on the top and bottom of the cases. Miniature circuit breakers shall be enclosed in moulded plastic with the tripping mechanism and arc chambers separated and sealed from the cable terminals.

The operating dolly shall be trip free with a positive movement in both make and break position. Clear indication of the position of the handle shall be incorporated.

The tripping mechanism shall be on inverse characteristic to prevent tripping in temporary overloads and shall not be affected by normal variation in ambient temperature.

A locking plate shall be provided for each size of breaker; A complete list of circuit details on typed cartridge paper glued to stiff cardboards and covered with a sheet of Perspex, and held in position with four suitable fixings, shall be fitted to the inner face of the lids of each distribution panel. The appropriate MCB ratings shall be stated on the circuit chart against

each circuit in use: Ivory labels shall be secured to the insulation barriers in such a manner as to indicate the number of the circuits shown on the circuit chart.

Insulated barriers shall be fitted between phases, and neutrals in all boards, and to shroud live parts.

Neutral cables shall be connected to the neutral bar in the same sequence as the phase cables are connected to the MCB's. This shall also apply to earth bars when installed.

## **FUSED SWITCHGEAR AND ISOLATORS**

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182 : 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183 : 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the „ON“ position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with the door in the open position for test purposes. The „ON“ and „OFF“ positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

### **2.11 CONDUITS AND CONDUIT RUNS**

Conduit systems are to be installed so as to allow the loop-in system of wiring:

All conduits shall be black rigid super high impact heavy gauge class „A“ PVC in accordance with KS 04 – 179: 1988 and IEE Regulations. No conduit less than 20mm in diameter shall be used anywhere in this installation.

Conduit shall be installed buried in plaster work and floor screed except when run on wooden or metal surface when they will be installed surface supported with saddles every 600mm. Conduit run in chases shall be firmly held in position by means of substantial pipe hooks driven into wooden plugs.

The contractor's attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.

All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

The systems, when installed and before wiring shall be kept plugged with well-fitting plugs and when short conduit pieces are used as plugs, they shall be doubled over and tied firmly together with steel wire; before wiring all conduit systems shall be carried out until the particular section of the conduit installation is complete in every respect.

The sets and bends in conduit runs are to be formed on site using appropriate size bending springs and all radii of bends must not be less than 2.5 times the outside diameter of the conduit. No solid or inspection bends, tees or elbows will be used.

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non-screwed boxes, care shall be taken that no rough edges of conduit stick out into the boxes.

Runs between draw in boxes are not to have more than two right angle bends or their equivalent. The contractor may be required to demonstrate to the Engineers that wiring in any particular run is easily withdrawable and the contractor may, at no extra cost to the contract; be required to install additional draw-in boxes required. If conduit is installed in straight runs in excess of 6000mm, expansion couplings as manufactured by Egatube shall be used at intervals of 6000mm.

Where conduit runs are to be concealed in pillars and beams, the approval of the Structural Engineer, shall be obtained. The contractor shall be responsible for marking the accurate position of all holes, chases etc, on site, or if the Engineer so directs, shall provide the Main Contractor with dimensional drawings to enable him to mark out and form all holes and chases. Should the contractor fail to inform the main contractor of any inaccuracies in this respect they shall be rectified at the sub-contractor's expense.

It will be the contractor's responsibility to ascertain from site, the details of reinforced concrete or structural steelwork and check from the builder's drawings the positions of walls, structural concrete and finishes. No reinforced concrete or steelwork may be drilled without first obtaining the written permission of the Structural Engineer.

The drawings provided with these specifications indicate the appropriate positions only of points and switches, and it shall be the Contractors responsibility to mark out and centre on site the accurate positions where necessary in consultation with the Architect and the Engineer. The contractor alone shall be responsible for the accuracy of the final position.

## **2.13 CONDUIT BOXES AND ACCESSORIES**

All conduit outlets and junction boxes are to be either malleable iron and of standard circular pattern of the appropriate type to suit saddles being used or super high impact PVC manufactured to KS 04 – 179 : 1983.

Small circular pattern boxes are to be used with conduits up to and including 25mm outside diameter. Rectangular pattern adaptable boxes are to be used for conduits of 32mm outside diameter and larger. For drawing in of cables in exposed runs of conduit, standard pattern through boxes are to be used:

Boxes are to be not less than 50mm deep and of such dimensions as will enable the largest appropriate number of cables for the conduit sizes to be drawn in without excessive bending.

Outlet boxes for lighting fittings are to be of the loop-in type where conduit installation is concealed and the sub-contractor shall allow one such box per fitting, except where fluorescent fittings are specified when two such boxes per fitting shall be fitted flush with ceiling and if necessary fitted with break joint rings. Pattresses shall be fitted where required to outlets on surface conduit runs.

Adaptable boxes are to be of PVC or mild steel (of not less than 12swg) and black enameled or galvanized finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids



secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

#### **2.14 LABELS**

Labels fitted to switches and fuse boards;-

- (i) Shall be Ivoryine engraved black on white.
- (ii) Shall be secured by R.H brass screws of same manufacturing throughout.
- (iii) Shall be indicated on switches:-
  - a) Reference number of switch
  - b) Special current rating
  - c) Item of equipment controlled
- (iv) Shall indicate on MCB panels
  - a) Reference number
  - b) Type of board, i.e.; lighting, sockets, etc.
  - c) Size of cable supplying panel
  - d) where to isolate feeder cable
- (v) Shall be generally not less than 75mm x 50mm.

#### **2.15 EARTHING**

The earthing of the installation shall comply with the following requirements;-

- (i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.
- (ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armoring of cables, distribution boards and metal frames shall be bonded thereto.
- (iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).
- (iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided
- (v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.
- (vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the sub-main cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the

I.E.E Regulations.

- (vii) Where an earth rod is specified (see Sub-clause (iii)) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground to a minimum depth of 3.6m . It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.
- (viii) Earth plates will not be permitted
- (ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Contractor in the presence of the Engineer and the Contractor shall be responsible for the supply of all test equipment.
- (x) Where copper tape is fixed to the building structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.
- (xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.
- (xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross-sectional area must not be less than required to comply with the IEE regulations.
- (xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.
- (xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

## **2.16 CABLES AND FLEXIBLE CORDS**

All cables used in this Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows:-

P.V.C. Insulated Cables and Flexible Cords	-	Ks 04-192:1988 Pvc Insulated Armoured Cables -
Ks 04-194:1990		
Armouring of Electric cables	-	Ks 04-290:1987

The successful Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.

P.V.C. insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm<sup>2</sup> shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform to the details stated in the "Cable Braid and insulation Colours" Clause.

## **2.17 ARMoured P.V.C. INSULATED AND SHEATHED CABLES:**

Shall be 600/1000 volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

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

## **2.18 CABLE SUPPORTS, MARKERS AND TILES**

All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cast cablehooks or clamps, or appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and galvanised mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or back straps described above which shall in turn be secured to walls or ceilings of ducts by raw bolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and blackstrap shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the contractor shall work in close liaison with other services Sub-contractors.

The Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid Underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this contract.

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All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Contractor, unless otherwise stated.

## **2.19 PVC INSULATED CABLES**

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000 volt grade cables, or equal and approved.

PVC cables shall conform to the details of the "Cables and Flexible cords" and "Cable Braid and Insulation Colours" clauses.

## **2.20 HEAT RESISTING CABLES**

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°C likely to be experienced ) shall be made using silicon rubber insulated cable or equal and approved.

**2.21 FLEXIBLE CORDS**

Shall be in accordance with the “Cable and Flexible Cords” clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings, the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see “Heat Resisting Cables” Clause 30).

**2.22 CABLE ENDS AND PHASE COLOURS**

All cable ends connected up in switchgear, MCB panels etc, shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers.

The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the “Cable Insulation Colours” clause. Black cable with black end markers shall only be used for neutral cables.

**2.23 CABLE INSULATION COLOURS**

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

SYSTEM	INSULATION COLOUR	CABLE END MARKER
1.) Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black
2). Sub-Circuits Single Phase		
a) Phase	Red	Red
b) Neutral	Black	Black

**2.24 SUB-CIRCUIT WIRING**

For all lighting and sockets wiring shall be carried out in the “looping in” system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P. V.C. cable.

1.5mm<sup>2</sup> for all lighting circuits indicated on the drawing.

Power circuits P.V.C cable (minimum sizes).

- (i) 2.5mm<sup>2</sup> for one, two or three 5Amp sockets wired in parallel.
- (ii) 2.5mm<sup>2</sup> for one 15Amp socket.
- (iii) 2.5mm<sup>2</sup> for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

## **2.25 SPACE FACTOR**

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

## **2.26 INSULATION**

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the contractor before the installations are handed over.

A report of all tests shall be furnished by the Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

## **2.27 LIGHTING SWITCHES**

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes and shall be of the gangs ratings and type shown in the drawings. They shall be as manufactured by "CLIPSAL", or other equal and approved to KS 04 – 247: 1988

## **2.28 SOCKETS AND SWITCHED SOCKETS**

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched and as manufactured by "CLIPSAL", or other approved equal to KS 04 – 246: 1987

## **2.29 FUSED SPUR BOXES**

These shall be flush, D.P switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by "CLIPSAL", or other approved equal. KS 04 – 247: 1988

### **2.30 COOKER OUTLETS**

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps.

The cooker control units shall be as manufactured by “CLIPSAL”, or other approved equal KS 04 – 247: 1988

### **2.31 CONNECTORS**

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

### **2.32 LAMPHOLDERS**

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C., E.S., or G.E.S. as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.

Where lampholders are supported by flexible cable, the holders shall have “cord grip” arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

The Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

### **2.33 LAMPS**

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 – 112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982

Pearl lamps shall be used in all fittings unless otherwise specified.

### **2.34 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS**

This Contract shall include for the provision, handling charges, taking the delivery, safe storage, wiring (including internal wiring) assembling and erecting of all lighting fittings shown on the drawings.

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.

In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above

provisions are not made by the manufacturers -, the contractor shall include cost of additional work necessary in his tender. See "Flexible Cords" clause for details of internal wiring of lighting fittings. Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

Where two or more points are shown adjacent to each other on the drawings, 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.

### **2.35 POSITIONS OF POINTS AND SWITCHES**

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Sub-contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Contractor shall be responsible for all alterations made necessary by the non-compliance with the clause.

### **2.36 STREET/SECURITY OUTDOOR LIGHTING COLUMNS:**

The column shall be at a minimum of 225mm in the ground on 75mm thick concrete foundations and the pole up to 150mm shall be surrounded with concrete. The top bracket and plain section of the columns shall be common to and interchangeable with all brackets with maximum mismatching tolerance of 3mm between any pole and bracket. After manufacture and before erection the columns shall be treated with an approved mordant solution which shall be washed off and the whole allowed to dry.

Thereafter, the columns shall be painted with one undercoat and two coats of gloss paint to an approved colour. All columns shall be complete with fused cut-outs.

### **2.37 TIMING CONTROL SWITCH**

These shall be installed where shown on the drawings. Photocell timing control circuits which will operate „on“ with a specified level of darkness and „off“ with a given level of light. The initial adjustment will be done with approval of the Electrical Engineer.

### **2.38 WIRING SYSTEM FOR STREETLIGHTING**

Cables shall be as indicated on the drawings, and shall be laid in a cable trench 450mm deep along the road sides and 600mm deep across the roads and 900mm away from the road kerb or 1500mm away from the edges of the road. „Loop-in“ and „Loop-out“ arrangement shall be used at every pole. Wiring to the lanterns on each pole shall be with 1.5mm<sup>2</sup> PVC twin insulated and sheathed cable with earth wire shall be laid at least 600mm below the finished road level on a compact bed of murram at least 50mm thick and covered with a concrete surrounded 150mm thick.

### **2.39 METAL CONTROL PILLAR**

These shall be metal clad and fabricated as per contract drawings and specification. The Contractor shall supply, install, test and commission control pillars including supplying, fixing connecting switchgears as detailed on the appropriate drawings.

## **2.40 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER**

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains. The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

## **2.41 M.V. SWITCHBOARD AND SWITCHGEAR**

The switchboard shall be manufactured in accordance with KS04-226 which co-ordinates the requirements for electrical power switchgear and associated apparatus. It is not intended that this K.S. should cover the requirements for specified apparatus for which separate Kenyan Standard exist. All equipment and material used in the switchboard shall be in accordance with the appropriate Kenya Standard.

The switchboard shall comprise the equipment shown on the drawings together with all current transformers, auxiliary fuses, labels, small wiring and interconnections necessary for the satisfactory operation of the switchboard

Switchboard shall be of the flush fronted, enclosed, metal clad type with full front or rear access as called for in the particular specifications, suitable for indoor use, sectionalised as necessary to facilitate transport and erection. The maximum height of the switchboard is to be approximately 2.0 metres. A suitable connection chamber containing all field terminals shall be provided at the top or bottom of the switchboard as appropriate.

Before manufacture, the Contractor shall submit to the consulting Engineer for approval of detailed drawings showing the layout, construction and connection of the switchboard.

All bus-bars and bus-bar connections shall consist of high conductivity copper and be provided in accordance with KS 04-226: 1985. The bus-bars shall be clearly marked with the appropriate phase and neutral colours which should be red, yellow, blue for the phases and black for neutral. The bus-bars shall be so arranged in the switchboard that the extensions to the left and right may be made in the future with ease should the need arise.

Small wiring, which will be neatly arranged and cleated, shall be executed in accordance with B.S. 158 and the insulation of the wiring shall be coloured according to the phase or neutral connection.

Switches and fuse switches, shall be in strict accordance with KS04-183:1978 Class 2 switches. Means of locking the switch in the "OFF" position shall be provided.

All fuse switches shall comply with KS04-183:1978, PARTS 2 and 3 a fault rating at least equal to the fault rating of the switchboard in which they are installed. Cartridge fuse links to KS 04-183:1978 category A.C. 46, class Q1 and fusing factor not exceeding 1.5 shall be supplied with each Fused switch.

Mounting arrangements shall be such that individual complete fuse switches may be disconnected and withdrawn when necessary without extensive dismantling work.

When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the "OFF" position shall be provided.



## 2.42 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class “B” welded to Standard specification KS 04- 180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enamelled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanised. Conduit fittings, accessories or equipment used in conjunction with galvanised conduits shall also be galvanised or otherwise as approved by the service engineer.

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Metal trunking shall be fabricated from mild steel of not less than 18 swg. All sections of trunking shall be rigidly fixed together and attached to the framework or fabric or the building at intervals of not less than 1.2m. Joint trunking shall not overhang fixing points by more than 0.5m.

All trunking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trunking is galvanised, the links shall be made by galvanised flat iron strips.

All trunking fittings (i.e. bends, tees, etc) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm<sup>2</sup> are employed.

Where trunking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trunking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trunking is used to connect switchgear or fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

Where vertical sections of trunking are used which exceed 4.5m in length, staggered tie off points shall be provided at 4.5m intervals to support the weight of cables.

Unless otherwise stated, all trunking systems shall be painted as for conduit.

Where a wiring system incorporates galvanised conduit and trunking, the trunking shall be deemed to be galvanised unless specified otherwise.

The number of cables to be installed in trunking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstances be such that a space factor of 45% is exceeded.

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects. Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enamelled tubing and galvanising paint for galvanised tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit. The inner radius of the bend shall not be less than four (4) times the outside diameter of the conduit.

Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15mm. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

Conduit shall be swabbed out prior to drawing in cables, and they shall be laid so as to drain of all condensed moisture without injury to end connections.

Conduits and trunking shall be run at least 150mm clear of hot water and steam pipes, and at least 75mm clear of cold water and other services unless otherwise approved by the services engineer.

All boxes shall conform to KS 04 – 668: 1986, to be of malleable iron, and black enamelled or galvanised according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws. All adaptable boxes and lids of the same size shall be interchangeable.

Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanised boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

## **2.43 TESTING ON SITE**

The contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specification and the Electric Supply Company's By-Laws.

(a) Tests shall be carried out to prove that all single pole switches are installed in the „live“ conductor.

- (b) Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the „live“ conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each „ring“ circuit.
- (c) Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the contractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above.
- (d) Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the at his own expense.
- (e) The contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.

The contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as maybe necessary.

The contractor shall test to the services engineer’s approval and as specified elsewhere in this specification or in standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any power or other supply and setting to work.

Where such equipment, etc., forms part of or is connected to a system whether primarily or of an electrical nature or otherwise ( e.g. air conditioning system) the contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or other system forming part of works, shall balance, regulate, test and commission the system to the service engineer’s approval.

## **MECHANICAL INSTALLATIONS**

### **1. GENERAL**

This part of the specification specifies the general requirements of plant, equipment and materials.

### **2. MATERIAL AND STANDARDS**

#### **2.1 Pipe work and fittings**

### **Black Steel Pipe Work**

All black steel pipe work up to 65mm nominal bore shall be manufactured in accordance with B.S. 1387 Medium Grade, with tapered pipe threads in accordance with B.S. 21. All fittings shall be malleable iron and manufactured in accordance with B.S. 143

Pipe joints shall be screwed and socketed and sufficient coupling unions shall be allowed so that fittings can be disconnected without cutting the pipe. Running nipples and long screws shall not be permitted unless exceptionally approved by the engineer.

All steel pipe work, 80mm nominal bore up to 150mm nominal bore, shall be manufactured to comply in all respects with the specification for 65mm pipe, except that screwed and bolted flanges shall replace unions and couplings for the jointing of pipes to valve and other items of plant.

All flanges shall comply with the requirements of B.S. 10 to the relevant classifications contained hereinafter in the specification.

### **Galvanized Steel Pipe work**

Galvanized steel pipe work shall be manufactured to comply in all aspects with the standards described for black steel pipe work in paragraph (a) above.

Galvanizing shall be carried out in accordance with the requirement of B.S. 1387 and B.S. 143 respectively.

### **Copper Tubing**

All copper tubing shall be manufactured in accordance with B.S. 2871 from C.160 „Phosphorus De-oxide Non-Arsenical Copper“ in accordance with B.S. 1172.

Pipe joints shall be made with soldered capillary fittings and connections to equipment shall be with compression fittings manufactured in accordance with B.S. 864.

Short copper connecting tubes between galvanized pipe work and sanitary fittings shall not be used because of the risk of galvanic action.

If, as may occur in certain circumstances, it is not possible to make the connections in any other way than by use of copper tubing, then a brass straight connector shall be positioned between the galvanized pipe and the copper tube in order to prevent direct contact.

## **PPR pipe work**

All pipework to be in Aqua pipe PPR pipe system and fittings as described in PN 20 continuously rated PPR piping ; All terminal fittings at the end of the pipe/ sanitary fittings connections shall have ss threaded ferole.

### **Cast Iron Pipe Work Internal Services**

Internal cast iron pipe work and fittings for above ground in connection with internal building services, shall be manufactured with spigot and socket joints of the weight required by the Local Authority and shall comply fully with the requirements of B.S. 416

All joints on cast iron spigot and socket pipes shall be made with an approved cold caulking compound and so installed as to allow for any expansion or contraction, which may take place.

All cast iron pipe work, branches, tees, bends, and other fittings shall be supplied complete with inspection covers for cleaning purposes. These inspection covers shall be included as part of the fittings and shall comply with the requirements of B.S. 416.

### **External Services**

Cast iron pipe work which is used in accordance with buried external services, shall be manufactured, coated and tested in accordance with the requirements of B.S. 1211

All buried cast iron bends, elbows, swept tees and other fittings, shall comply with the requirement of B.S. 1130.

Jointing on external cast iron pipes shall be carried out in accordance with one of the methods described in B.S. Code of Practice 301, Clause 505c(v), to the approval of the engineer.

## **Pitch Fibre Pipe Work**

Pitch fibre pipe work and fittings for use in connection with external drainage services shall be manufactured in accordance with the requirements of B.S. 2760. Pipes shall be connected by means or purpose made tapered joints manufactured in accordance with B.S. 2760

Until such time as the use of pitch impregnated fibre pipes is covered by a Code of Practice, the jointing, laying and cutting of these pipes shall be carried out in accordance with the requirements of the notes contained under appendix C of B.S. 2760.

### **Concrete Pipe**

Where concrete pipe and fittings are used in connection with the conveyance of surface water or sewage under atmospheric pressure, they shall be manufactured in accordance with the requirements of B.S. 556, Class 1, except where otherwise stated.

The joints of concrete pipe and fittings may be one of the following depending upon application and conditions:-

Flexible spigot and socket type

Flexible rebated type (Storm water drainage only) Ordinary spigot and socket type.  
Ordinary rebated type (Storm water drainage only)

Joints (1) and (2) shall be sealed with suitable rubber gaskets manufactured in accordance with B.S. 2494 except where they are likely to be contaminated by oil products, in which case the gaskets shall be manufactured in accordance with B.S. 3514

Joint (3) and (4) shall be made with an approved cement mortar mix.

### **P.V.C. (Hard) Pressure Pipe and Fittings**

All P.V.C. pipes and fittings shall be manufactured in accordance with B.S. 3505: 1968.

#### **Jointing**

The method of jointing to be employed shall be that of solvent welding, using the pipe and manufacturer's approved cement. Seal ring joints shall be introduced where it is necessary to accommodate thermal expansion.

#### **Anchoring**

All bends, valves, and hydrant tees etc., in the line of the water main shall be adequately anchored to resist thrust due to internal water pressure. A concrete block shall be cast under and around the pipe and between it and sides of the trench. Wall rammed material shall be used to support the pipe on either sides of concrete.

#### **Pipe Bed**

Pipes shall be uniformly laid on a 75mm thick bed, (sand or red soil) and must not be allowed to rest on the joint or on stones e.t.c.

#### **Supports to Fittings**

In underground installations, care shall be taken to ensure that heavy components such as valves are fully supported so that no weight is carried by the pipeline.

### **Backfilling**

For the protection of the pipe, initial backfilling shall be carried out as soon as possible after laying. The initial backfill shall be fine grained material thoroughly compacted around the pipe and consolidated to a depth of 6" above the crown of the pipe. At no time shall heavy rocks, stones or other objects be included in the balance of the backfill that might protrude the initial backfill layer and come in contact with the pipe.

### **Testing**

Pipelines shall be tested in sections under an internal water pressure normally one and a half times the maximum allowed working pressure for the class of pipe used. Testing shall be carried out as soon as practicable after laying and when the pipeline is adequately anchored. Precautions shall be taken to eliminate all air from the test section and to fill the pipeline slowly to avoid risk of damage due to surge.

### **A.B.S. Waste System**

Where indicated on the drawings and schedules, the sub-contractor shall supply and fix A.B.S. waste pipes and fittings.

The pipes, traps and fittings shall be in accordance with the relevant British Standards, including B.S. 3943, and fixed generally in accordance with manufacturer's instructions, and B.S. 5572:1978.

Jointing of pipes shall be carried out by means of solvent welding. The manufacturer's instructions, and B.S. 5572:1978.

Jointing of pipes shall be carried out by means of solvent welding. The manufacturer's recommended method of joint preparation and fixing shall be followed.

Standard brackets, as supplied for use with this system, shall be used wherever possible. Where the building structure renders this impracticable, the sub-contractor shall provide purpose made support, the centers of which shall not exceed one metre.

### **P.V.C. Soil System**

The sub-contractor shall supply and fix P.V.C soil pipe and fitting as indicated on the drawings and schedules.

Pipes and fittings shall be in accordance with the relevant British Standards, including B.S. 4514 and fixed to the manufacturer's instructions, and B.S. 5572.

The soil system shall incorporate synthetic rubber gaskets as provided by the manufacturer whose fixing instructions shall be strictly adhered to.

Connections to W.C. and pans shall be effected by the use of a W.C. connector gasket and cover, sized to suit plan outlet.

Suitable supporting brackets and pipe clips shall be provided at maximum of metre centers.



The sub-contractor shall be responsible for the joint into the gully trap and drain as indicated on the drawings.

**2.2 Valves**

**Draw-Off Taps and Stop Valves (up to 50mm Nominal Bore)**

Draw-off taps and valves up to 50mm nominal bore, unless otherwise stated or specified for attachment or connection to sanitary fitments shall be manufactured in accordance with the requirements of B.S. 1010.

**Gate Valves**

All gate valves 80mm nominal bore and above, other than those required for fitting to buried water mains shall be cast iron construction, in accordance with the requirements of B.S. 3464. All gate valves required for fitting to buried water mains shall be of cast iron construction in accordance with the requirements of B.S. 1218.

All gate valves up to and including 65mm nominal bore shall be of bronze construction in accordance with the requirements of B.S. 1952.

The pressure classification of all gate valves shall depend upon the pressure conditions pertaining to the site of works.

**Globe Valves**

All globe valves upto and including 65mm nominal bore shall be of bronze construction in accordance with the requirements of B.S. 3061.

The pressure classification of all globe valves shall depend upon the pressure conditions pertaining to the site of works.

**Check or Non-Return Valves**

All check or non-return valves 80mm nominal bore and above shall be of the swing check type of cast iron construction in accordance with the requirements of B.S. 4090.

The pressure classification of all check or non-return valves shall depend upon the pressure conditions pertaining to the site of works.

**Ball Valves**

All ball valves for use in connection with hot and cold water services shall be of the Portsmouth type in accordance with the requirements of B.S. 1212, constructed from bronze or other corrosion resistant materials. These valves fall into three pressure classifications as follows:-

- |                    |   |                 |
|--------------------|---|-----------------|
| 1. Low Pressure    | - | 3.58 b maximum  |
| 2. Medium Pressure | - | 7.72 b maximum  |
| 3. High Pressure   | - | 12.62 b maximum |

The pressure classification required for each ball valve will be designated in the description of its associated equipment contained in the specification.

### **Manually Operated Mixing Valves**

Mixing valves for shower fittings and other appliances being provided under the sub-contract works shall be manufactured in accordance with the requirements of B.S. 1415 from bronze or other corrosion resistant materials.

## **2.3 Waste Fitting Traps**

### **Standard and Deep Seal P & S Traps**

Where standard or deep traps are specified they shall be manufactured in suitable non-ferrous with the full requirements of B.S. 1184

In certain circumstances, cast iron traps may be required for cast iron baths and in these instances bath traps shall be provided which are manufactured in accordance with the full requirements of B.S. 1291.

### **Anti-Syphon Traps**

Where anti-syphon traps are specified, these shall be similar or equal to the range of traps manufactured by Greenwood and Hughes Ltd., Deacon Works Littlehampton, Sussex, England.

The trade name for traps manufactured by this company is "Grevak".

## **2.4 Pipe Supports**

### **General**

This sub-clause deals with supports security pipes to the structure of buildings for ground application.

The variety and type of support shall be kept to a minimum and their design shall be such as to facilitate quick and secure fixings to metal, concrete, masonry or wood.

Consideration shall be given, when designing supports, to the maintenance of desired pipe falls and the restraining of pipe movements to a longitudinal axial direction only.

The sub-contractor shall supply and install all steel work forming part of the pipe support assemblies and shall be responsible for making good any damage to builders work associated with the pipe support installation.

The sub-contractor shall submit all his proposals for pipe supports to the engineer for approval before any erection work commences.

### **Steel and Copper Pipes and Tubes**

Pipe runs shall be secured by pipe clips connected to pipe hangers, wall brackets, or trapeze type support. „U“ bolts shall not be used as a substitute for pipe clips without the prior approval of the engineer.

An approximate guide to the maximum permissible support spacing in metres for steel and copper pipe and tube is given in the following table for horizontal runs.

Size Nominal Bores	Copper Tube to B.S. 659	Steel Tube to B.S. 1387
15mm	1.25m	2.0m
20mm	2.0m	2.5m
25mm	2.0m	2.5m
32mm	2.5m	3.0m
40mm	2.5m	3.0m
50mm	2.5m	3.0m
65mm	3.0m	3.5m
80mm	3.0m	3.5m
100mm	3.0m	4.0m
125mm	3.0m	4.5m
150mm	3.5m	4.5m

The support spacings for vertical runs shall not exceed one and half times the distances given for horizontal runs.

#### **Cast Iron and Asbestos Cement Spigot and Socket Jointed Pipes.**

Cast iron and asbestos cement socketed pipes shall generally be supported at every socket joint by means of either holderbats secured rigidly to the structure, or purpose made straps for attachment to rigid steel support brackets.

When holderbats are used, they shall conform to the requirements of B.S. 416.

Suitable anchors shall be provided at all changes of pipe directions, junctions and tees, to counterpart the effect of end thrust loads.

#### **Asbestos Cement Pressure Pipes**

Asbestos cement pressure pipes with either cast iron detachable joints or asbestos cement screw joints shall be supported and anchored on either side of the joint. The joint shall remain free.

Pipe hangers and trapeze type supports shall not be suitable for the suspension of asbestos pressure pipes unless they are designed with suitable restrictions to prevent swinging while at the same time providing the necessary support requirements.

Within buildings, asbestos pressure pipes shall be carried either on concrete supports or on rigidly fixed steel wall brackets.

Suitable anchors shall be provided at all changes of pipe directions, junctions and tees to counterpart the effect of end thrust loads.

#### **Concrete and Pitch Fibre Pipes**

These pipes shall not be used for above ground application.

**Expansion Joints and Anchors**

Where practicable, cold pipe work system shall be arranged with sufficient bends and changes of direction to absorb pipe expansion provided that the pipe stresses are contained within the working limits prescribed in the relevant B.S. specification.

The sub-contractor shall pay particular care when supporting cast iron and asbestos cement pipes in order to ensure that settlement and building movement do not break the pipe joints.

Where piping anchors are supplied, they shall be fixed to the main structure only. Details of all anchor design proposals shall be submitted to the engineer for approval before erection commences.

The sub-contractor when arranging his piping shall ensure that no expansion movements are transmitted directly to connections and flanges on pumps or other items of plant.

The sub-contractor shall supply flexible joints to prevent vibrations and other movements being transmitted from pumps to piping systems or vice versa.

## 2.5

### **Sanitary Appliances**

All sanitary appliances supplied and installed, as part of the sub-contract works shall comply with the general requirements of B.S. specification.

## 2.6

### **Pipe Sleeves**

Main runs of pipe work are to be fitted with sleeves where they pass through walls and floors. Generally the sleeves shall be of P.V.C. except where they pass through the structure, where they shall be of mild steel. The sleeves shall have 6mm – 12mm clearance all-round the pipe or for insulated pipe work all around the insulation. The sleeves will then be packed with slag wool or similar.

## **3. INSTALLATION**

### **General**

Installation of all pipe work, valves fittings and equipment shall be carried out under adequate supervision from skilled staff to the relevant codes and standards as specified herein. The sub- contractor shall be responsible to the main contractor for ensuring that all builders work associated with his piping installation is carried out in satisfactory manner to the approval of the engineer.

### **Above Ground Installation**

#### **Water Services**

Before any joint is made, the pipes shall be hung in their supports and adjusted to ensure the joining faces are parallel and falls which shall be required are achieved without springing the pipe.

Where falls are not shown on the contract drawings or stated elsewhere in the specification, pipework shall be installed parallel to the lines of the buildings and as close to the walls, ceiling, columns etc, as is practicable.

All water systems shall be provided with sufficient drain points and automatic air vents to enable them to function correctly. Valves and other user equipment shall be installed with adequate access for operation and maintenance. Where valves and other operational equipment are unavoidable installed beyond normal reach or in such position as to be difficult to reach from a short step ladder, extension spindles with floor or wall pedestals shall be provided.

Screwed piping shall be installed with a sufficient number of unions to facilitate easy removal of valves and fittings, and to enable alterations of pipework to be carried out without the need to cut the pipe.

Full allowance shall be made for the expansion of pipework, precautions being taken to ensure that any force produced by pipe movements are not transmitted to valves, equipment or plant.

All screwed joints to piping and fittings shall be made with P.T.F.E Tape.

#### **Sanitary Services**

Soil, waste and vent pipe systems shall be installed in accordance with the best standards of modern practice as described in B. S. 5572 to the approval of the engineer.

The sub-contractor shall be responsible for ensuring that all ground floor waste fittings are discharged to a gully trap before passing to the sewer via a manhole.

The sub-contractor shall provide all necessary rodding and inspection facilities within the draining system in positions where easy accessibility is available.

Where a branch requires rodding facilities in a position to which normal access is unobtainable, then that branch shall be extended so as to provide a suitable purpose made rodding eye in the nearest adjacent wall or floor to which easy access is available.

The vent stacks shall terminate above roof level and where a stack passes through the roof, a weather skirt shall be provided. The sub-contractor shall be responsible for sealing the roof after installation of the stacks.

The open end of each stack shall be fitted with plastic coated or galvanized steel, wire guard. Access for rodding and testing shall be provided at the foot of each stack.

### **Sanitary appliances**

All sanitary appliances associated with the sub-contract works shall be installed in accordance with the best standard of modern practice as described in B.S 5572 to the approval of the engineer.

### **Underground installation**

#### **General**

All underground water and drainage service installations shall be carried out in accordance with the best standards of modern practice as described in C.P. 301 and C. P. 310 respectively and the following clause.

#### **(b) Sequence of operation for underground services installation**

(1) Setting Out - As described in B. S. Code of Practice 301 Clause 502.

(2) Breaking Up surface (If in Roads) - As described in B.S Code of Practice 301 Clause 503.

(3) Excavation and Timbering - As described in B.S Code of Practice 301 Clause 503 and the following: -

Excavation shall be made to such depths and dimensions as may be required by the engineer to obtain prior falls and firm foundations. No permanent construction shall be commenced on any bottom until the excavation has been approved by the engineer.

Should the sub-contractor error or without the instruction of the engineer make any excavation below the required to refill such excavation to the correct levels with concrete 1:4:8 to 38mm maximum aggregate size.

The sub-contractor prices shall have included for excavation in all materials met with, for trimming bottoms to the necessary falls and for any extra excavating required for planking, strutting and working space.

The sub-contractor shall keep the whole of the trenches or other excavations free from water and shall execute such works and install such pumps as may be necessary to keep the excavation dry at all times.

No sub-soil water shall be discharged into the sewage systems without written permission of the engineer.

(4) Layering of concrete beds or other supports for pipes (If required)

As described in B.S Code of Practice 301 Clause 504 and the following: -

All drains below buildings and roads shall be encased in concrete 150mm thick. Concrete beds and supports shall be concrete 1:3:6 to 25mm maximum aggregate size.

(5) Pipe Laying and jointing

Drain pipes shall be laid and jointed as described under B.S. Code of Practice 301, Clause 505.

Pitched fibre drain pipe shall be laid, jointed and cut in accordance with the requirement or the note contained under appendix C of B. S. 2760

(6) **MANHOLES**

(i) General

All manholes provided under the sub-contract works shall be constructed of approved materials and in an approved manner.

All manholes shall be water tight and if construction of brickwork, solid block or stonework, they shall be rendered internally with a cement mortar of at least 12mm thickness and finished with a smooth surface.

The side of all channels in every manhole shall be brought up vertically to a height of not less than the diameter of the drain shall be benched in good concrete from the top of the channels at an angle 30° to the horizontal and floated to a smooth hard surface with a coat of 1:1 cement mortar.

In all other respects, manholes shall be constructed in accordance with B. S. Code Practice 301.

(ii) Rectangular and Square Manholes

Rectangular and square straight through manholes shall be constructed from brickwork, solid block work, stonework or concrete to comply with the following minimum internal dimensions (millimeters)

Depth Below Ground of Outgoing Invert	Internal Access Shaft Dimensions L x W	Size of Main Channel Diameter	Internal Chamber Dimensions L x W	Height of Chamber above Benching	Wall Thickness
Up to 740	-	100 to 150	610 x 460	-	150
Up to 740	-	230 to 460	760 x 760	-	150
Up to 1200	-	100 to 150	760 x 760	-	150
760 to 1200	-	230 to 460	910 x 910	-	150
1220 to 1800	-	100 to 150	910 x 910	-	150
1220 to 1800	-	230 to 460	1070 x 910	1370	150
1830 to 4550	760 x 760	100 to 150	1370 x 910	1370	230
1830 to 4550	760 x 760	230 to 460	1370 x 100	1680	230
4570 & over	760 x 760	100 to 150	1370 x 1140	1680	230
4570 & over	760 x 760	230 x 460	1370 x 1140	-	230

When the branches are connected into manhole, the length and width dimension of the chambers shall be increased as follows: -

Length	Branch Diameter
100mm	300mm/branch on the side with most branches
150mm	380mm/branch on the side with most branches
230 & 300mm	460mm/branch on the side with most branches
460mm	610mm/branch on the side with most branches

Width	Branches Diameter
100mm to 460mm	300mm for each side with branches plus 150mm or the diameter of the main drain whichever is the greater.

#### **Precast Concrete Circuit Manholes**

Where specified straight through precast concrete manholes shall be manufactured and constructed to comply with B. S. 556 and the following dimensional requirements, (dimensions in millimeters):

-

Depth of ground of outgoing Invert	Internal access shaft diameter	Size of main channel diameter	Channel diameter	Height of chamber above benching
------------------------------------	--------------------------------	-------------------------------	------------------	----------------------------------



Up to 740	-	100 to 460	910	-
760 to 2410	760	100 to 460	1070	1370
2440 to 4550	760	100 to 460	1220	1680
4570 and over		100 to 460	1370	

When the branches are connected into manholes, the internal diameter of the chamber shall be increased as necessary up to a maximum chamber diameter of 1830mm.

### (iii) Step Iron and Covers

Access shafts to manholes of depths greater than 760mm shall be provided with approved step irons at suitable intervals.

Every manhole or manhole access shaft shall be fitted with a removable air tight cast iron cover of adequate size and strength, fixed in a manner which prevents surface water gaining access into the drainage system.

Cast manhole covers and frames shall be manufactured in accordance with the requirements of B. S. 497 shall generally fall into the following categories: -

Heavy Duty: For Carriageways

Medium Duty: For Footpaths

Light Duty: For domestic premises or other places where they do not have to carry wheeled traffic.

### (iv) Back Drop Connections

Where the level of the branch drain entering the manhole is higher than can be suitably Accommodated by the normal type benching, then the branch drain shall be connected to the manhole by means of a backdrop connection.

Backdrop connections shall be made in accordance with the details shown on the relevant sub- contract drawings and the requirements of B. S. Code of Practice 301.

### (iv) Channels

Where the branch channel connects to the main channel in the manhole, the invert of the branch channel shall be a minimum of 38mm higher than the channel.

## (7) Testing of Pipelines

After pipelines are connected up and joints have been sealed, the pipelines shall be tested before pipes are, if required, haunched, or surrounded in concrete.

Methods of testing and inspection shall be in accordance with clause 4 of specification.

## (8) Concrete Bedding, Haunching, and Surround

Concrete bedding, haunching, and surround shall be provided as necessary or where called for by the engineer in accordance with the requirements laid down in B. S. Code of Practice 301, Clause 310.

#### **(9) Backfilling**

Backfilling of trenches, headings and around manholes shall be carried out in accordance with the methods described in B. S. Code of Practice 301, clause 310.

## **10.Reinstatement of Surfaces**

Following the final backfilling of all trenches, headings and manhole surrounds, the surface of the excavated areas shall be fully reinstated to the approval of the engineer.

Where excavations have been carried out in public highways or other areas not forming part of the site, the sub-contractor shall be deemed to have allowed in his price for all charges associated with the temporary and final reinstatement requirements of the Local Highway Authority, whether this is carried out by the sub-contractor or by the authority concerned.

No claims for extras in this respect will be accepted.

## **(10) Sewer Connections**

The sub-contractor shall pay all charges associated with the connection by the local authorities of the drainage to the main sewer, including necessary reinstatement.

## **4. TESTING AND INSPECTION**

### **4.1 Site Tests- Pipe work Systems**

#### **(a) Underground Water Mains**

After laying, jointing and anchoring, the main shall be slowly and carefully charged with water, so that all air is expelled and allowed to stand for those three days before testing under pressure.

A long main shall be tested in sections as the work of laying proceeds and all joints shall be exposed for inspection during the testing.

The open end of the main may be temporarily closed for testing under moderate pressure by fitting a water pipe expanding plug, of which several types are available. The end of the main and the plug should be secured by struts or otherwise, to resist the end thrust of the water pressure in the main.

If the section of the main tested terminates with a sluice valve, the wedge of the valve shall not be used to retain the water; instead the valve shall be fitted temporarily with a blank flange, or if a socket valve, with a plug and the wedge shall be placed in the open position while testing. The sub-contractor shall provide suitable end supports to withstand the end thrust of the water pressure in the main.

The test pressure shall be applied by means of a manually operated test pump or, in the case of long mains of large diameter, by a power driven test pump which shall not be left unattended. In either case precautions shall be taken to ensure that the required pressure is not exceeded. Pressure gauges should be recalibrated before the tests.

The sub-contractor shall be deemed to have included in his price for all test pumps and other equipment required under this clause of the specification.

The test pressure shall be one and half times the maximum working pressure except where pipe is manufactured from a material for which the relevant B.S. specification designated a maximum test pressure as in the case of cast or spun iron pipes, where the test pressure should not exceed 120, 180, and 240 metre/head for class B, C, or D pipes, respectively.

The test pressure shall be maintained by the pump for about one hour and if there is any leakage, it shall be measured by the quantity of water pumped into the main in that time. A general leakage of one gallon per 25mm of diameter, per 1.6 kilometres per 24 hour per 30 metres head, may be considered reasonable but any visible individual leak shall be repaired.

#### **(b ) Above Ground Internal Water Service Installation**

All water service pipe system installed above ground level shall be tested hydraulically for a period of one hour to not less than one and half times the design working pressure.

If preferred, the sub-contractor may test the pipe lines in sections. Any section found to be satisfactory need not be the subject of a further test when the system has been completed, unless specifically requested by the engineer.

During the test, each branch and joint shall be examined carefully for leaks and any defects revealed shall be made good by the sub-contractor and the section re-tested.

The sub-contractor shall take all necessary precautions to prevent damage occurring to special valves and fittings during the tests. Any item damaged shall be repaired or replaced at the sub-contractor's expense.

#### **(c ) Underground Drainage System**

A site test shall be carried out on all drainage pipes before concrete haunchings or surrounds are applied. These tests shall be carried out preferably from manhole to manhole.

Short branch drains connected to a drain between manholes shall be tested as one system with the main drain. In long branches, testing junction shall be inserted next to the junction with the main drain and the branch tested separately. After the test has been passed, the testing junction shall be effectively sealed.

All tests on underground drains shall be water tests. Smoke tests shall not be permitted.

In certain circumstances, air tests may be permitted on cast iron drains at the discretion and to the approval of the engineer.

Water tests shall be carried out in accordance with the methods described under B.S. Code of Practice 301, clause 601(b) and (c) and the test pressure shall be not less than 1.520m head at the highest point in the pipe section and not more than 10.630m head at any point in the section.

The test pressure shall be maintained for a period of one hour during which time the pipes and joints shall be inspected for sweating and leakage. Any leaks discovered during the tests shall be made good by the sub-contractor and the section re-tested.

In addition to pressure tests, drainpipe runs shall also be tested for straightness where applicable. This test shall be carried out in accordance with one of the two methods described in B.S. Code of Practice 301, clause 601 (e)

Testing of manhole shall be carried out in accordance with the methods described under B.S. Code of Practice 301, clause 601 (f)

#### **(d ) Above Ground Soil Waste and Ventilating Pipe Systems**

All soil, waste and ventilating pipe systems forming of the above ground installation, shall be given the appropriate test procedures as described in B.S. 5572: 1972.

Smoke tests on above ground soil, waste and ventilating UPVC pipe systems shall not be permitted. Pressure tests shall be carried out before any work, which is to be concealed is finally enclosed.

Any defects revealed by the tests shall be made good by the sub-contractor and the test repeated to the approval of the engineer.

In all other respects, tests shall comply with the requirements of B.S. Codes of Practice 304 and the requirements of B.S. 5572: 1972.

#### **4.2 Site Test – Performance**

Following satisfactory pressure tests on the pipe systems, operational tests shall be carried out in accordance with the relevant B.S. Codes of Practice on the systems as a whole to establish that special valves, gauges, controls, fittings, equipment and plant are functioning correctly to the satisfaction of the engineer.

### **5. STERILIZATION OF HOT AND COLD WATER SUPPLY SYSTEMS**

All underground water mains and above ground water distribution systems, cisterns, tanks, calorifiers, pumps, e.t.c., shall be thoroughly sterilized and flushed out after the completion of all tests and before being fully commissioned for hand over.

The sterilization procedure shall be carried out by the sub-contractor or specialists employed by the sub-contractor in accordance with the requirements of B.S. Code of Practice 310, clause 409, to the approval of the engineer.

I.

## **SECTION VII-BILLS OF QUANTITIES**

**A.**

The "Employer" is

The "Project Manager" is

The "Architect" is

The "Quantity Surveyor" is

The "Structural/Civil Engineer" is

The "M and E Engineer" is

The Employer has appointed the above listed consultants to render professional services in accordance with Clause 2.13 of the Agreement and Conditions of Contract for Building Works. For the purpose of the works which are under the control of the consultants above, the respective consultant shall be deemed to be invested with the duties and be representatives of the Architect. The contractual obligations of each Consultant will be governed by the Agreement and Conditions of Contract for Building Works.

## B.

The site is located on Plot L.R. No ASSET NO:LR:11151 in Thika Town, Kiambu County at the current headquarters of Thika Water & Sewerage Co. Ltd.

The site of the works shall be used solely for the purpose of executing and completing the Contract to the satisfaction of the Architect.

The Contractor shall obtain the Architect's approval for the siting of all temporary storage areas for materials. Site storage shall be the responsibility of the main contractor and his pricing shall cater for the same.

The Contractor shall visit the site to acquaint themselves with its nature and position, scope of demolition works, the nature of the ground, sub- strata and other local conditions, position of power and water supplies, access roads or any other limitations, and no claims for extras will be considered on account of lack of knowledge in this respect.

The Contractor's attention is drawn to the fact that they shall confine themselves to the area necessary for executing the works as instructed by the Architect.

The Contractor must obtain the Architect's approval and directions regarding the use of any material found on the Site. Any such material utilized in the execution of the Contract shall be measured and value assessed by the Quantity Surveyor and the amount credited to the employer

**Kshs**

A.	<p><b>ACCESS TO SITE</b></p> <p>Access to site is as per Architect's Instruction</p>									
B.	<p><b>WORKING AND STORAGE SPACE</b></p> <p>Working and storage space will be confined to the area designated by the Architect within the plot boundary. The Contractor is to include in his pricing all costs associated with provision of adequate &amp; secured storage space for his materials &amp; goods</p>									
C.	<p><b>DESCRIPTION OF THE MAIN CONTRACT WORKS</b></p> <p>The Contract covers the construction of a 1 No.office block comprising of 3 No. storeys and one basement floor including associated electromechanical and external works.</p> <p>Construction shall involve vibrated reinforced concrete strip foundations,column bases, columns, reinforced concrete suspended solid slab, beams,masonry walling and suspended concrete roof structure</p> <p>Finishes shall be non-slip ceramic tiling to floors and polished concrete finish and ceramic wall tiles and plaster/paint to walls internally. External finishes shall comprise of render to walls to receive Textured paint finish and mazeras stone cladding</p> <p>Windows shall be powder coated aluminium frames infilled in 6mm thick laminated glass.</p> <p>Doors shall be powder coated aluminium framed and solid timber framed doors.</p> <p>External works shall include driveway/parking, foul water drainage and landscaping</p> <p>Plinth Area is as follows for guidance only:-</p> <table><tr><td>Basement Floor</td><td><u>239.00 Sm</u></td></tr><tr><td>Ground Floor</td><td><u>246.00 Sm</u></td></tr><tr><td>First Floor</td><td><u>239.00 Sm</u></td></tr><tr><td>Second Floor</td><td><u>239.00 Sm</u></td></tr></table>	Basement Floor	<u>239.00 Sm</u>	Ground Floor	<u>246.00 Sm</u>	First Floor	<u>239.00 Sm</u>	Second Floor	<u>239.00 Sm</u>	
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First Floor	<u>239.00 Sm</u>									
Second Floor	<u>239.00 Sm</u>									
D.	<p><b>DRAWINGS</b></p> <p>The Drawings used in preparing the Bills of Quantities are scheduled in Appendix "A" at the end of these Bills. Drawings may be inspected at the offices of the Architect or Quantity Surveyor by prior appointment</p>									
<p><b>Carried To Collection</b></p>		<p><b>Kshs</b></p>								



**A.**

The Contractor will be required to enter into a Contract which will be the current Form of Agreement and Conditions of Contract for Building Works published by the Joint Building Council of Kenya (1999 Edition, with Quantities) excepting in so far as varied hereafter.

## Clause 1 Definitions.

Clause 3 General Obligations of the Employer.  
Sub clause 3.4 shall be deleted

Clause 4      General Obligations of the Contractor.

**Clause 5      General Obligations of the Architect.**

Clause 6 General Obligations of the Quantity Surveyor.

**Clause 7 Contract Documents.**

- i) A list of drawings from which the tender documents have been prepared is appended (See appendix A)
- ii) Before submitting tenders, Tenderers are advised to examine all the drawings and satisfy themselves details as no claim by reason of ignorance to this connection shall be entertained.
- iii) The tenderer shall satisfy themselves to the correctness of all drawings and measurements. If the tenderer finds discrepancies in the drawings or between the drawings and the bills of quantities, they shall immediately refer the same to the concerned consultants who shall decide which shall be followed.
- iv) The Contractor is to take the necessary particulars for ordering his materials from the drawings and the work in progress on the building and not use the Bills of Quantities for that purpose.

Clause 8 Contract Bills and Contract Price.  
Sub clause 8.1, amend the words, 'the employer' to 'the architect'.

The Contract Bills have been prepared in accordance with The Standard Method of Measurement of Building Works, Third Edition (Metric) June 2008, published by the Architectural Association of Kenya, Chapter of Quantity Surveyors, which is available for inspection at the offices of the Quantity Surveyor by appointment.

Exception to the Standard method of measurements include:

- \* Composite descriptions: the contractor shall include for all works necessary to complete the works
- \* All works in this contract that are subject to adjustment have been defined as 'Provisional'.

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<p>Clause 9 Contractor's Site Agent and Other Staff.</p> <p style="padding-left: 40px;">ADD Sub clause 9.1a "The Contractor shall provide detailed qualifications and experience profile for the site agent for approval by the Employer and Architect before commencement of the works on site."</p> <p style="padding-left: 40px;">ADD Sub clause 9.5 "The Contractor's site agent shall remain on site after practical completion to attend to all the snags to the satisfaction of the Architect and Employer."</p> <p>Clause 10 Clerk-of-Works.</p> <p>Clause 11 Liability against Injury to Persons and Property.</p> <p>In addition to the requirements contained in clause 11, the contractor's All Risk Policy shall cover the full value of the following and allow for all costs thereof:</p> <ul style="list-style-type: none"> <li>* The works and temporary works erected in performance of this contract</li> <li>* The materials on site, plant and tools</li> <li>* The cost and expense of removing debris of the property insured, destroyed and damaged by any peril insured.</li> <li>* Professional fees, allowed as 15% of the Contract Sum.</li> </ul> <p>Clause 12 Insurance against Injury to Persons and Property.</p> <p>The Contractor shall effect and maintain the following insurances as required by Clause 12.1.1 and 12.1.2 and shall allow for all costs thereof:</p> <p>(i) Employers' Liability (Workmen's Compensation).</p> <p>(ii) Third Party (Public Liability) for an Indemnity of not less than Shs. 15,000,000.00 for any one accident or series of accidents arising from the same event (unlimited in aggregate).</p> <p>Should the Contractor already hold annual Insurance covering the whole of their activities, and the Indemnity required under this Contract exceeds the Indemnity under the existing policy/is, then further insurance shall be effected and maintained to cover such excess.</p> <p>The Contractor shall ensure that all Sub-Contractors effect and maintain such insurances as are necessary to cover their liabilities in respect of injury to persons and property and Workmen's Compensation.</p> <p>Clause 13 Insurance of the Works (Contractor's Liability).</p> <p>Clause 14 Insurance of the Works (Employer's Liability). This clause is NOT applicable. Shall be deleted.</p> <p>Clause 15 Insurance of Works (Works of Alteration etc.). This clause is NOT applicable. Shall be deleted.</p>	
<b>Carried To Collection</b>	<b>Kshs</b>

<p>Clause 16    Performance Bond. Section 16.2 of clause 16 is not applicable. Shall be deleted.</p> <p>Clause 17    Compliance with Regulations, Notices etc.</p> <p>Clause 18    Programme of Works.</p> <p>Clause 19    Access to the Works.</p> <p>Clause 20    Possession of Site and Commencement of Works. Sub clause 20.2 shall be amended by the addition of the words 'or such other date as arises by virtue of extension of time granted under Clause 36 of the Conditions of Contract'.</p> <p>Clause 21    Levelling and Setting Out. Sub clause 21.1 amend the words 'The Employer' to 'The Architect'.</p> <p>Clause 22    Architect's Instructions.</p> <p>Clause 23    Specification of Goods, Materials and Workmanship. Sub Clause 23.7 shall not be applicable .Shall be deleted.</p> <p>Clause 24    Samples and Tests.</p> <p>Clause 25    Royalties and Patent Rights.</p> <p>Clause 26    Assignment. Clause 26 shall be deleted</p> <p>Clause 27    Subletting. Sub-Clause 27.1 amend "He may sub-let part of the Works upon giving notice to the Architect" to read "He may sub-let part of the works upon giving notice and getting approval from the Architect and Employer."</p> <p>Clause 28    Suspension of the Works by the Architect.</p> <p>Clause 29    Suspension of the Works by the Contractor.</p> <p>Clause 30    Variations.</p> <p>Sub clause 30.2 the part reading "provided that no such instructions shall substantially change the scope or object of the contract without the consent of the Employer and the Contractor" shall be deleted</p> <p>Section 30.3 of clause 30 shall not be applicable. Shall be deleted</p> <p>ADD Sub clause 30.6.5 "Where a Prime Cost rate is inserted in the Bills of Quantities for the supply of any materials or items, adjustment to the prime cost rate shall be undertaken by the Quantity Surveyor in accordance with the contract.</p>	
<p><b>Carried To Collection</b></p>	<p><b>Kshs</b></p>

Clause 30.6.3.2 Shall be amended to read “when no such rates have been inserted, at rates to be agreed between the quantity surveyor, the employer and the contractor; failing which the quantity surveyor will issue a fair valuation. The quantity surveyor’s fair valuation thereof shall be final and binding between parties”.

Add to sub clause 30.9 “The conditions of this sub clause do not apply to works undertaken by another contractor under Architects Instructions issued in accordance with clause 22.2 of the Conditions of Contract”.

Add Sub clause 30.15 “The Quantity surveyor will assess the variations and advise the Architect and the Employer within three calendar weeks from the date of occurrence of the variations.

The Architect in consultation with Employer will issue a variation order within one calendar week of receipt of the said evaluation from Quantity surveyor / services engineer”

**Daywork Rates:** Any Daywork ordered under Sub-Clause 30.6.3 of contract shall be executed at the following rates:-

Labour: The Prime Cost to which \* \_\_\_\_\_ per centum shall be added.

Materials: The Prime Cost (delivered to Site) to which \* \_\_\_\_\_ per centum shall be added.

Plant: The Nett Hire Charge to which \* \_\_\_\_\_ per centum shall be added.

These percentage additions shall cover all insurances, use of small tools and non-mechanical plant, sharpening tools, water, supervision, watching, lighting, establishment and overhead charges and profit.

Dayworks will be allowed only where specifically ordered by the Architect in writing.

All Daywork Sheets must be signed by the Architect and the Contractor or their authorised representatives.

Clause 31 Nominated Sub-Contractors.

The main contractor shall be responsible for giving all necessary directions to Nominated Sub-contractors, ascertaining their requirements, co-ordination of their works and arranging for them to be on site at the proper time for the orderly progress of the works and for agreeing accurate dimensions in regard to settling out and all builder's work. The main contractor shall place all orders with the nominated sub-contractor clearly on his behalf and shall not pledge the credit of the employer ,either directly or indirectly. They shall arrange for the delivery of all materials or goods at the proper time for the ordered progress of works.

**Carried To Collection**

**Kshs**

<p>The Contractor will be required to ensure that all Nominated Sub-Contractors enter into the Sub-Contract Agreement issued under the authority of the Kenya Association of Building and Civil Engineering Contractors and as amplified or varied hereinafter and they must deposit with the Quantity Surveyor a signed extract of the relevant details thereof.</p> <p>ADD: Both Nominated and Domestic sub-contractors may be paid directly by the Employer, if mutually agreed between the Employer and the Contractor.</p> <p>Sub-Clause 31.15 "If a nominated sub-contractor terminates the sub-contract or the Contractor terminates the sub-contract on the advice of the Architect," shall be amended to read "If a nominated sub-contractor terminates the sub-contract or the Contractor terminates the sub-contract on the advice of the Architect and Employer,"</p> <p>Clause 32     Nominated Suppliers.</p> <p>The main contractor shall place all orders with the nominated suppliers clearly on his behalf and shall not pledge the credit of the employer, either directly or indirectly. They shall arrange for delivery of all materials or goods at the proper time for the ordered progress of the works.</p> <p>The Contractor will not receive any cash, trade or other discounts on Prime Cost and Provisional Sums. Any profit in lieu of these discounts which the Contractor desires must be priced by them against the appropriate item provided in the Bills of Quantities.</p> <p>When tendering for works covered by Prime Cost and Provisional Sums the Contractor will be treated as any other Nominated Supplier or Sub-Contractor.</p> <p>The Employer reserves the right to pay direct on the Certificates of the Architect some or all accounts in respect of works and materials covered by Prime Cost and Provisional Sums due to Nominated Sub-Contractors or Nominated Suppliers and to deduct any amounts so paid from any sums otherwise payable to the Contractor. Should this reservation be adopted due to default on the part of the Contractor, any profits which the Contractor may have allowed on Prime Cost and Provisional Sums will be omitted from the Contract. Direct payment will not be deemed to construe omission of the work from the Contract and the Contractor will continue to be responsible for the work or goods in accordance with the terms of the Contract.</p> <p>The contractor is to include in his pricing for all costs associated to provision of adequate &amp; secured storage space for all materials supplied by nominated and / or directly procured by the client</p> <p>Clause 33     Works by Other Persons engaged by The Employer.</p> <p>Works to be executed by others and not forming part of this contract are described in the Preliminaries Section of the Contract Bills under the heading of Description of Works and Scope of Contract. The employer reserves the right to engage any other contractors to carry out works on any part of the site and the contractor will at all times grant access to such contractors duly appointed by the employer.</p> <p>Sub clause 33.2 shall be amplified as follows; 'The Employer reserves the right to engage any other contractors to carry out works on any part of the site and the main contractor will at all times grant access to such contractors duly appointed by the employer. The controller will allow in their rates for any inconveniences, interference or co-ordination with such other persons as no profit and attendance shall be paid on this account.</p>	
<p style="text-align: right;"><b>Carried To Collection</b></p>	<p style="text-align: right;"><b>Kshs</b></p>

<p>Clause 34     Payments</p> <p>At the intervals stated, Certificates shall be issued provided the amounts of such Certificates are considered reasonable by the Quantity Surveyor, in accordance with the value of the Contract. When applying for a Certificate, the Contractor shall furnish the Quantity Surveyor with a detailed approximate statement of the value of the work executed and all materials on Site in order to expedite the issue of the Certificate.</p> <p>Subsequent Certificates will not be issued to the Contractor by the Architect until satisfactory proof has been given by the Contractor that Nominated Sub-Contractors and Nominated Suppliers have been paid the amounts included for them in previous Certificates issued to the Contractor.</p> <p>The employer reserves the right to make direct payments to nominated sub-contractors and nominated suppliers.</p> <p>All documents necessary for the purposes of the compilation of the Final Account including all documents relating to the accounts of nominated sub-contractors and nominated suppliers shall be passed to the Quantity Surveyor as and when available during the progress of the works and at later than one month after the Date of Practical Completion.</p> <p>Add sub-clause 34.2a "The Quantity Surveyor, Employer's Representative and Contractor shall be represented on site during verification of work done and materials on site to be included in the interim valuation."</p> <p>Clause 34.15 shall be deleted</p> <p>Clause 34.20 "The final account shall be agreed between the Quantity Surveyor, the Contractor, the Architect and the Employer."</p> <p>Clause 35     Fluctuations.</p> <p>Clauses 35.0 The Contract shall be a FIXED RATE Contract</p> <p>Sub-Clauses 35.2 to 35.8 (inclusive) will be deleted.</p> <p>Clause 36     Extension of Time.</p> <p>Delete sub-clause 36.1.10 and insert, 'By the contractor's inability for reasons beyond and which he could not reasonably have foreseen at the date of this contract to obtain delivery upon the works of such imported goods or materials imported from outside the country in which the contract is being executed as are essential to the proper carrying out of the works'.</p> <p>Sub clause 36.1.15 shall not be applicable. Shall be deleted.</p> <p>The Contractor shall order all materials to be obtained from overseas immediately upon signing the contract and shall order materials to be obtained locally as early as necessary to ensure that such materials are on site when required for the works.</p> <p>However, before placing any order, the contractor must contain confirmation in writing from the architect that the materials specified are required for the works and have not been varied in any way in the light of altered requirements or planning.</p>	
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<p>A claim for extension of time under clause 36.1.10 shall not be considered unless substantial proof is submitted that every endeavour has been made by the contractor to avoid such delays.</p> <p>As soon as any delay becomes apparent the architect must be notified in writing</p> <p>Clause 36.8 shall be amended to read..., "All applications for extension of time and all decisions on the same shall be copied and discussed and agreed with the Employer at the time of application or decision, as the case may be."</p> <p>Clause 37    Loss and Expense caused by Disturbance of Regular Progress of The Works. When evaluating the actual loss incurred under this clause, the only items to be considered are the priced preliminaries. The figures to be used shall be the agreed recurrent costs and NOT the entire priced rate</p> <p>Clause 38    Termination of the Contract by the Employer.</p> <p>Clause 39    Termination of the Contract by the Contractor.</p> <p>Clause 40    Termination of the Contract by either Party.</p> <p>Clause 41    Practical Completion and Defects Liability. Sub-Clause 41.8 shall be deleted and replaced with the following.... "Notwithstanding the provisions of sub-clause 30.10 and sub-clause 41.6 herein, where defects shrinkages or other faults shall occur during the period of rectification of defects which are not due to materials or workmanship not being in accordance with the contract, the Architect may instruct their rectification at the Contractors own cost, unless such faults are due to design errors. Such instruction shall only be treated as a variation and valued in accordance with sub-clause 30.6 of these conditions if the faults are of design nature."</p> <p>Clause 42    Sectional Completion.</p> <p>Clause 43    Damages for Delay in Completion.</p> <p>Clause 44    Antiquities and Other Objects of Value.</p> <p>Clause 45    Settlements of Disputes.</p>	
<p style="text-align: right;"><b>Carried To Collection</b></p>	<p style="text-align: right;"><b>Kshs</b></p>

<b>A. APPENDIX TO THE CONDITIONS OF CONTRACT</b>		
The Appendix to the Conditions of Contract will be filled in as follows:		
Clause 13.0	Percentage to cover Professional Fees	15%
Clause 16.1	Amount of Contractor's Surety	10% of the Contract Sum.
Clause 16.2	Amount of Employer's Surety	This clause shall be deleted.
Clause 18.1	Period for Submission of Programme	2 weeks from the date of possession.
Clause 20.1	Period for Possession of Site	As per Architect's instructions
Clause 20.2	Contract Period	To be stated in the Form of Tender.
Clause 20.2	Date for Commencement of Works	Within 14 days of receipt of notice accepting tender.
Clause 20.2	Date for Practical Completion	To be agreed.
Clause 31.14	Name of the bank for purposes of interest calculation	Central Bank of Kenya
Clause 34.1	Intervals for application of Payment Certificates	4 weeks
Clause 34.4	Minimum amount of Payment Certificates	Kshs. 2,000,000.00
Clause 34.12	Percentage of Certified Value Retained	10% of the project cost
Clause 34.12	Limit of Retention Fund	10% of the project cost
Clause 34.12	Periods for Release of Interest on Retention Money to Contractor	N/A
Clause 34.17	Period of Final Measurement and Valuation	Six (6) Months after Practical Completion
Clause 41.6	Defects Liability Period	Six (6) Months
Clause 43.1	Liquidated and Ascertained Damages	KShs. 50,000.00 - per calendar week or part thereof for late completion.
<b>Carried To Collection</b>		<b>Kshs</b>



<b>GENERAL MATTERS</b>																														
<b>A.</b>	<b>SUFFICIENCY OF TENDER</b>  The Contractor shall be deemed to have satisfied themselves before tendering as to the correctness and sufficiency of their Tender for the Works and of the rates and prices stated in the priced Bills of Quantities, which rates and prices shall cover all their obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the Works.																													
<b>B.</b>	<b>STAMP CHARGES</b>  The Contractor shall allow for the payment of all Stamp Charges in connection with the Surety Bond and Contract Agreement.																													
<b>C.</b>	<b>DEFINITIONS AND ABBREVIATIONS</b>  Terms used in these Bills of Quantities shall be interpreted as follows:  <table><tr><td>Approved</td><td>shall mean approved by the Architect.</td></tr><tr><td>"as directed"</td><td>shall mean as directed by the Architect.</td></tr><tr><td>"B.S."</td><td>Shall mean the current British Standard Specification published by the British Standards Institution, 2 Park Street, London W.1., England.</td></tr><tr><td>"CM"</td><td>shall mean Cubic Metres.</td></tr><tr><td>"SM"</td><td>shall mean Square Metres.</td></tr><tr><td>"LM"</td><td>shall mean Linear Metres.</td></tr><tr><td>"MM"</td><td>shall mean Millimetres.</td></tr><tr><td>"KG"</td><td>shall mean Kilogrammes.</td></tr><tr><td>"NO"</td><td>shall mean Number.</td></tr><tr><td>"Ditto"</td><td>Shall mean the whole of the preceding description except as qualified in the section in which it occurs</td></tr><tr><td>"m.s"</td><td>Shall mean Measured Separately</td></tr><tr><td>"VAT"</td><td>Shall mean Value Added Tax</td></tr><tr><td>"Take delivery."</td><td>shall mean collecting the client supply items from a store located within Nairobi, loading and transporting the same to the site at no cost to the employer.</td></tr><tr><td>"Omitted works"</td><td>shall mean works completely removed from the scope and not to be done at all within the contract. This shall not apply to works removed from the main/builders works and instead executed by a specialist subcontractor within the current contract.</td></tr></table> <table><tr><td>Where work is removed from builder's work and executed by a specialist, the main contractor shall be paid for profit and attendance in the prime cost section of the bills of quantities. No claim for loss of profit and or expense shall arise.</td></tr></table>	Approved	shall mean approved by the Architect.	"as directed"	shall mean as directed by the Architect.	"B.S."	Shall mean the current British Standard Specification published by the British Standards Institution, 2 Park Street, London W.1., England.	"CM"	shall mean Cubic Metres.	"SM"	shall mean Square Metres.	"LM"	shall mean Linear Metres.	"MM"	shall mean Millimetres.	"KG"	shall mean Kilogrammes.	"NO"	shall mean Number.	"Ditto"	Shall mean the whole of the preceding description except as qualified in the section in which it occurs	"m.s"	Shall mean Measured Separately	"VAT"	Shall mean Value Added Tax	"Take delivery."	shall mean collecting the client supply items from a store located within Nairobi, loading and transporting the same to the site at no cost to the employer.	"Omitted works"	shall mean works completely removed from the scope and not to be done at all within the contract. This shall not apply to works removed from the main/builders works and instead executed by a specialist subcontractor within the current contract.	Where work is removed from builder's work and executed by a specialist, the main contractor shall be paid for profit and attendance in the prime cost section of the bills of quantities. No claim for loss of profit and or expense shall arise.
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A.	<p><b>PROGRESS SCHEDULE</b></p> <p>The Contractor shall, upon receiving instructions to proceed with the work, draw up a Time and Progress Schedule setting out the order in which the Works are to be carried out with the appropriate dates thereof. This Time and Progress Schedule is to be agreed with the Architect and no deviation from the order set out in this Schedule will be permitted without the written consent of the Architect. The Main Contractor will be responsible for arranging the above programme with all Sub-Contractors including the Nominated Sub-Contractors and Nominated Suppliers.</p>	
B.	<p><b>FIGURED DIMENSIONS</b></p> <p>Figured dimensions are to be followed in preference to dimensions scaled from the Drawings; but whenever possible dimensions are to be taken on the Site or from the Buildings. Before any work is commenced by Sub-Contractors or Specialist Firms, dimensions must be checked on the Site and /or buildings and agreed with the Contractor, irrespective of the comparable dimensions shown on the Drawings. The Contractor shall be responsible for the accuracy of such dimensions.</p>	
C.	<p><b>PROVISIONAL WORK</b></p> <p>All "provisional" and other work liable to adjustment under this Contract shall be left uncovered for a reasonable time to allow all measurements needed for such adjustment to be taken by the Quantity Surveyor. Immediately the work is ready for measurement, the Contractor shall give notice to the Quantity Surveyor.</p> <p>If the Contractor makes default in these respects he shall, if the Architect so directs, uncover the work at his own expense to enable the measurements to be taken.</p>	
D.	<p><b>SITE LEVELS</b></p> <p>Before commencing the works the contractor must arrange for and agree with the architect, engineer and quantity surveyor on the existing levels and similarly establish and agree a bench mark.</p>	
E.	<p><b>SETTING OUT</b></p> <p>The contractor shall set out the works according to drawings and shall be responsible for its correctness and shall be required to amend any errors arising from inaccurate setting out at his own cost and expense. Any discrepancies on the dimensions or levels marked on the drawings should be reported to the architect for their immediate attention and the contractor shall only proceed after the architect's instructions to adjust the same. No claim for extra time, expense or relief from provisions of clause 21.0 of the conditions of the contract may be made there after</p> <p>Before any works are commenced by sub-contractors or specialist, dimensions must be checked by and agreed with the contractor. The contractor shall be responsible for the accuracy of such dimensions.</p>	
F.	<p><b>EXISTING SERVICES</b></p> <p>Prior to commencement of any work the Contractor is to ascertain from the relevant Authorities the exact position, depth and level of all existing electric cables, water pipes or other services in the area and they shall make whatever provisions may be required by the Authorities concerned for the support and protection of such services. Any damage or disturbance caused to any services shall be reported immediately to the Architect and the relevant Authority and shall be made good to their satisfaction at the Contractor's expense.</p>	
<p style="text-align: right;"><b>Carried To Collection</b></p>		<p style="text-align: right;"><b>Kshs</b></p>

A.	<p><b>TRANSPORT TO AND FROM THE SITE</b></p>	
	<p>The Contractor shall include in their prices for the transport of materials, workmen, etc., to and from the Site of the proposed Works, at such hours and by such routes as are permitted by the Authorities.</p> <p>All current rules and regulations issued by the Transport Licencing Board (TLB) of the Republic of Kenya shall be adhered to.</p>	
B.	<p><b>PROGRAMME OF WORKS</b></p> <p>The contractor shall ,upon receiving instructions to proceed with the work, submit programme of works in accordance with clause 18.0 of the conditions of contract. The programme shall be computerized critical path programme schedule which the contractor shall develop and maintain during the course of the project. The schedule shall include construction and procurement activities as well as other time related factors. The contractor shall prepare the time schedule showing the time and order in which they propose to carry out the woks within the total construction time. The schedule shall also show in detail the construction time and order in which each section of the work is to be carried and be sub-divided into elements, trades and tasks. The schedule shall show when information is required from consultants especially in relation to the ordering of imported materials.</p> <p>The time schedule is to be agreed with the Architect and the Project Manager.</p> <p>At the end of each month, the contractor shall incorporate actual start and finish dates into the time schedule and produce an update on the programme. The update is to show actual start and finish dates, identify out sequence of activities, critical activities and any constraints which may have or may affect the progress of the works.</p> <p>During construction ,the contractor will incorporate any changes to the time schedule only if approved in writing by the architect and produce a revised schedule.</p> <p>The contractor shall provide to the Project Manager and the Architect, a soft copy of the time schedule including monthly updates and analysis together with four printed copies of the relevant data.</p>	
C.	<p><b>OVERTIME</b></p> <p>The Contractor shall allow in their tender for any extra costs for overtime working they consider will be necessary in order to complete the works by the contract Date of Completion.</p> <p>If during the course of the Contract overtime is worked for a specific purpose in accordance with a written instruction issued by the Architect, the Contractor will be reimbursed in respect of such overtime to the extent only of the additional net cost of unproductive time payable over and above the basic hourly rates as laid down by the Regulations of Wages and Conditions of Employment Act, Building and Construction Industry Wages council and excluding any bonuses, profits and overheads.</p>	
D.	<p><b>SITE PHOTOS</b></p> <p>The contractor shall allow for taking digital site photographs on a weekly basis to the satisfaction of the consultants. Copies of each shall be provided to the employer and consultants as required and a weekly record shall be placed on a board in the site office.</p>	
	<p style="text-align: right;"><b>Carried To Collection</b></p>	<p style="text-align: right;"><b>Kshs</b></p>

A.	<p><b>FAIR WAGES</b></p> <p>The contractor shall pay rates of wages and observe hours and conditions of labour not less favourable than the minimum rates of remuneration and minimum conditions of employment applicable in the area where work is carried out. The contractor is to comply with the Regulation of Wages and Conditions of Employment Act, Building and Construction industry Wages Council and is to be responsible for the compliance by the Sub-contractors employed in the execution of the contract. Should a claim be made to the architect alleging the contractor's default in payment of Fair Wages, and if thereof, the architect may, failing to pay the contractor, pay the claim out of monies due to the contractor under this contract. The contractor will furnish the architect if called upon, such particulars, of the rates of wages, hours and conditions of labour referred above as the architect may direct.</p>	
B.	<p><b>PUBLIC AND PRIVATE ROADS, PAVEMENTS, ETC.</b></p> <p>The Contractor will be required to make good, at their own expense, any damage they may cause to the present road surfaces and pavements within or beyond the boundary of the Site, during the period of the Works. In particular, all existing trees, shrubs, plants, etc., which may be destroyed or damaged during the progress of the Works are to be made good by the Contractor to the approval of the Architect.</p>	
C.	<p><b>SUPERVISION</b></p> <p>The said works shall be executed under the direction and to the entire satisfaction of the architect and engineer who shall be acting under the delegated authority of the architect, and who shall at all times have access to the works and the yards and workshops where work is being prepared for the building works.</p>	
D.	<p><b>POLICE REGULATIONS</b></p> <p>The Contractor is to allow for complying with all instructions and regulations of the Police Authorities.</p>	
E.	<p><b>LOCAL REGULATIONS AND BY-LAWS</b></p> <p>The contractor is to comply with all local regulations and by-laws of the local authority including serving notices and paying of fees.</p>	
F.	<p><b>ACCOMODATION ON SITE</b></p> <p>No accommodation on site will be permitted for the contractor's staff or work people including those of sub-contractors</p>	
Carried To Collection		Kshs

A.	<p><b>CONTRACTORS' SUPERINTENDENCE</b></p> <p>The Contractor shall constantly keep on the Works a literate English-speaking Agent or Representative, competent and experienced in the kind of work involved, who shall give his whole time to the superintendence of the Works. Such Agent or Representative shall receive on behalf of the Contractor, directions and instructions from the Architect and such directions and instructions shall be deemed given to the Contractor in accordance with the Conditions of Contract. The Agent shall not be replaced without the specific approval of the Architect.</p> <p>It is to be a specific condition of this Contract that the successful Tenderer shall provide on site throughout the period from the completion of the substructure to the Date for Practical Completion a suitably qualified, experienced and competent person to ensure that the works are carried out to the standard required by the specification and detailed on the Drawings; and shall ensure that upon any termination of employment a suitable replacement is found.</p> <p>Before the Tenderer's offer is accepted the Architect will personally interview the Contractor's proposed Representative. A curriculum vitae of past experience and qualifications must be provided for the Architect's scrutiny.</p> <p>The Architect's decision will be final regarding the suitability of the proposed Representative.</p>	
B.	<p><b>WATER</b></p> <p>The contractor shall make arrangement with the local authorities for the installation of a separate meter for all water used by him and sub contractors through out the contract and pay all costs and fees in connection therewith.</p> <p>All water shall be fresh, clean and pure, free from earthy vegetable or organic matter, acid or alkaline substance in solution or suspension.</p> <p>The Contractor shall provide at their own risk and cost all water for use in connection with the Works (including the work of Sub-Contractors). The Contractor shall provide at their own expense all temporary distribution pipes, storage tanks, meters, etc., and they shall clear away same upon completion of the Works.</p> <p>The contractor is to provide the receipts in connection with this to the Quantity Surveyor should he be called upon to do so</p>	
C.	<p><b>LIGHTING AND POWER</b></p> <p>The Contractor shall provide at their own risk and cost all artificial lighting and power for use on the Works, including all Sub-Contractors' and Specialists' requirements and including all temporary connections, wiring, fittings, etc., and clearing away on completion. The Contractor shall pay all fees and obtain all permits in connection therewith.</p> <p>All such temporary works shall be cleared away on completion of the construction.</p> <p>The contractor is to provide the receipts in connection with this to the Quantity Surveyor should he be called upon to do so</p>	
Carried To Collection		Kshs

A.	<p><b>SAFETY</b></p> <p>The Contractor shall comply at all times with the requirements of the Factory Act (Cap 514), Building Construction Rules, Supplement 18, Legal Notice No. 40 dated 5th April, 1984 ensure that the safety of their workpeople and authorised visitors to the Site is protected at all times. In particular there shall be proper provision of planked footways and guard-rails to scaffolding, etc.; protection against falling materials and tools and the Site shall be kept tidy and clear of dangerous rubbish.</p> <p>The Contractor shall appoint a Safety Officer as required by the Factory Act and notify the Factory Inspector of his name. The Safety Officer shall be qualified in compliance with the Factory Act and shall have experience in First Aid. The Safety Officer shall be on site at all times and all directions given by the Architect to the Safety Officer shall be deemed to be Architect's Instructions, and shall be complied with promptly without additional cost to the contract.</p> <p>The Architect shall be empowered to suspend work on the Site should he consider these conditions are not being observed, and no claim arising from such a suspension will be allowed.</p>	
B.	<p><b>PROTECTIVE CLOTHING</b></p> <p>The Contractor shall provide all protective or any other special clothing or equipment for their employees that may be necessary.</p> <p>These shall include, inter-alia, safety helmets, gloves, goggles, earmuffs, gumboots, steel toed boots, overalls, etc. according to the type of work. The Contractor shall ensure that all safety and protective gear are worn by all staff on site at all times</p> <p><b><u>MATERIALS AND WORKMANSHIP</u></b></p>	
C.	<p><b>GENERALLY</b></p> <p>All materials shall be new unless otherwise directed or permitted by the Architect and in all cases where the quality of goods or materials is not described or otherwise specified, is to be the best quality obtainable in the ordinary meaning of the word "best" and not merely a trade signification of that word.</p> <p>All materials and workmanship shall, unless otherwise specified or described, conform to the appropriate Kenya Bureau of Standards or British Standards Institution Specification current at the date of tender.</p> <p>The Contractor shall order all materials to be obtained from overseas immediately after the Contract is signed and shall also order materials to be obtained from local sources as early as necessary to ensure that such materials are on Site when required for use in the Works.</p> <p>The Contractor shall be responsible for and shall replace or make good at their own expense any materials lost or damaged.</p> <p>The Works throughout shall be executed by skilled workmen well versed in their respective trades.</p> <p>It's the contractor's responsibility to erect an approved storage facility for the materials on site.</p>	
D.	<p><b>REJECTED WORKMANSHIP OR MATERIALS</b></p> <p>Any workmanship or materials not complying with the specific requirements or approved samples or which have been damaged, contaminated or have deteriorated, must immediately be removed from the Site and replaced at the Contractor's expense, as required.</p>	
Carried To Collection		Kshs

A.	<p><b>PROPRIETARY MATERIALS</b></p>	
	<p>Where proprietary materials are specified herein-after the Contractor may propose the use of materials of other manufacture but equal quality for approval by the Architect.</p> <p>All materials and goods, where specified to be obtained from a particular manufacturer or supplier are to be used or fixed strictly in accordance with their instructions.</p>	
B.	<p><b>SAMPLES</b></p>	
	<p>The Contractor shall furnish at the earliest possible opportunity before work commences and at his own cost, any samples of materials or workman-ship that may be called for by the Architect for his approval or rejection, and any further samples in the case of rejection until such samples are approved by the Architect and such samples, when approved, shall be the minimum standard for the work to which they apply.</p>	
C.	<p><b>SHOP DRAWINGS</b></p>	
	<p>The contractor shall prepare for scrutiny and issue to the architect, copies of detailed shop drawings of all specialists works. The contractor shall immediately amend after the architect has checked the drawings and when approved shall issue to the architect four copies for general use. The scrutiny of these drawing shall be for general conformity including conformity with the works of others and to co-ordinate the contract work in pace. Such approvals shall not imply any further indication or correctness.</p>	
D.	<p><b>CONCRETE TESTS</b></p>	
	<p>Concrete test cubes I.e. per set of three as later described, including testing fees, labour and materials, making moulds, transport and handling etc.. and ensuing copies of tests are promptly dispatched to the Architect's and Quantity Surveyor's offices.</p> <p>Tenderer to allow for undertaking successful tests throughout the project period as and when required.</p>	
E.	<p><b>ACCESS TO SITE AND TEMPORARY ROADS</b></p>	
	<p>Means of access to site shall be agreed with the architect prior to the commencement of the work and the contractor must allow for building ant temporary access roads for the transport of materials, plant and workmen as may be required for the complete execution of the works including the provision of temporary culverts, crossings, bridges or any other means of gaining access.</p> <p>All such temporary works shall be cleared away on completion of the construction and make good and reinstate all works and services disturbed to the satisfaction of the architect.</p>	

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Kshs

A.	<p><b>SITE OFFICE</b></p> <p>The Contractor shall provide where directed within the site, site offices and clean toilet facilities for the sole use of the Architect and their representatives to the satisfaction of the Local Authorities. The offices shall be provided with adequate furniture and the contractor shall provide the services of a sweeper, pay all charges and keep the facilities in a clean and sanitary condition during the whole period of the Works. In particular, the Contractor is to note that the neighbourhood will continue with operations during the period of the works and the contractor shall ensure that construction activities do not interfere with such operations by way of noise, obstruction, dust, vibrations or trespass. The contractor shall allow for all cost necessary to comply with the above to the satisfaction of the Architect.</p> <p>The site office is to be fully supplied with power, with notice boards, computers and drawers for storage.</p> <p>The contractor to allow for provision of snacks and soft drinks to participants during site inspections and meetings.</p> <p>The entire site is a non-smoking area.</p> <p>The contractor shall keep on site and maintain in good condition on dumpy quickset level, metric levelling staff, one 30 metre steel tape for use by the architect, quantity surveyor and engineer.</p> <p>All such temporary works shall be cleared away on completion of the construction.</p>	
B.	<p><b>TELEPHONE</b></p> <p>The Contractor shall provide a telephone connection to the town exchange for the period of the Works, and shall pay all fees and rental for the same. The telephone connection shall remain on site until completion of the works</p>	
C.	<p><b>SANITATION</b></p> <p>The Contractor shall make arrangements for the necessary toilet facilities for their staff and workmen to the requirements and satisfaction of the Health authorities and maintain the same in a thoroughly clean and sanitary condition and pay all conservancy fees during the period of the Works and remove when no longer required.</p>	
<p><b>Carried To Collection</b></p>		<p><b>Kshs</b></p>



A.	<p><b>PLANT, TOOLS AND SCAFFOLDING</b></p> <p>The Contractor shall provide all necessary hoists, tackle, plant, vehicles, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove same on completion.</p> <p>All materials and workmanship used in the execution of the works shall be of the best quality and description for the due and satisfactory completion of the works and shall remove the same on completion.</p> <p>The Contractor shall provide, erect and maintain all temporary scaffolding, sufficiently strong and efficient for the due performance of the Works, including Sub-contract Works, provide special scaffolding as and when required during the Works including all sub-contracted works and remove on completion and make good.</p> <p>Such scaffolding shall be constructed of tubular steel or timber of sufficient scantlings and be provided with planked footways and guard-rails to approval. No timber used for scaffolding , formwork or similar temporary works shall be used afterwards in the permanent work.</p> <p>All such plant, tools and scaffolding shall comply with all regulations whether general or local, in force throughout the period of the Contract and shall be altered or adapted during the Contract as may be necessary to comply with any amendments in or additions to such regulations.</p> <p>Scaffolding is not measured hereinafter, and the Contractor must allow here or in his rates for the above.</p>	
B.	<p><b>EXISTING AND ADJACENT PROPERTY</b></p> <p>The Contractor must take all steps necessary to safeguard existing and adjacent property, make good at their own expense any damage to persons or property caused thereon, and hold the Employer indemnified against any such claim arising.</p> <p>The Contractor will be held fully responsible for the safety of the existing and adjacent buildings and for any damage caused in consequence of these Works. They must reinstate all damages at his own expense and indemnify the Employer against any loss.</p> <p>The Contractor must take such steps and exercise such care and diligence as to minimise nuisance from dust, noise or any other cause to the occupiers of the existing and adjacent property.</p>	
C.	<p><b>HOARDING</b></p> <p>The Contractor shall enclose the site, with a hoarding 2.40 metres high, with openings and gates as required, constructed of substantial timbers to approval and covered with reasonably new corrugated galvanised iron sheeting painted to approval.</p> <p>The contractor's attention is drawn to the fact that some areas of the site are already built up and shall be in use during the currency of this project. As such the contractor must allow for keeping his/her employees from interfering with such other users and preventing and minimising any nuisance arising from dust ,noise or by way of trespass.</p> <p>The contractor shall allow the employer to erect and face the hoarding with advertising should they so require.</p>	
Carried To Collection		Kshs

A.	<p><b>(SECURITY) WATCHING AND LIGHTING</b></p> <p>The Contractor shall provide at their risk and cost all watching and lighting as necessary to safeguard the Works, plant and materials against damage and theft. The contractor shall be entirely responsible for the security both for his own and sub-contractors.</p>	
B.	<p><b>SIGNBOARD</b></p> <p>The signboard shall give a brief title of the project and image</p> <p>The Signboard and lettering on same for the display of the General and Sub-Contractors' names shall be of an approved size with the Employer's name painted thereon. The Architect's, Quantity Surveyor's and other Consultants' names shall be printed in 50 mm letters all to the Architect's approved design.</p> <p>No other signboard or advertising will be permitted without prior permission from the Architect.</p>	
	<p><b><u>NOMINATED SUB-CONTRACTORS AND SUPPLIERS</u></b></p> <p>(See also under FORM OF CONTRACT Clauses 31 and 32)</p>	
C.	<p><b>NOMINATED SUB-CONTRACTORS</b></p> <p>The Contractor shall be responsible for Nominated Sub- Contractors in every respect and in particular it shall be the Contractor's responsibility to ensure that each Sub- Contractor commences and completes the work in such manner and is ready on the Site with their materials, labour and special plant at such times so as to conform with the Progress Schedule, as specified previously, and to ensure satisfactory progress.</p> <p>The Contractor shall also accept liability for and bear the cost of General Attendance on Nominated Sub-Contractors which shall be deemed to include for:</p> <p>Allowing the use of standing scaffolding, maintenance and alteration of all scaffolding, retention of all scaffolding until such time as all relevant Sub-Contractors' works are complete and removal of all scaffolding on completion. Providing space for office accommodation, and for storage of plant and materials; allowing use of sanitary accommodation; the supply of all necessary water, and lighting; and clearing away all rubbish.</p> <p>The items for "General Attendance" given herein-after following P.C. Sums in respect of Sub-Contractors' work shall be deemed to include all the above.</p> <p>The Contractor shall also accept liability for and bear the cost of Special Attendance on Nominated Sub-Contractors which shall include for one or more of the following:</p> <p>Unloading, storing, hoisting, placing in position, providing power, provision of special scaffolding.</p> <p>The items of "Special Attendance" given herein-after following P.C. Sums shall include any one or more of the above items as set out in the particular reference.</p> <p>Cutting away for and making good after the work of Sub- Contractors as may be required will be priced and allowed for separately under Builder's work to the Specialist trade.</p>	
	<p><b>Carried To Collection</b></p>	<p><b>Kshs</b></p>

A.	<p><b>NOMINATED SUPPLIERS</b></p> <p>The Cost of "Fix Only" materials to be obtained from Nominated Suppliers which are covered by Prime Cost or Provisional Sums shall include for taking delivery where directed, checking with invoices or indents, reporting and claiming damages for shortages and damaged goods, defraying demurrage, signing for as having been received in good order, transporting, unloading, storing, covering and protecting until the time of fixing, unpacking, replacing anything lost or damaged, sorting, assembling, hoisting to required levels and fixing as described.</p> <p>Before placing any orders with Nominated Sub-Contractors or Nominated Suppliers the Contractor must ascertain that the terms and conditions of the quotations and the dates of delivery of materials or execution of works comply with the terms of Contract and the Progress Schedule.</p>	
B.	<p><b>PRIME COST RATES</b></p> <p>Where description of items include a P.C. rate per unit this rate is to cover the nett supply cost of the unit only. The Contractor's price must include for the cost of the unit at the rate stated, plus waste, taking delivery, storage, fixing in position, profit and overheads.</p> <p>The actual nett cost per unit will be adjusted within the Final Account against the P.C. rate stated.</p> <p><b><u>PROTECTION AND CLEANING</u></b></p>	
C.	<p><b>PROTECTION</b></p> <p>The Contractor shall cover up and protect from damage, including damage from inclement weather, all finished work and unfixed materials, including that of Sub-Contractors, etc., to the satisfaction of the Architect until the completion of the Contract.</p>	
D.	<p><b>CLEANING</b></p> <p>The Contractor shall, upon completion of the Works, at their own expense, remove and clear away all surplus excavated materials, plant, rubbish and unused materials and shall leave the whole of the Site and Works in a clean and tidy state to the satisfaction of the Architect, including clearing away and making good all traces of temporary access roads, offices, sheds, camps, etc. Particular care shall be taken to leave clean all floors and windows and to remove all paint and cement stains. They shall also, at the discretion of the Architect, remove all rubbish and dirt as it accumulates. The Contractor is to find their own dump and shall pay all charges in connection therewith.</p>	
	<p style="text-align: right;"><b>Carried To Collection</b></p>	<p style="text-align: right;"><b>Kshs</b></p>

A.	<p><b>TRAINING LEVY</b></p> <p>The Contractor's attention is drawn to Legal Notice No. 237 of October 1971, which requires payment by the Contractor of Training Levy on all Contracts of more than Shs.50,000/- in value and his Tender must include for all costs arising or resulting therefrom.</p>	
B.	<p><b>VALUE ADDED TAX</b></p> <p>The Contractor's attention is drawn to the Finance Act 1993 which requires payment by the contractor of Value Added Tax on construction services rendered. The contractor shall allow for the requirements of this tax in their rates.</p>	
C.	<p><b>WITHHOLDING TAX</b></p> <p>The contractor's attention is drawn to the Finance Act 2002. The contractor shall ensure that they have the full knowledge of the workings of withholding tax. Withholding tax shall be deducted from all payments as applicable.</p>	
D.	<p><b>OCCUPATION CERTIFICATE</b></p> <p>The Architect will provide to the Contractor a duly completed application together with the requisite "As Built" drawings. The contractor will be required to submit the application and obtain the Occupation Certificate from the Local Authority no later than the end of the Defects Liability Period. The Contractor will deliver the original certificate to the owner with a copy to the Architect.</p>	
E.	<p><b>STANDARDS LEVY</b></p> <p>The Contractor's attention is drawn to Legal Notice No. 267 of 22nd June 1990, which requires payment by the Contractor of Standards Levy. his Tender must include for all costs arising or resulting therefrom.</p>	
F.	<p><b>NEMA REQUIREMENT</b></p> <p>The Contractor shall be responsible for complying with NEMA requirements and shall allow for all costs arising or resulting therefrom. No claim of extension of time shall be allowed as a result of complaints to NEMA requirements. Copy of NEMA license may be inspected in the QS office by prior notice.</p>	
G.	<p><b>OTHER STATUTORY OBLIGATIONS, NOTICES, FEES AND CHARGES</b></p> <p>Notwithstanding any other statutory obligations, notices, fees and charges not listed above, the contractor shall allow in his tender for all such costs incurred in complying with all statutory requirements and payment of all levies currently in force and affecting the construction industry.</p>	
H.	<p><b>NATIONAL CONSTRUCTION AUTHORITY COMPLIANCE</b></p> <p>The contractor shall ensure compliance with the National Construction Authority regulations including paying for all fees and levies where applicable.</p>	
Carried To Collection		Kshs

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	<b><u>TOTAL AMOUNT FOR SECTION NO. 1 - PRELIMINARIES</u></b>		
	<b><u>CARRIED TO THE GRAND SUMMARY</u></b>		

## OFFICE BLOCK BUILDER'S WORKS

**PROPOSED THIWASCO OFFICE BLOCK****SECTION NO. 02 : BUILDER'S WORKS****ELEMENT NO. 01****SUBSTRUCTURE (All provisional)**

Item	Description	Page	Unit	Rate	Amount
a	<u>Demolitions</u> Carefully demolish existing office timber structure and hand over re-usable items to the Client for storage and cart away arising to approved dumping sites, approximate floor area 90 square metres		Item		
b	<u>Site clearance</u> Clear site of works of grass, shrubs, bush and small trees, grub up roots, fill with selected soil and burn debris	238	Sm		
c	Destroy termites nests within site of works, take out and destroy queen, impregnate holes and tunnels with insecticide and fill voids with approved material		Item		
d	<u>Oversite excavations</u> Mass excavation to lower ground	492	Cm		
e	<u>Excavations including maintaining and supporting sides and keeping free from water, mud and fallen material</u> Excavate for strip foundations not exceeding 1.50 metres deep, starting from reduced levels	41	Cm		
f	Ditto; pits to receive column bases	13	Cm		
g	Ditto; pits to receive retaining wall base	10	Cm		
h	<u>Disposal</u> Return, fill and ram selected excavated materials around foundations and around the retaining wall.	48	Cm		
i	Load, wheel and cart away surplus excavated material away from site to an approved dumping site approved by the NCC.	501	Cm		
j	<u>Hardcore or other approved filling :</u> Fill excavations with Imported hardcore or approved quarry waste fill compacted in 150 mm thick layers	238	Cm		
k	50mm Thick quarry dust blinding compacted and rolled smooth to receive polythene sheeting	238	Sm		
l	<u>Planking and strutting</u> Allow for planking and strutting to sides of excavations for keeping bottoms free from fallen materials		Item		
m	<u>Disposal of water</u> Allow for keeping excavations free from mud and all water by pumping, bailing or other approved means		Item		
	<u>Carried to Collection</u>		<b>KSHS</b>		

Item	Description	Quantity	Unit	Rate	Amount
a	<u>Anti-termite treatment</u> Premise® 200.SC or equal and approved to blinded hardcore surfaces (executed complete by a specialist; applied strictly in accordance with the manufacturer's printed instructions under a <b>ten year written guarantee</b> )	238	Sm		
b	<u>Damp-proof membrane</u> 1000 gauge polythene or other equal and approved damp proof membrane, laid over blinded hardcore (m/s) with 300mm side and end laps (measured net - allow for laps)	238	Sm		
c	<u>Plain concrete class 15 as described achieving a compressive strength of 15N/mm<sup>2</sup> at 28 days of 150mm cubes:</u> 50mm blinding under column bases	95	Sm		
d	Ditto under strip footings	55	Sm		
e	Ditto under retaining wall base	10	Sm		
f	<u>Reinforced concrete class (25 / 20) as described, in:-</u> Strip foundations	14	Cm		
g	Column bases	41	Cm		
h	Retaining wall base	5	Cm		
i	200mm retaining wall	20	Cm		
j	Columns	2	Cm		
k	200mm thick surface bed	238	Sm		
l	<u>Extra Over for Waterproofing Admixtures</u> Extra over for Concrete Waterproofing Admixtures as 'Sika Floseal', applied in accordance to manufacturer's instructions and as per Engineer's instructions.	130	Cm		
m	<u>Reinforcement, as described (PROVISIONAL)</u> <u>High yield deformed reinforcement bars to BS 4461; include for soft iron tying wire, spacer blocks, bending, cutting etc.</u> 8mm bars	1,265	Kg		
n	10mm bars	1,768	Kg		
o	12mm bars	2,524	Kg		
p	16mm bars	1,153	Kg		
q	20mm bars	1,652	Kg		
r	<u>Mesh fabric reinforcement to B.S 4483 and setting in concrete with 300mm side and end laps (measured net-allow for laps)</u> Fabric ref. A142 weighing 2.22kg / sq.metre, in surface bed.	238	Sm		
	<u>Carried to Collection</u>		KSHS		



Item	Description	Quantity	Unit	Rate	Amount
	<u>Sawn formwork as described to:-</u>				
a	Edges of strip foundations	46	Sm		
b	Edge of column bases	32	Sm		
c	Edges of retaining wall base	7	Sm		
d	Vertical sides of retaining walls	33	Sm		
e	Vertical sides of columns	18	Sm		
f	Edge of slab , over 75mm but not exceeding 150mm high.	60	Lm		
	<u>Walling in semi cut load bearing natural stone obtained from an approved quarry, bedded and jointed in cement and sand (1:4) mortar;</u>				
	200mm thick walling	133	Sm		
g	<u>Hessian based damp proof course bedded and levelled in cement and sand (1:4) mortar as described (measured net allow for laps):</u>				
	200mm wide	106	Lm		
h	<u>Carried to Collection</u>		KSHS		
	<u>COLLECTION</u>				
	<u>SUBSTRUCTURES</u>				
	Brought Forward from Pg. 03 / 01		Kshs		
	Brought Forward from Pg. 03 / 02		Kshs		
	Brought Forward from Pg. 03 / 03		Kshs		
	<u>CARRIED TO SUMMARY</u>		KSHS		
	<u>Substructures</u>				

Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 02</u></b>				
	<b><u>REINFORCED CONCRETE FRAME</u></b>				
	<i>Reinforced concrete class (25 / 20) achieving characteristic compressive strength of minimum 30N/mm<sup>2</sup> at 28 day test of 150mm cubes, as described in:-</i>				
a	Beams	67	Cm		
b	Roof beams,	18	Cm		
c	Staircase	10	Cm		
d	Columns	13	Cm		
e	200mm thick retaining walls	48	Sm		
f	150mm thick suspended floor slabs	948	Sm		
g	150mm Thick landings	14	Sm		
	<i>Reinforcement, as described (PROVISIONAL)</i>				
	<i>High yield deformed reinforcement bars to BS 4461; include for soft iron tying wire, spacer blocks, bending cutting etc.</i>				
	8mm bars	6,256	Kg		
h	10mm bars	9,225	Kg		
j	12mm bars	2,459	Kg		
k	16mm bars	6,839	Kg		
l	20mm bars	2,701	Kg		
	<i>Sawn formwork as described to:</i>				
m	Sides and soffits of beams, horizontal or slanting below 15 degrees	863	Sm		
	Sides and soffits of roof beams	216	Sm		
n	Soffits of suspended slabs	948	Sm		
p	Vertical sides of retaining walls	80	Sm		
q	Vertical sides of columns	147	Sm		
r	Edges of suspended slabs over 75mm but not exceeding 150mm	260	Lm		
s	Soffits of landings	14	Sm		
t	Soffits of staircase sloping over 15 degrees from horizontal	30	Sm		
u	Edge of riser over 75mm but not exceeding 150mm girth	168	Lm		
v	Edge of open staircase string 300mm (extreme) girth including forming to profile of risers and treads	14	Sm		
w	CARRIED TO SUMMARY		KSHS		
x	<i>Reinforced Concrete Frame</i>				

Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 03</u></b>				
	<b><u>WALLING</u></b>				
	<i>Walling in machine dressed load bearing natural stone obtained from an approved quarry bedded and jointed in cement and sand (1:4) mortar; Include for all hoop iron reinforcement (where necessary);</i>				
a	200mm thick walling externally	571	Sm		
	<i>Walling in machine dressed load bearing natural stone obtained from an approved quarry bedded and jointed in cement and sand (1:4) mortar; Include for all hoop iron reinforcement (where necessary);</i>				
b	200mm Thick walling internally	147	Sm		
c	150mm Thick walling internally	291	Sm		
	<b><u>ALUMINIUM PARTITIONS</u></b>				
	<i>The following in partitions comprising 18mm thick laminated MDF in aluminium framing and glazing approximately 3000mm from finished floor level</i>				
d	100 x 45 x 2mm anodized powder coated aluminium framing horizontally	105	Lm		
	Ditto, vertically	62	Lm		
e	20 x 15mm thick powder coated aluminium beading	334	Lm		
f	18mm Thick laminated MDF Board on both sides of aluminium framing	32	Sm		
g	<b><u>GLAZING</u></b>				
	8mm thick clear glass fixed to metal with aluminium connectors and rubber strips; panes not exceeding 1 square metre	48	Sm		
h	<b><u>PARTITIONS</u></b>				
	<i>12mm thick special laminate MDF boards hardwood lipped all round, fixed to aluminium framing(m/s)</i>				
j	Partitioning; fixed to aluminium framing with 19 x 16mm aluminium beading	80	Sm		
	CARRIED TO SUMMARY		KSHS		
	<i>Walling</i>				



Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 05</u></b>				
	<b><u>FINISHES</u></b>				
	<u>Wall finishes</u>				
	<u>15 mm cement and sand (1:3) render finished with wood float to:-</u>				
a	Concrete or masonry surfaces externally to receive weather guard paint	1556	Sm		
b	15mm thick cement sand screed to receive mazeras wall cladding	94	Sm		
	<u>12mm (minimum) two coat lime plaster as described to:</u>				
c	Concrete or masonry surfaces internally	1561	Sm		
	<u>Cement and sand (1:4 )backings etc.</u>				
d	15mm render finished to receive ceramic wall tiles (measured separately)	504	Sm		
	<u>Ceramic wall tiling</u>				
	<u>Supply and Fix coloured glazed ceramic wall tiles as 'Saj' or approved equivalent on backing (m/s); Contractor to include in his rates for grouts, grouting, spacers, tile adhesives upvc tile trims / edgings etc.</u>				
	300 x 300 x 6mm thick tiles	504	Sm		
e	<u>Mazeras wall cladding</u>				
	25mm thick mazeras wall cladding	94	Sm		
f	<u>Floor Finishes</u>				
	<u>Cement and sand (1:3) screeds, backings, beds etc.:</u>				
	32mm bed finished to receive non-slip ceramic floor tiles (measured separately)	54	Sm		
	32mm thick bed finished to receive polished screed	885	Sm		
g	Ditto to landings	14	Sm		
h	Ditto to 250mm treads	44	Lm		
j	Ditto 150mm high risers	46	Lm		
k	15mm thick x 100mm high skirting	176	Lm		
l	Ditto formed to step profile	8	Lm		
m	<u>Ceramic floor tiling</u>				
n	<u>Supply and Fix "saj" or other equal and approved coloured rustic non- slip ceramic floor tiles on approved backings (m/s) ; include for matching grout, spacers, brass coated tile edgings etc.</u>				
	400 x 400 x 8mm thick tiles to floors	54	Sm		
	<u>Supply and Fix "saj" or other equal and approved color rustic porcelain ceramic floor tiles on approved backings (m/s) ; include for matching grout, spacers, brass coated tile edgings etc.</u>				
p	600 x 600 x 8mm thick tiles to floors	885	Sm		
	<u>Polished screed floor finish</u>				
	8mm thick cement sand screed polished floor finish	14	Sm		
	Ditto to landings	14	Sm		
q	Ditto to 250mm treads	44	Lm		
	Ditto 150mm high risers	46	Lm		
	Ditto formed to step profile	8	Lm		
r	<u>Carried to Collection</u>		<b>KSHS</b>		
s					
t					
u					
v					

Item	Description	Quantity	Unit	Rate	Amount
	<u>Ceiling Finishes</u>				
	<u>12mm (minimum) two coat plaster as described to:-</u>				
a	Soffits of suspended slabs	948	Sm		
b	Soffits of staircase sloping over 15 degrees from horizontal	30	Sm		
c	Soffits of landings	14	Sm		
	<u>Prepare and apply undercoat and three coats first quality matt emulsion paint as "Crown (K) Ltd" or approved equivalent on:-</u>				
d	Plastered surfaces internally	1561	Sm		
e	Plastered concrete soffits	948	Sm		
f	Ditto, sloping soffits of staircases	30	Sm		
g	Soffits of landings	14	Sm		
	<u>Prepare and apply white paint to rendered surfaces externally</u>				
h	General surfaces of render externally	1556	Sm		
	<u>Carried to Collection</u>		KSHS		
	<u>COLLECTION</u>				
	<u>FINISHES</u>				
	Brought Forward from Pg. 03 / 07		Kshs		
	Brought Forward from Above		Kshs		
	CARRIED TO SUMMARY				
	<u>Finishes</u>				

Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 06</u></b>				
	<b><u>WINDOWS</u></b>				
	<i>Supply, assemble and fix the following purpose made powder coated Aluminium casement windows by approved manufacturer with 100/50 x 50 x 3mm thick sections by Booth Manufacturing or equal and approved complete with fixing lugs, rubber gasket including all necessary cutting, 6mm thick clear or obscure laminated glazing and approved ironmongery</i>				
a	Window overall size 1500 x 900 mm high	8	NO		
b	Window overall size 1200 x 1800 mm high	6	NO		
c	Window overall size 1500 x 1800 mm high	21	NO		
d	Window overall size 1200 x 1200 mm high;	1	NO		
e	Window overall size 2000 x 1800 mm high corner window	5	NO		
	<b><u>CURTAIN WALLING</u></b>				
	<i>Curtain walling system as supplied by an approved manufacturer and bolted to reinforced concrete beams with the following specifications: 200 x 75mm x 2mm thick powder coated aluminium mullions and transomes with moment of inertia adequate for the structural requirements taking into consideration wind load, span and building height. Dry glazing with EPDM gaskets for fixed glass; structurally glazed vents with visible frame to outside</i>				
f	Curtain walling with 12mm thick, toughened, tinted solar receptive framed one way glazing an aluminium framework(200 x 75mm x 3mm thick) bolted RC beams	203	Sm		
	<b>CARRIED TO SUMMARY</b>				
	<u>Windows</u>				

Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 07</u></b>				
	<b><u>DOORS</u></b>				
	<i><u>In Wrot mahogany</u></i>				
a	100 x 30mm Architrave with two labours, plugged	205	LM		
b	25mm quadrant beading	205	LM		
c	50 x 150mm Frame with two labours; plugged	205	LM		
	<i><u>Solid Core Flush Doors</u></i>				
	<i><u>45mm thick solid cored flush door, to BS 459: part 2, overall faced both sides with mahogany veneer to approval with rounded and post-formed edges to approval</u></i>				
d	Single leaf door overall l size 900 x 2400mm high	36	NO		
	<i><u>Supply and install air tight laminated door complete with 200 - 300mm natural aluminium frame including architraves, beadings and all necessary accessories and ironmongery</u></i>				
	Swing double leaf door overall size 1800 x 2400mm high	1	No		
	Sliding double leaf door overall size 1800 x 2400mm high	2	No		
e	Swing single leaf door overall size 900 x 2400mm high	4	No		
f	<i><u>Supply and fix the following "English Union" or other equal and approved "Brass coated" ironmongery with matching screws;</u></i>				
g	<i><u>(To timber doors only)</u></i>				
	100 x 76 x 3mm heavy duty stainless steel butt hinges	54	Prs		
	2 lever mortise lock with brass lever furniture	36	No		
h	Bathroom / toilet lockset (50285 - 94 PB) with thumb turn and emergency release	11	No		
i	38mm Diameter chrome door stop as "Union 8400" rawl bolted to concrete floor	25	No		
	<i><u>Glazing</u></i>				
j	5mm thick ordinary sheet glass to wood frames with wooden glazing beads (m/s)	9	Sm		
k	<i><u>Painting and decorating</u></i>				
	<i><u>Prime back of wood before fixing</u></i>				
l	Surfaces not exceeding 100 mm girth	410	Lm		
	100 - 300 mm girth	205	Lm		
	<i><u>Prepare and apply three coats polyurethane clear polish to woodwork</u></i>				
m	General timber surfaces	121	Sm		
	Surfaces not exceeding 300mm girth	615	Sm		
n	<i><u>Steel casement Doors complete with hinges, fasteners, permanent vent with mosquito gauze and sheet; assembled and fixed to opening including cutting and pinning lugs to concrete or blockwork surround and bedding frame in cement and sand mortar (1:4) comprising 75x40x3mm steel frames, stiles, bottom and top rail and 4 No.50x50x3mm intermediate rails, 2.5mm checked panel metal sheet all primed with grey oxide and as per Architect's specifications to:-</u></i>				
m	Door size 900 x 2400 mm high	2	No.		
	<b><u>CARRIED TO SUMMARY</u></b>				
	<i><u>DOORS</u></i>				
m					



Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 08</u></b>				
	<b><u>BALUSTRADING AND RAILING</u></b>				
	<i><u>Staircase Balustrading:</u></i>				
a	Supply and fix 925mm High stainless steel Balustrading comprising of 2No. 50 x 3mm Thick CHS in handrail and intermediate rail; 2No. 30mm dia. x 2.5mm Thick CHS intermediate rails, all fixed to and including - 50mm diameter by 825mm high Circular Hollow Section main balusters at 2100mm (horizontal) centres, 30mm dia. X 2.5mm Thick CHS in twin intermediate balusters at 1650mm centres; all balusters anchored to concrete slab with steel plates; bracing and cross-bracing as per Architect's detail drawing; smoothly ground weld joints	32	Lm		
	<i><u>Balustrading to balcony</u></i>				
b	Supply and fix 925mm High stainless steel Balustrading comprising of 2No. 50 x 3mm Thick CHS in handrail and intermediate rail; 2No. 30mm dia. x 2.5mm Thick CHS intermediate rails, all fixed to and including - 50mm diameter by 825mm high Circular Hollow Section main balusters at 2100mm (horizontal) centres, 30mm dia. X 2.5mm Thick CHS in twin intermediate balusters at 1650mm centres; all balusters anchored to concrete slab with steel plates; bracing and cross-bracing with toughened glass as per Architect's detail drawing; smoothly ground weld joints	76	Lm		
	CARRIED TO SUMMARY		KSHS		
	<i><u>Balustrading and Railing</u></i>				

Item	Description	Page No.	Unit	Amount
<b>PROPOSED THIWASCO OFFICE BLOCK</b>				
<b>SECTION NO. 05 : OFFICE BLOCK</b>				
<b><u>SUMMARY</u></b>				
1.0	Element No. 01 - Substructure	/ 03	Kshs	
2.0	Element No. 02 - Reinforced Concrete Work	/ 04	Kshs	
3.0	Element No. 03 - Walling	/ 05	Kshs	
4.0	Element No. 04 - Roof Construction and Finishes	/ 06	Kshs	
5.0	Element No. 05 - Finishes	/ 08	Kshs	
6.0	Element No. 06 - Windows	/ 09	Kshs	
7.0	Element No. 07 - Doors	/ 010	Kshs	
8.0	Element No. 08 - Balustrading and Railing	/ 011	Kshs	
TOTAL CARRIED TO GRAND SUMMARY			<b>KSHS</b>	
<i>Office block</i>				

# EXTERNAL WORKS

**PROPOSED THIWASCO OFFICE BLOCK**

**SECTION NO. 03 : EXTERNAL WORKS**

Item	Description	Quantity	Unit	Rate	Amount
	<b><u>ELEMENT NO. 01</u></b>				
	<b><u>DRIVEWAY, PARKING AND PAVED AREAS</u></b>				
	<b>(All Provisional)</b>				
	<u>Site clearance</u>				
a	Clear site of works of grass, shrubs, bushes and small trees, grub up roots, fill with selected soil and burn debris	675	Sm		
	<u>Excavations including maintaining and supporting sides and keeping free from water, mud and fallen material;</u>				
b	Excavate to reduce levels in road areas, not exceeding 1500mm, (average 600mm) deep starting from existing levels	203	Cm		
	<u>Disposal</u>				
	Load and cart away surplus excavated materials from site	203	Cm		
c	<u>Filling to road areas</u>				
	Roll and compact subgrade to achieve 98% modified proctors MDD including grading to falls and crossfalls	675	Sm		
d	Imported hardcore or approved quarry waste fill to make up levels under roads and compacted in layers <u>(250mm deep)</u>	169	Cm		
e	150mm thick gravel or murrum base compacted to 100% compaction at optimum moisture content in road areas	675	Sm		
f	200mm thick handpacked stone base, including levelling as necessary to road areas	675	Sm		
g	Prepare and apply total persistent herbicide to surfaces of sub-base	675	Sm		
	<u>Concrete block paving (as manufactured by bamburi special products Ltd or equal and approved);</u>				
h	Medium duty loading blocks size 210x105x60mm, (minimum strength 45N per square mm) laid on and including 40mm sand bed and compacted by surface vibration	675	Sm		
j	100 x 125mm flush channel block laid on and including 325 x 100mm concrete (1:3:6) bed	155	Lm		
k					
	<u>Carried to Collection</u>		<b>KSHS</b>		

Item	Description	Quantity	Unit	Rate	Amount
a	125 x 250mm splayed kerb laid on and including 325x100mm concrete (1:3:6) bed and 200 x 200mm haunching behind	140	Lm		
b	Ditto but curved on plan	18	Lm		
	<u>Painting and decoration</u>				
c	Prepare and apply three coats of road marking paint to general surfaces precast concrete units	14	Sm		
d	Ditto but not exceeding 100mm girth	158	Lm		
	<u>Carried to Collection</u>		<b>KSHS</b>		
	<u>COLLECTION</u>				
	<u>DRIVEWAY, PARKING AND PAVED AREAS</u>				
	Brought Forward from Pg. 04 / 01		<b>Kshs</b>		
	Brought Forward from Above		<b>Kshs</b>		
	<u>CARRIED TO SUMMARY</u>		<b>KSHS</b>		
	<u>Driveway, Parking and Paved areas</u>				

Page No	Description	Element No.	Unit		Amount
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**PROPOSED THIWASCO OFFICE BLOCK**

**SECTION NO. 06 : EXTERNAL WORKS**

./ 01	DRIVE, PARKING AND PAVED AREAS	03	Kshs		
	CARRIED TO GRAND SUMMARY		KSHS		
	<u>External Works</u>				

# **MECHANICAL INSTALLATIONS**





## PROPOSED THIWASCO OFFICE BLOCK

## SECTION NO. 04 : PLUMBING &amp; DRAINAGE WORKS

Item	Description	Qty	Unit	Rate	Amount (Kshs)
	<b>Bill No 1: SANITARY FITTINGS</b>				(VAT inclusive)
	<i>Supply, deliver and install the following sanitary fittings complete with all accessories including connections to services, wastes etc. . "JAQUAR" products are specified only as an indication of quality. Equal and approved appliances may be supplied. Where Trade names are mentioned below Ref No. is intended only as a guide to the type and quality of fittings.</i>				
<b>A</b>	<b>Water closet</b>				
i	Close - coupled washdown water closet in approved colour complete with W.C. pan with horizontal outlet, Dual flush cistern with fittings, heavy duty plastic seat and cover and 1/2" angle valve with 350 mm long connector. As "JAQUAR" or equal and approved	11	No		
<b>B</b>	<b>Wash Hand Basins</b>				
i	Wash Basin Wall Mounted with Half Pedestal 480X570X460 mm, with overflow Hole and Cap and Fixing screws complete with chrome plated single lever mixer with pop-up waste 32mm dia chrome plated bottle trap with 75mm seal and 1/2" angle valve with 350 mm long connector. As "JAQUAR" or equal and approved	13	No		
<b>C</b>	<b>Kitchen Sink</b>				
i	Countersunk Single Bowl Single Drainer (SBSD) with flat edge for laying on granite stainless steel sink of size; size; 800x600x185mm complete with Cobra Pillar type tap and Mixer and 1/2" angle valve with 350 mm long connector. As ASL or equal and approved	1	No		
ii	Stainless steel top mount sink size 600x500mm complete with Cobra Pillar type tap and Mixer and 1/2" angle valve with 350 mm long connector. As FRANKE or equal and approved	2	No		
<b>D</b>	<b>Shower</b> Concealed Shower with 50mm arm and 3KW instantaneous shower rose as Lorenzetti	1	No		
<b>E</b>	<b>Mirrors</b>				
i	6mm plain polished edge mirror fixed on the wall with chrome plated form seated screws, mirror size 800 x 600 mm high	13	No		
<b>F</b>	<b>Towel rail</b> Chrome plated towel rail in continuous frame size 20mmdia x 610mm long on wall with dome shaped Stainless Steel Screws.	1	No		
<b>G</b>	Stainless steel toilet roll holder	11	No		
<b>H</b>	<b>Soap Dispensers</b>				
	0.5 Litres Soap Dispenser as MEDICLINICS or an approved equivalent. The dispenser is to be complete with wall mounting brackets, key and initial charge.	6	No.		
<b>I</b>	<b>Hand Dryer</b>				
	Fast hot air hand & face drier with automatic operation by touch-free infra-red control with sensor range of 150mm vertically under air inlet as SLOAN EHD-454, or an approved equivalent.	6	No.		
<b>J</b>	<b>Under sink Instantaneous Water Heater</b>				
	<b>7 litres</b> capacity under sink instantaneous water heater with displacement operating principle of opening of tap allowing cold water to enter into the unit and forcing hot water out, 3kW embedded rod type element in color sheathed soldered to corrosion resistant copper plate, externally adjustable capillary type thermostat between 30 -60 degrees range, single shot non-resettable overtemperature cut-out at 87 deg, polyurethane foam thermal insulation, corrosion-proof ABS mouldering outer casing, mountings and water and electrical connections. The heater shall be as "Streamline Pack K" of Heatrae Sadia Heating Ltd. <b>Power supply: 3kW 240V 50Hz.</b>	1	No		
<b>Total amount for Sanitary Fittings carried forward to collection page</b>					

INTERNAL PLUMBING					
Item	Description	Qty	Unit	Rate	Amount (Kshs)
	<b>Bill No. 2: Internal Plumbing</b> Supply, deliver and install tubing and fittings as described and shown on the drawings. Tenderers must allow for jointing as, couplings etc. necessary for the proper and satisfactory functioning of the system when pricing. The following in PN 20 PPRC conforming to the current European standards for PPR installations and to the Engineer's approval, pipe jointing shall be by polyfusion or use of electric coupling Rates must allow for all the Metal/plastic threaded adaptors where required for the connection of sanitary fixtures, valves, sockets, sliding and fixed joints, support raceways, isolating sheaths, elastic materials, expansion arms and bends, crossovers etc.				
<b>A</b>	<b>PPR Pipes</b>				
i	20mm dia pipe chased in walls/floors and in duct	20	Lm		
ii	25mm -ditto-	22	Lm		
iii	32 mm -ditto-	60	Lm		
iv	40 mm -ditto-	20	Lm		
<b>B</b>	<b>Extra-over PPRC pipework for the following:-Bends/elbows</b>				
i	20mm dia bend	15	No		
ii	25mm bend	7	No		
iii	32mm bend	12	No		
iv	40mm bend	5	No		
<b>C</b>	<b>Tees</b>				
i	40mm diameter equal tee	2	No		
ii	32mm diameter equal tee	3	No		
<b>D</b>	<b>Reduced Tees</b>				
i	40/32mm diameter reduced tee	3	No		
ii	32/25mm ditto	1	No		
<b>E</b>	<b>Sockets</b>				
i	20mm dia sockets	9	No		
ii	25mm dia sockets	8	No		
iii	32mm dia sockets	17	No		
<b>F</b>	<b>Unions</b>				
i	20mm dia union	5	No		
ii	25mm -ditto-	5	No		
iii	32mm -ditto-	12	No		
iv	40mm -ditto-	5	No		
<b>G</b>	<b>Reducers</b>				
i	25/20mm reducers	9	No		
ii	32/25mm ditto	9	No		
iii	40/32mm ditto	4	No		
<b>H</b>	<b>PPR Male threaded adaptors (Brass threads).</b>				
i	20 x 1/4"Ø dia Male threaded adaptors (Brass threads).	9	No		
ii	25 x 3/4"Ø dia Male threaded adaptors (Brass threads).	8	No		
iii	32 x 1"Ø dia Male threaded adaptors (Brass threads).	17	No		
<b>I</b>	<b>PPR Female threaded elbows (Brass threads).</b>				
i	20 x 1/2"Ø dia female threaded adaptors (Brass threads).	9	No		
ii	25 x 1"Ø dia ditto	8	No		
iii	32 x 1 1/4"Ø dia ditto	17	No		
<b>Total carried forward to next page</b>					

[illegible]

INTERNAL DRAINAGE					
Item	Description	Qty	Unit	Rate	Amount (Kshs)
	<b>Bill No. 3: INTERNAL DRAINAGE Soil and waste system</b> <u>Supply, deliver and install the following in PVC soil and waste system to BS 4514 and 5255 with fittings fixed to manufacturer's printed instructions and BS 5572 (1978).</u>  <u>All uPVC branches, tees, reducing tees, reducers etc. are to be formed in strict accordance with the manufacturer's printed instructions and tenderers must allow for all the various sizes of connectors, socket reducers, holderbats, clips, etc. required for the satisfactory functioning of the system</u>				
<b>A</b>	<b>PVC grey waste pipe</b>				
i	40mm dia -ditto-	25	Lm		
ii	50mm dia -ditto-	45	Lm		
iii	100mm dia ditto	65	Lm		
<b>B</b>	<b>Extra-over uPVC pipework for the following:-</b>				
i	100mm dia WC connectors	11	No		
ii	100mm dia long radius bend	11	No		
iii	100mm dia single branch	6	No		
iv	40mm dia sweep bends	8	No		
v	50mm dia sweep bends	7	No		
vi	100mm dia sweep bends	2	No		
vii	40mm sweep tee	4	No		
<b>C</b>	<b>Extra-over uPVC pipework for the following:-</b>				
i	50x40mm dia boss connectors	1	No		
ii	100x50mm dia boss connectors	7	No		
iii					
ii	50mm dia access plugs	1	No		
iii	100mm dia access plugs	6	No		
<b>D</b>	100x50mm floor traps complete with grating	8	No		
<b>E</b>	<b>Inspection Chamber</b> Manhole of internal dimension 600x450 mm and up to 2000mm deep. The manhole to consist of 100mm thick class 20 bed, 150mm thick solid concrete block walling in with 600x450mm heavy duty Mild steel chequered cement/sand (1:3) mortar and complete with 600x450mm heavy duty Mild steel chequered cover with hand holes	4	No		
<b>F</b>	Masonry gulley trap complete with golden brown UPVC P-Trap with seal drain and concrete cover	1	No		
<b>G</b>	<b>Excavation</b> Excavate trench for buried drain pipes not exceeding 150mm and average 1500mm deep, part return, fill in, ram and remainder cart away. Allow for pipe bedding materials	20	Lm		
<b>Total carried forward to Collection page</b>					

FIRE HOSEREEL INSTALLATIONS					
Item	Description	Qty	Unit	Rate	Amount (Kshs)
	<p><i>Supply, fix, test and commission the following equipment and fitting as described:-</i></p> <p><i>Tenderers must allow in pipework prices for all couplings, unions, nipples, sockets connectors, joints etc. in running lengths of pipes and also where necessary for fixing clips, holderbats plugged and screwed.</i></p>				
A	<b>Hose reel System Pipework</b>				
i	25mm diameter pipe GMS Class B to BS 1387	8	LM.		
ii	50mm ditto	20	LM.		
B	<b>Elbows</b>				
i	25mm elbows malleable iron galvanized.	8	No.		
ii	50mm ditto	4	No.		
C	<b>Tees</b>				
i	50/25mm diameter malleable iron Reduced tee	4	No		
D	<b>Valves</b>				
i	25mm bronze gate valve to BS 5154	4	No.		
ii	25mm air relief valve screwed as CRANE.	4	No.		
E	Swinging type hose reel complete with 30m long hose of 20mm diameter,.25mm internal diameter rubber fire hose with nylon spray/jet and shut off nozzle, and mounting brackets conforming to BS 5274	4	No.		
F	Allow a sum for wire brushing and cleaning followed by painting of the whole hose reel pipe-work installation with one coat of epoxy cold cured zinc chromate primer (two pack) and three coats two pact epoxy enamel to Architect's colour.	1	Item		
G	<p><b>Hose reel Pump set</b></p> <p>Hose reel pump set, one duty, the other standby mounted on a frame with a mild steel base plate. Each pump shall have a duty 2.5m<sup>3</sup>/hr. against 50m head as Grundfos model CHV 4 - 60 or approved equivalent. In addition, there shall be a 100 litres diaphragm pressure vessel (as Varem or approved equivalent), pressure switches, a switch to protect dry run, 65mm foot valve and strainer, tank connections, gate valves and non-return valves. The pressure set to be as Dayliff or equal and approved.</p> <p>Control shall be effected via a pressure switch through a pre-wired control panel which shall give automatic change-over from duty to standby pump within 5 seconds should the duty pump fail to deliver for any reason. The pump set shall include all non-returns valves, timer, isolating valves and pipe connections.</p>	1	Set		
<b>Total C/F to next page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Amount (Kshs)
	<b>Total B/F from previous page</b>				
	<b><u>Portable Fire Extinguishers</u></b> Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
A	9 litres water/carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
B	<b>Dry Chemical Powder Fire Extinguisher</b> 6kg dry chemical powder portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets.	4	No		
C	<b>Manual Alarm Bell</b> 9" (225mm) manual operated alarm bell (Gong)	3	No		
D	<b>Fire Notices</b> Allow for fire signage for the hose reel system, fire exits and fire instructions as described in the particular specifications and to the Project Engineer's approval.	10	No		
E	<b>Fire Blanket</b> Fire blanket made of cloth woven with pre-asbestos yarn or any other fire proof material and to measure 1800 x 1210 mm. It shall be fitted with special tapes folded so as to offer instantaneous single action to release blanket from storing jacket to BS 1721.	1	No		
F	<b>Automatic Dry Chemical Powder Fire Extinguisher</b> 10kg automatic dry chemical powder fire extinguisher complete with pressure gauge, initial charge, glass bulb, sprinkler head and mounting base. The operating temperature of the bulb shall be 79°C. The unit shall be mounted on the concrete slab ceiling using purpose-made screws and to be as Germania, model GD 25 or equal and approved.	1	No		
<b>Total amount for Fire Hose Reels C/F to summary page</b>					

COLLECTION PAGE		
Item	Description	Amount (Kshs)
1	TOTAL B/F FROM SANITARY FITTINGS INSTALLATIONS	
2	TOTAL B/F FROM INTERNAL PLUMBING INSTALLATIONS	
3	TOTAL B/F FROM INTERNAL DRAINAGE INSTALLATIONS	
4	TOTAL B/F FROM FIRE HOSE REEL & PORTABLE FIRE EXTINGUISHERS INSTALLATIONS	
5	ALLOW A SUM FOR STERILIZE, TEST AND COMMISSION THE SYSTEM	
	TOTAL C/F TO MAIN SUMMARY PAGE	

# **MECHANICAL VENTILATION & HVAC INSTALLATIONS**



**PROPOSED THIWASCO OFFICE BLOCK****SECTION NO. 05 : MECHANICAL VENTILATION & HVAC WORKS**

Item	Description	Qty	Unit	Rate (Kshs)	Cost (Kshs)
	<b>SPLIT AIR CONDITIONING SYSTEM FOR THE BOARDROOM</b> <i>Supply, Installation, testing and commissioning, upon approval of working drawings, of the following items.</i> <i>NB: Outdoor units shall be mounted on external wall on second floor.</i>				
A	The indoor unit shall be ceiling cassette type air-cooling unit of capacity 7.1KW (24,000 Btu/hr). The air conditioning unit shall be supplied complete with room thermometer, room thermostat controls and remote control device. It shall be charged with R410A refrigerant or any other non ozone depleting refrigerant. The unit shall be such that if the power supply goes off, it will start automatically after power is restored with three minute delay. The outdoor unit shall have matching capacity with the indoor unit. The unit shall be "Carrier" Model or equal and approved.	1	No.		
	<b>Refrigeration Pipework</b>				
B	Refrigeration liquid line pipework including 25mm Amaflex insulation.	7	LM		
C	Refrigeration gas line pipework including 25mm Amaflex insulation.	7	LM		
	<b>Refrigerant</b>				
D	Allow R410A refrigerant for charging air conditioning system.	1	Item		
	<b>Drain</b>				
E	25mm PVC condensate drainage pipework, class D, including bends, clips, joints and tees in the running lengths of the pipe.	10	LM		
	<b>Surge Protector</b>				
F	Power surge protector as Solatek to suite or equal and approved.	1	No.		
	<b>Electrical Works</b>				
G	Allow for associated electrical works from the local isolator provided by others within one meter to the air conditioning units and wiring from indoor unit to outdoor unit.	1	Item		
	<b>Mounting Bracket</b>				
H	Mounting bracket for the outdoor unit complete with a cage and provided with purpose-made protective steel iron angle frame and all other anchoring accessories including rawl bolts and anti-vibration rubber mountings to engineer's approval.	1	Item		
	<b>Wall Mounted Wired Remote Controller</b>				
I	Fully wired wall mounted remote controller panel, wiring and conduit works including but not limited to interconnecting cable between the outdoor and indoor units.	1	No.		
	<b>Total Carried Forward to Collection Page for Air Conditioning</b>				

Item	Description	Qty	Unit	Rate (Kshs)	Cost (Kshs)
	<b>MECHANICAL VENTILATION FOR LOWER GROUND FLOOR</b>				
A	<u>EXTRACT FAN</u> Supply and install an acoustic box air extract fan capable of delivering 0.2m <sup>3</sup> /s against a pressure drop of 200 pa. The fan to come complete with mounting brackets, speed controller, 400x200mm inlet grille, inlet cowl, connecting flanges, back draft shutter, anti vibration mountings and flexible connector. To be as XID315 XPELAIR centrifugal plastic inline fan model 91388AA or equal and approved.	1	No.		
B	<u>FAN CONTROL PANEL</u> Splash proof control panel manufactured from 1.2mm thick sheet with stove enamel finish and clear perplex front cover. The panel shall incorporate isolator contactor phase failure relay, motor starter, overload relay and overheat safety control and fuses	1	No.		
C	<u>DUCT WORK</u> Galvanized mild steel ductwork 1.2mm (SWG 18) thick complete with bends, transformation pieces, hangers, supports, sleeves, flexible connections, etc.	25	SM		
D	<u>AIR EXTRACT GRILLE</u> 150mm x 150mm air supply grille with dampers complete with grill box.	6	No.		
E	<u>DOOR REPLACEMENT GRILLE</u> 450mm x 300mm air replacement louvered grilles.	3	No.		
F	<u>VOLUME CONTROL DAMPER</u> Volume control damper suitable for 150 x 150mm duct.	6	No.		
<b>Total Carried Forward to the next page</b>					

Item	Description	Qty	Unit	Rate (Kshs)	Cost (Kshs)
	<b>Total B/F from previous page</b>				
	<u><b>FIRE DAMPER</b></u>				
Gi	Shutter fire damper complete with fusible link and micro switch for de-activating the fan when damper closes suitable for a 400 x 200mm duct.	1	No.		
ii	Ditto but 300 x 150mm	1	No.		
iii	Ditto but 200 x 100mm	1	No.		
	<u><b>FAN SILENCER</b></u>				
H	Circular silencer casing constructed from cold formed pre-galvanized sheet steel and absorbent material of acoustic grade resin bonded mineral fibre with erosion resistant lining. The silencer shall be fitted with absorption pod and shall be of size 315mm diameter x 1000mm long. To be as woods or equal and approved.	1	No.		
	<u><b>ELECTRICAL WORKS</b></u>				
I	Allow for associated electrical works including wiring and conduiting from the local isolator provided by others through the control panels to the fans. The distance between the isolator and the fan is approximately 5m. It shall include a push and turn safety switch near the machines in the machine room for isolation during servicing and maintenance.	1	Item		
	<u><b>BALANCING OF THE SYSTEM</b></u>				
L	The systems shall be balanced such that the spaces shall be balanced as per the designed flowrates indicated in the drawings. It will be the onus of the tenderer to make sure that the flows are adjusted to meet these requirements.	1	Item		
<b>Total Carried Forward to Collection Page for Mechanical Ventilation</b>					

**COLLECTION PAGE**

Item	Description		Total Cost (Kshs)
1	Total Brought Forward for Air Conditioning Installation Works	.....	
2	Total Brought Forward for Mechanical Ventilation Installation Works	.....	
<b>Total Cost for Air Conditioning and Mechanical Ventilation Works Carried to Grand Summary</b>			

# **ELECTRICAL INSTALLATIONS**

## PROPOSED THIWASCO OFFICE BLOCK

## SECTION NO. 06 : ELECTRICAL WORKS

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL (KSHS)
	<b>Supply and install the following: -</b>				
1.0	Final sub-circuit from Consumer Unit to lighting point comprising of 3 x 1.5mm sq sc copper cables drawn in 20mm diameter concealed conduit for one way switching	No.	128		
2.0	Ditto but for 2 way switching	No.	12		
3.0	<b><u>ALLOW FOR THE SUPPLY AND INSTALLATION OF THE FOLLOWING ACCESSORIES</u></b> <b>SWITCHES( As Clipsal Vivace Range by Schneider Electric)</b>				
a	10A one gang one way	No.	26		
b	10A two gang one way	No.	3		
c	10A four gang one way	No.	1		
d	10A two gang two way	No.	5		
4.0	<b><u>Light fitting complete with internal wiring, lamp and control gear</u></b> <b><u>ALLOW FOR THE SUPPLY AND INSTALLATION OF THE FOLLOWING LIGHT FITTING.</u></b>				
a	Type4 -4ft 36W Surface-Mount LED Luminaire W/silvr Louvre,lamp & Elct.ballst	No.	12		
b	Type2 -2ft 18W Surface-Mount LED Luminaire W/silvr Louvre,lamp & Elct.ballst	No.	1		
c	Type P-Carolus LED pendant light 1300 x 350 x 350mm E27 - 1x 40W Grey as philips or equal equivalent	No.	3		
d	TYPE Ex- Exit light fitting hanging type	No.	4		
e	Type LV- Led Down Light 5w 3200k LV	No.	8		
f	Type B - Phillips (fe)aqua Bathroom Fitting c/w accessories	No.	15		
g	TYPE X- 60W Bulkhead wall mounted external light fitting	No.	6		
h	Type A - LED Ceiling light 15W 3000K	No.	17		
i	Type6-36W 600x600 ceiling mount LED Panel 6000K for the office	No.	70		
j	Type FL - LED Flood lights 30W	No.	2		
k	Type WB - Wall Brackets Light Fitting as approved by engineer 30W	No.	2		
5.0	Final Sub-circuit from consumer unit to power outlet point comprising of 3 x 2.5mm sq sc copper cables drawn 25mm diameter Hg concealed conduit	No.	110		
a.	13A twin switched socket outlet plates As Clipsal Vivace Range by Schneider Electric	No.	108		
b	Ditto but weatherproof	No.	2		
6.0	Final Radial Sub-circuit from consumer unit to Dp point comprising of 3 x 2.5mm sq sc copper cables drawn 25mm diameter Hg concealed conduit	No.	10		
a.	20A D.P power switch with neon light indicator	No.	10		
7.0	TV socket conduit outlet point in 25 mm diameter terminating at roof outlet with draw wire.	No.	4		
8.0	2 Gang Telephone/data Outlet with Shutter C/W conduit and draw wire as CLIPSAL.	No.	48		
9.0	Floorboxes to house 2No. 13A Twin switched sockets and 2No. Data/Voice Points	No.	16		
	<b>TOTAL C/F TO NEXT PAGE</b>				

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL (KSHS)
	<b>TOTAL B/F FROM PREVIOUS PAGE</b>				
<b>10.0</b>	<b>3 phase Distribution boards</b> 4 way recessed Distribution board incorporating 125A intergral isolator, lockable cover, labelling as TERASAKI but without mcb's	item	4		
<b>11.0</b>	<b>Consumer units</b> 4way SPN MCB recessed consumer unit incorporating 125A SPN MCB, lockable cover, labelling as Merlin Gerin but without mcb's	No.	11		
	b Ditto but 9 way	No.	1		
<b>12.0</b>	<b>Miniature circuit breaker</b> a. 10A Single pole b. 20A Single pole c. 30 A Single pole d. 45 A Single pole e. Blanking cover	No. No. No. No. No.	12 10 12 2 17		
<b>13.0</b>	<b><u>600/1000V grade single core pvc insulated copper cables to B.S 6346 drawn in pvc conduits from Meterboard to Distribution board to consumer units</u></b> a. 4x16mm <sup>2</sup> sc cu cables drawn in 50mm dia pvc conduit from Meterboard to Distribution board b. 3x10mm <sup>2</sup> sc cu cables drawn in 32mm dia pvc conduit from Meter Board to cu	M M	35 100		
<b>14.0</b>	Cable Trays 250x50mm	Lm	25		
<b>15.0</b>	<b><u>CCTV POINTS</u></b> CCTV connection point (Each outlet for indoor, out door camera, monitor, shall be measured as one point. Price includes 20mm <sup>2</sup> conduits and draw wire and leading from point to the CCTV section in the communication cabinet with all accessories).	No.	8		
<b>16.0</b>	<b><u>Access Control</u></b> Access control connection points. Price includes 20mm <sup>2</sup> conduits and draw wire and leading from consumer unit to the control point with all accessories	No.	12		
<b>17.0</b>	<b><u>Water Booster Pump</u></b> a Power point for domestic water booster pump comprising of 3 x 2.5mm <sup>2</sup> sc cu cable complete with 13A fused and switch spur unit. b Power point for fire fighting pumps comprising of 3 x 6mm <sup>2</sup> sc cu cable complete with Single Phase 32A TP fused and switch spur unit.	No. No.	1 1		
<b>TOTAL CARRIED FORWARD TO ELECTRICAL COLLECTION PAGE</b>					

**B METERBOARD, DISTRIBUTION BOARDS AND BUSBARS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
<b>1.0</b>	<b><u>LV METERBOARD</u></b> Free Standing LV Meterboard Assembly to comply with Fully Type Tested Assembly (TTA) to IEE 60439 and KSIEC 60439 and IEE61439 comprising of the following main components		1		
a.	KPL three phase meters (space only)	No.	1		
b.	KPL cutouts (as Lucy Oxford) 3phase	No.	1		
c.	160A TPN MCCB incomer complete with upgrade CTs and Tripping	No.	1		
d.	160A copper bus-bars	No.	1		
e.	125A TPN MCCB outgoing	No.	4		
<b>2.0</b>	<b><u>Earthing</u></b> Earthing points comprising of 10mm dia x 1500mm long copper earth electrode including clamp connector and driving head	item	1		
<b>3.0</b>	<b><u>Testing</u></b> Testing of the switchboard to comply to IEE regulations	item	1		
<b>TOTAL CARRIED FORWARD TO ELECTRICAL COLLECTION PAGE</b>					

**C STRUCTURED CABLING INSTALLATIONS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1.0	Horizontal cabling for voice/data outlet points wired in cat 6 cables drawn in conduits and radiating in a star topology from the administration cabinet as Siemon	No.	48		
2.0	Supply and install 48port 10/100/1000 auto sensing Managed PoE+ Gigabit Network Switch with SFP as UniFi complete with all necessary accessories with provision for mounting on a standard administration cabinet.	No.	1		
3.0	Supply and install an appropriate 42U free standing cabinet complete with cable management accessories, lock, key, glass viewing window an extractor fan and 4NO.Socket outlets.	No	1		
4.0	Supply and install cat 6 siemon stranded cat 6 patch cords factory terminated (3m) fly leads	No	48		
5.0	Provide 2U siemon cable organisers for patch leads, horizontal cabling etc to approval	No.	1		
6.0	Supply and install RJ45 cat 6 - 48 port patch panel as Siemon	No.	1		
7.0	Color coded shutters for patch panels	No	1		
8.0	UniFi security Gateway PRO USG-PRO-4 Gateway Router with Gigabit Ethernet	No	1		
9.0	UniFi AP AC PRO Access point with Dual-Radio 3x3 11AC MIMO Technology	No	7		
10.0	Printed self laminated wrap cable markers. These are to be installed on both ends of the cable and and at an interval of 3m along the cable length with the trunking	Lot	1		
11.0	Allow for fixing permanent labels on all the equipments and sockets	Item	1		
12.0	Allow for termination of all terminal equipments including telephones, faxes, modems, computers etc	Item	1		
13.0	Allow for testing and commissioning of penta scanner test results	Item	1		
<b>TOTAL CARRIED FORWARD TO NEXT PAGE</b>					



## TELEPHONE CABLING

[illegible]

D	FIRE DETECTION AND ALARM INSTALLATIONS				
ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
	<b><u>ALLOW FOR THE FOLLOWING POINTS ONLY.</u></b>				
1.0	Provide an outlet for fire alarm comprising 20mm dia pvc conduit from control panel to:				
a	Addressable Smoke detectors	No	23		
b	Addressable Heat detectors	No	1		
c	Break Glass	No	4		
d	Sounder points	No	4		
2.0	Supply and draw through conduit 1mm sq fire tuff cables from control panel to ;				
a	Addressable Smoke detectors	No	23		
b	Addressable Heat detectors	No	1		
c	Break Glasses	No	4		
d	Sounder points	No	4		
3.0	Supply and install the following accessories as GE Risco or equal and approved:-				
a.	2 Amp Power Supply, c/w Rechargeable battery	No	1		
b	Complete Siren Box (Includes 25W siren and strobe light).	No	1		
c	Addressable Smoke detectors	No	23		
d	Addressable Heat detectors	No	1		
e	Sounders	No	4		
f	Break Glasses	No	4		
4.0	2 loop addressable fire alarm control panel	No	1		
5.0	Allow for testing and commissioning of the installation to the satisfaction of the engineer and client.	Item	1		
<b>TOTAL FOR FIRE DETECTION AND ALARM C/F TO COLLECTION PAGE</b>					

E	TV INSTALLATION				
ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b><u>SATELLITE MASTER ANTENAE TV SYSTEM</u></b>				
	<b><u>SUPPLY, DELIVER, INSTALL, TEST AND COMMISSION THE FOLLOWING:-</u></b>				
1.01	Mast head amplifier unit as Televes	1	No.		
1.02	UHF aerial as Ellies complete with mounting bracket	1	No.		
1.03	KU band Satellite Dish 120mm	1	No.		
1.04	8 ways Channel Master Digital splitter unit as Televes	1	No.		
1.05	Combiner units as Televes	1	No.		
1.06	5 AMP High voltage guard as Sollatec	1	No.		
1.07	Security lock box to house equipment	1	No.		
1.08	RG-6U 75-Ohm Coaxial cable complete with connectors as Volex or approved equivalent	85	Lm		
1.09	Any other items necessary to complete the system installation satisfactorily. (List, give quantities and price of the items) a)..... b)..... c)..... d)..... e).....				
	<b>TOTAL FOR TV INSTALLATION C/F TO COLLECTION PAGE</b>				

F		CCTV INSTALLATIONS			
ITEM	DESCRIPTION	UNIT	QTY	RATE	TOTAL KSHS
1.0	<i>Supply and install, test, commission and maintain the following</i>				
a	High Resolution Bullet Camera FULL High Definition 720 TVL, High resolution of 650TV lines, Min. Illumination 0Lux (IR LED on), IR distance 30m, Built-in fixed lens (8mm), Angle of view of 180°, 2.0 Megapixels, DNR, 12V DC, IP66 Ȳ, Max 25/30fps@1080P(1920×1080) Day/Night, AWB, AGC, BLC as DS-2CE16C2T-IT5-- HD720P Turbo HD EXIR Bullet Camera	No	4		
b	Premium Resolution IR Dome Camera with high resolution of 700TV lines, Min. Illumination 0Lux (IR LED on), IR distance 20m, Built-in fixed lens 3.8mm (SCD-2022R), 2.0 Megapixels, 8mm (SCD-2042R), Day & Night (ICR), SSNR III, Defog, Coax : Pelco-C (Coaxitron), 12V DC as DS-2CE56C2T-IR --HD720P Turbo HD Turret Camera	No	7		
c	DS-7224HWI-SH 24 channel DVR--Turbo HD24 CHANNEL DVR Support HDCVI/Analog/IP Video input HCVR4104/4108/4116HS-S2: All channel 720P recording HDMI/VGA simultaneous video output 4/8/16/24 channel synchronous playback, GRID interface & smart search ONVIF Version 2.4 conformance Without Hard Disk, Support 1 SATA HDD up to 4TB, 2 USB2.0 Multiple network monitoring: Web viewer, CMS(DSS/Smart PSS)&Smart Phone(DMSS)	No	1		
d	4TB HARD DISK - Toshiba 4 TB HDD High performance, High-capacity		1		
e	Samsung H4003R - 32" - Series 4 - HD Flat TV - Black 32" display, Wide Color Enhancer , Triple Protection Technology, Connectshare - VGA & HMDI Connectivity	No	1		
f	600 VA Uninterruptible Power Supply	No	1		
g	Power Supply unit to the cameras	No	7		
h	CAT 6 Cable	M	80		
i	Sundries, BNCs, Rawl bolts, conduits, trunkings, wood screws, wall plugs, Power Jacks, MU;T sockets and other camera accessories etc	item	1		
j	Programming, testing and commissioning	Item	1		
TOTAL CARRIED FORWARD TO COLLECTION PAGE					

## ELECTRICAL INSTALLATION BILLS OF QUANTITIES

**COLLECTION PAGE**

ITEM	DESCRIPTION	TOTAL KSHS
1.0	Total Brought forward from Power and Lighting Installations pg 2	
2.0	Total brought forward from LV Switchboard Installations pg 3	
3.0	Total brought forward Intercom and Data Installations pg 5	
4.0	Total brought forward Fire Detection Installations pg 6	
5.0	Total brought forward CENTRALISED TV Installations pg 7	
6.0	Total brought forward CCTV Installations pg 8	
TOTAL CARRIED FORWARD TO GRAND SUMMARY PAGE		

# **PRIME COST & PROVISIONAL SUMS**

Item	Description	Unit	Amount
<b>PROPOSED THIWASCO OFFICE BLOCK</b>			
<b><u>SECTION NO. 07 : PRIME COST AND PROVISIONAL SUMS</u></b>			
a	Allow a Sum of Five Hundred Thousand Shillings (Kshs. 500,000.00) Only for Landscaping Works	Item	
b	Allow a Sum of Three Million, Five Hundred Thousand Shillings (Kshs. 3,500,000.00) Only for standby Generator	Item	
c	Allow a Sum of Three Hundred Thousand Shillings (Kshs. 300,000.00) Only for connection to existing sewer line	Item	
d	Allow a Sum of Eight Hundred Thousand Shillings (Kshs. 800,000.00) Only for Access Control Installations	Item	
e	Allow a Sum of One Million Shillings (Kshs. 1,000,000.00) Only to for specialist joinery works	Item	
f	Allow a Sum of Three Million Shillings (Kshs. 3,000,000.00) Only to Cover all arising Contingencies for the Works	Item	
CARRIED TO GRAND SUMMARY		KSHS	
<u>P.C &amp; Prov. Sums</u>			

Page	Description	Section No	Unit		Amount
PROPOSED THIWASCO OFFICE BLOCK					
GRAND SUMMARY					
01' / 023	Preliminaries	0'1	Kshs		
03' / 011	Office Block	0'2	Kshs		
04' / 03	External Works	0'3	Kshs		
05' / 09	Plumbing and Drainage Works	0'4	Kshs		
06' / 07	Mechanical Ventilation and HVAC Works	0'5	Kshs		
07' / 09	Electrical Works	0'6	Kshs		
08' / 01	Prime Cost & Provisional Sums	0'7	Kshs		
TOTAL COST OF WORKS			KSHS		
<i>(Inclusive of V.A.T)</i>					
<u>Carried to Form of Tender</u>					
<div>CONTRACTOR'S NAME: _____</div> <div>ADDRESS: _____</div> <div>_____</div> <div>TELEPHONE: _____</div> <div>Signature: _____</div> <div>Date: _____</div> <div>Witness' Name: _____</div> <div>Address: _____</div> <div>Signature _____</div> <div>Date: _____</div> <div>Stamp Here</div>					



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## **PART III - CONDITIONS OF CONTRACT AND CONTRACT FORMS**

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## SECTION VIII - GENERAL CONDITIONS OF CONTRACT

These General Conditions of Contract (GCC), read in conjunction with the Special Conditions of Contract (SCC) and other documents listed therein, should be a complete document expressing fairly the rights and obligations of both parties.

These General Conditions of Contract have been developed on the basis of considerable international experience in the drafting and management of contracts, bearing in mind a trend in the construction industry towards simpler, more straightforward language.

The GCC can be used for both smaller admeasurement contracts and lump sum contracts.

### General Conditions of Contract

#### A. General

##### 1. Definitions

1.1 Bold face type is used to identify defined terms.

- a) **The Accepted Contract Amount** means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.
- b) **The Activity Schedule** is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump sum contract. It includes a lump sum price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events.
- c) **The Adjudicator** is the person appointed jointly by the Procuring Entity and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.
- d) **Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.
- e) **Compensation Events** are those defined in GCC Clause 42 hereunder.
- f) **The Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 53.1.
- g) **The Contract** is the Contract between the Procuring Entity and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub-Clause 2.3 below.
- h) **The Contractor** is the party whose Bid to carry out the Works has been accepted by the Procuring Entity.
- i) **The Contractor's Bid** is the completed bidding document submitted by the Contractor to the Procuring Entity.
- j) **The Contract Price** is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.
- k) **Days** are calendar days; months are calendar months.
- l) **Day works** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.
- m) **A Defect** is any part of the Works not completed in accordance with the Contract.
- n) **The Defects Liability Certificate** is the certificate issued by Project Manager upon correction of defects by the Contractor.
- o) **The Defects Liability Period** is the period **named in the SCC** pursuant to Sub-Clause 34.1 and calculated from the Completion Date.
- p) **Drawings** means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Procuring Entity in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract.
- q) **The Procuring Entity** is the party who employs the Contractor to carry out the Works, **as specified in the SCC**, who is also the Procuring Entity.
- r) **Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

- s) **“In writing” or “written”** means hand-written, type-written, printed or electronically made, and resulting in a permanent record;
- t) The Initial Contract Price is the Contract Price listed in the Procuring Entity's Letter of Acceptance.
- u) **The Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is **specified in the SCC**. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.
- v) **Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.
- w) **Plant** is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.
- x) **The Project Manager** is the person **named in the SCC** (or any other competent person appointed by the Procuring Entity and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.
- y) **SCC** means Special Conditions of Contract.
- z) **The Site** is the area of the works as **defined as such in the SCC**.
- aa) **Site Investigation Reports** are those that were included in the bidding document and are factual and interpretative reports about the surface and subsurface conditions at the Site.
- bb) **Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.
- cc) **The Start Date** is **given in the SCC**. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.
- dd) **A Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.
- ee) **Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
- ff) **A Variation** is an instruction given by the Project Manager which varies the Works.
- gg) **The Works** are what the Contract requires the Contractor to construct, install, and turn over to the Procuring Entity, **as defined in the SCC**.

## 2 Interpretation

- 21 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.
- 22 If sectional completion is specified in the SCC, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).
- 23 The documents forming the Contract shall be interpreted in the following order of priority:
  - a) Agreement,
  - b) Letter of Acceptance,
  - c) Contractor's Bid,
  - d) Special Conditions of Contract,
  - e) General Conditions of Contract, including Appendices,
  - f) Specifications,
  - g) Drawings,
  - h) Bill of Quantities<sup>6</sup>, and
  - i) any other document **listed in the SCC** as forming part of the Contract.

<sup>6</sup>In lump sum contracts, delete “Bill of Quantities” and replace with “Activity Schedule.”

### 3. Language and Law

- 3.1 The language of the Contract is English Language and the law governing the Contract are the Laws of Kenya.
- 3.2 Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Procuring Entity's Country when
- a) as a matter of law or official regulations, Kenya prohibits commercial relations with that country; or
  - b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods from that country or any payments to any country, person, or entity in that country.

### 4. Project Manager's Decisions

- 4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Procuring Entity and the Contractor in the role representing the Procuring Entity.

### 5. Delegation

- 5.1 Otherwise **specified in the SCC**, the Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.

### 6. Communications

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

### 7. Subcontracting

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

### 8. Other Contractors

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

### 9. Personnel and Equipment

- 9.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid, to carry out the Works or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.
- 9.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.
- 9.3 If the Procuring Entity, Project Manager or Contractor determines, that any employee of the Contractor be determined to have engaged in Fraud and Corruption during the execution of the Works, then that employee shall be removed in accordance with Clause 9.2 above.

### 10. Procuring Entity's and Contractor's Risks

- 10.1 The Procuring Entity carries the risks which this Contract states are Procuring Entity's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

## 11. Procuring Entity's Risks

11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Procuring Entity's risks:

- a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to
  - i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or
  - ii) negligence, breach of statutory duty, or interference with any legal right by the Procuring Entity or by any person employed by or contracted to him except the Contractor.
- b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Procuring Entity or in the Procuring Entity's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

11.2 From the Completion Date until the Defects Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is a Procuring Entity's risk except loss or damage due to

- aa) a Defect which existed on the Completion Date,
- bb) an event occurring before the Completion Date, which was not itself a Procuring Entity's risk, or
- cc) the activities of the Contractor on the Site after the Completion Date.

## 12. Contractor's Risks

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

## 13. Insurance

13.1 The Contractor shall provide, in the joint names of the Procuring Entity and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles **stated in the SCC** for the following events which are due to the Contractor's risks:

- a) loss of or damage to the Works, Plant, and Materials;
- b) loss of or damage to Equipment;
- c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
- d) personal injury or death.

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

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

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

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

## 14. Site Data

14.1 The Contractor shall be deemed to have examined any Site Data **referred to in the SCC**, supplemented by any information available to the Contractor.

## 15. Contractor to Construct the Works

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

## **16. The Works to Be Completed by the Intended Completion Date**

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

## **17. Approval by the Project Manager**

171 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.

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

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

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

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

## **18. Safety**

181 The Contractor shall be responsible for the safety of all activities on the Site.

## **19. Discoveries**

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

## **20. Possession of the Site**

201 The Procuring Entity shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date **stated in the SCC**, the Procuring Entity shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event.

## **21. Access to the Site**

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

## **22. Instructions, Inspections and Audits**

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

222 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and sub-consultants to keep, accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs.

223 The Contractor shall permit and shall cause its subcontractors and sub-consultants to permit, the Procuring Entity and/or persons appointed by the Public Procurement Regulatory Authority to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by the Public Procurement Regulatory Authority. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 25.1 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Public Procurement Regulatory Authority's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Public Procurement Regulatory Authority's prevailing sanctions procedures).



## **23. Appointment of the Adjudicator**

- 23.1 The Adjudicator shall be appointed jointly by the Procuring Entity and the Contractor, at the time of the Procuring Entity's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Procuring Entity does not agree on the appointment of the Adjudicator, the Procuring Entity will request the Appointing Authority designated in the SCC, to appoint the Adjudicator within 14 days of receipt of such request.
- 23.2 Should the Adjudicator resign or die, or should the Procuring Entity and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Procuring Entity and the Contractor. In case of disagreement between the Procuring Entity and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority designated in the SCC at the request of either party, within 14 days of receipt of such request.

## **24. Settlement of Claims and Disputes**

### **24.1 Contractor's Claims**

- 24.1.1 If the Contractor considers itself 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 30 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- 24.1.2 If the Contractor fails to give notice of a claim within such period of 30 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub- Clause shall apply.
- 24.1.3 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.
- 24.1.4 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 Procuring Entity'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.
- 24.1.5 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:
- a) this fully detailed claim shall be considered as interim;
  - 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
  - c) the Contractor shall send a final claim within 30 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.
- 24.1.6 Within 42 days after receiving a Notice of a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by 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.
- 24.1.7 Within the above defined period of 42 days, the Project Manager shall proceed in accordance with Sub-Clause
- 24.1.8 [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.

24.1.9 Each Payment Certificate shall include such additional payment for any claim as has 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.

24.1.10 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 to Arbitration in accordance with Sub-Clause 24.4 [Arbitration].

24.1.11 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 24.3.

## **242 Amicable Settlement**

24.2.1 Where a notice of a claim has been given, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a notice of a claim in accordance with Sub-Clause 24.1 above should move to commence arbitration after the fifty-sixth day from the day on which a notice of a claim was given, even if no attempt at an amicable settlement has been made.

## **243 Matters that may be referred to arbitration**

24.3.1 Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:

- a) The appointment of a replacement Project Manager upon the said person ceasing to act.
- b) Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions.
- c) Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
- e) Any dispute arising in respect of war risks or war damage.
- f) All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless the Procuring Entity and the Contractor agree otherwise in writing.

## **244 Arbitration**

- 24.4.1 Any claim or dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 24.3 shall be finally settled by arbitration.
- 24.4.2 No arbitration proceedings shall be commenced on any claim or dispute where notice of a claim or dispute has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.
- 24.4.3 Notwithstanding the issue of a notice as stated above, the arbitration of such a claim or dispute shall not commence unless an attempt has in the first instance been made by the parties to settle such claim or dispute amicably with or without the assistance of third parties. Proof of such attempt shall be required.
- 24.4.4 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.
- 24.4.5 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision requirement or notice had been given.
- 24.4.6 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager, 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.
- 24.4.7 Neither Party shall be limited in the proceedings before the arbitrators to the evidence, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction.
- 24.4.8 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, and the Project Manager shall not be altered by reason of any arbitration being conducted during the progress of the Works.
- 24.4.9 The terms of the remuneration of each or all the members of Arbitration shall be mutually agreed upon by the

Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

#### **245 Arbitration with National Contractors**

24.5.1 If the Contract is with national contractors, arbitration proceedings will be conducted in accordance with the Arbitration Laws of Kenya. In case of any claim or dispute, such claim or dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed, on the request of the applying party, by the Chairman or Vice Chairman of any of the following professional institutions;

- i) Architectural Association of Kenya
- ii) Institute of Quantity Surveyors of Kenya
- iii) Association of Consulting Engineers of Kenya
- iv) Chartered Institute of Arbitrators (Kenya Branch)
- v) Institution of Engineers of Kenya

24.5.2 The institution written to first by the aggrieved party shall take precedence over all other institutions.

#### **246 Alternative Arbitration Proceedings**

24.6.1 Alternatively, the Parties may refer the matter to the Nairobi Centre for International Arbitration (NCIA) which offers a neutral venue for the conduct of national and international arbitration with commitment to providing institutional support to the arbitral process.

#### **247 Failure to Comply with Arbitrator's Decision**

24.7.1 The award of such Arbitrator shall be final and binding upon the parties.

24.7.2 In the event that a Party fails to comply with a final and binding Arbitrator's decision, then the other Party may, without prejudice to any other rights it may have, refer the matter to a competent court of law.

#### **248 Contract operations to continue**

24.8.1 Notwithstanding any reference to arbitration herein,

- a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and
- b) the Procuring Entity shall pay the Contractor any monies due the Contractor.

### **25. Fraud and Corruption**

25.1 The Government requires compliance with the country's Anti-Corruption laws and its prevailing sanctions policies and procedures as set forth in the Constitution of Kenya and its Statutes.

25.2 The Procuring Entity requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.

## **B. Time Control**

### **26. Program**

26.1 Within the time stated in the SCC, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule.

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

26.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period stated in the SCC. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the SCC from the next payment certificate and

continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted. In the case of a lump sum contract, the Contractor shall provide an updated Activity Schedule within 14 days of being instructed to by the Project Manager.

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

## **27. Extension of the Intended Completion Date**

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

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

## **28. Acceleration**

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

28.2 If the Contractor's priced proposals for an acceleration are accepted by the Procuring Entity, they are incorporated in the Contract Price and treated as a Variation.

## **29. Delays Ordered by the Project Manager**

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

## **30. Management Meetings**

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

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

## **31. Early Warning**

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

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

# **C. Quality Control**

## **32. Identifying Defects**

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

### 33. Tests

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

### 34. Correction of Defects

- 34.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the SCC. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 34.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.

### 35. Uncorrected Defects

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

## D. Cost Control

### 36. Contract Price<sup>7</sup>

- 36.1 The Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item.

### 37. Changes in the Contract Price<sup>8</sup>

- 37.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Procuring Entity.
- 37.2 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.

### 38. Variations

- 38.1 All Variations shall be included in updated Programs<sup>9</sup> produced by the Contractor.
- 38.2 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.
- 38.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.
- 38.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

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<sup>7</sup>In lump sum contracts, replace GCC Sub-Clauses 36.1 as follows:

36.1 The Contractor shall provide updated Activity Schedules within 14 days of being instructed to by the Project Manager. The Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid. If payment for materials on site shall be made separately, the Contractor shall show delivery of Materials to the Site separately on the Activity Schedule.

<sup>8</sup>In lump sum contracts, replace entire GCC Clause 37 with new GCC Sub-Clause 37.1, as follows:

The Activity Schedule shall be amended by the Contractor to accommodate changes of Program or method of working made at the Contractor's own discretion. Prices in the Activity Schedule shall not be altered when the Contractor makes such changes to the Activity Schedule.

<sup>9</sup>In lump sum contracts, add "and Activity Schedules" after "Programs." <sup>10</sup>In lump sum contracts, delete this paragraph.

- 385 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning
- 386 If the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 39.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work
- 387 Value Engineering: The Contractor may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following;
- a) the proposed change(s), and a description of the difference to the existing contract requirements;
  - b) a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle costs) the Procuring Entity may incur in implementing the value engineering proposal; and
  - c) a description of any effect(s) of the change on performance/functionality.
- 388 The Procuring Entity may accept the value engineering proposal if the proposal demonstrates benefits that:
- a) accelerate the contract completion period; or
  - b) reduce the Contract Price or the life cycle costs to the Procuring Entity; or
  - c) improve the quality, efficiency, safety or sustainability of the Facilities; or
  - d) yield any other benefits to the Procuring Entity, without compromising the functionality of the Works.
- 389 If the value engineering proposal is approved by the Procuring Entity and results in:
- a) a reduction of the Contract Price; the amount to be paid to the Contractor shall be the **percentage specified in the SCC** of the reduction in the Contract Price; or
  - b) an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above, the amount to be paid to the Contractor shall be the full increase in the Contract Price.

### 39. Cash Flow Forecasts

- 39.1 When the Program<sup>11</sup>, is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.

### 40. Payment Certificates

- 40.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.
- 40.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.
- 40.3 The value of work executed shall be determined by the Project Manager.
- 40.4 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed<sup>12</sup>.
- 40.5 The value of work executed shall include the valuation of Variations and Compensation Events.
- 40.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
- 40.7 Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (which would be the tender price), payment valuation certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows:  $(\text{corrected tender price} - \text{tender price}) / \text{tender price} \times 100$ .



## 41. Payments

- 41.1 Payments shall be adjusted for deductions for advance payments and retention. The Procuring Entity shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of each certificate. If the Procuring Entity makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.
- 41.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
- 41.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.
- 41.4 Items of the Works for which no rate or price has been entered in shall not be paid for by the Procuring Entity and shall be deemed covered by other rates and prices in the Contract.

## 42. Compensation Events

42.1 The following shall be Compensation Events:

- d) The Procuring Entity does not give access to a part of the Site by the Site Possession Date pursuant to GCC Sub-Clause 20.1.
- e) The Procuring Entity modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.
- f) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.
- g) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.
- h) The Project Manager unreasonably does not approve a subcontract to be let.
- i) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.
- j) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Procuring Entity, or additional work required for safety or other reasons.
- k) Other contractors, public authorities, utilities, or the Procuring Entity does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- l) The advance payment is delayed.
- m) The effects on the Contractor of any of the Procuring Entity's Risks.
- n) The Project Manager unreasonably delays issuing a Certificate of Completion.

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

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

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<sup>11</sup>In lump sum contracts, add "or Activity Schedule" after "Program."

<sup>12</sup>In lump sum contracts, replace this paragraph with the following: "The value of work executed shall comprise the value of completed activities in the Activity Schedule."

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

#### **43. Tax**

43.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 30 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of GCC Clause 44.

#### **44. Currency of Payment**

44.1 All payments under the contract shall be made in Kenya Shillings

#### **45. Price Adjustment**

45.1 Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies:

$$P = A + B \text{ Im/Io}$$

where:

P is the adjustment factor for the portion of

the Contract Price payable.

A and B are coefficients<sup>13</sup> **specified in the SCC**, representing the non-adjustable and adjustable portions, respectively, of the Contract Price payable and Im is the index prevailing at the end of the month being invoiced and IOC is the index prevailing 30 days before Bid opening for inputs payable.

45.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.

#### **46. Retention**

46.1 The Procuring Entity shall retain from each payment due to the Contractor the proportion stated in the **SCC** until Completion of the whole of the Works.

46.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC 53.1, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected. The Contractor may substitute retention money with an "on demand" Bank guarantee.

#### **47. Liquidated Damages**

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

47.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in GCC Sub-Clause 41.1.

#### **48. Bonus**

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

#### **49. Advance Payment**

- 49.1 The Procuring Entity shall make advance payment to the Contractor of the amounts stated in the SCC by the date stated in the SCC, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Procuring Entity 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 shall not be charged on the advance payment.
- 49.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.
- 49.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.

#### **50. Securities**

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

#### **51. Dayworks**

- 51.1 If applicable, the Dayworks rates in the Contractor's Bid shall be used only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
- 51.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.
- 51.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

#### **52. Cost of Repairs**

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

### **E. Finishing the Contract**

#### **53. Completion**

- 53.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the whole of the Works is completed.

#### **54. Taking Over**

- 54.1 The Procuring Entity shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.

#### **55. Final Account**

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

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<sup>13</sup>The sum of the two coefficients A and B should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A, for the non-adjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other non-adjustable components. The sum of the adjustments for each currency are added to the Contract Price.



## **56. Operating and Maintenance Manuals**

56.1 If “as built” Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the SCC.

56.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the SCC pursuant to GCC Sub-Clause 56.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount **stated in the SCC** from payments due to the Contractor.

## **57. Termination**

57.1 The Procuring Entity or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

57.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- a) the Contractor stops work for 30 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;
- b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 30 days;
- c) the Procuring Entity or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- d) a payment certified by the Project Manager is not paid by the Procuring Entity to the Contractor within 84 days of the date of the Project Manager's certificate;
- e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
- f) the Contractor does not maintain a Security, which is required;
- g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as **defined in the SCC**; or
- h) if the Contractor, in the judgment of the Procuring Entity has engaged in Fraud and Corruption, as defined in paragraph 2.2 a of the Appendix A to the GCC, in competing for or in executing the Contract, then the Procuring Entity may, after giving fourteen (14) days written notice to the Contractor, terminate the Contract and expel him from the Site.

57.3 Notwithstanding the above, the Procuring Entity may terminate the Contract for convenience.

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

57.5 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under GCC Sub-Clause 56.2 above, the Project Manager shall decide whether the breach is fundamental or not.

## **58. Payment upon Termination**

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

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

## **59. Property**

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

## **60. Release from Performance**

- 60.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Procuring Entity or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

## SECTION IX - SPECIAL CONDITIONS OF CONTRACT

Except where otherwise specified, all Special Conditions of Contract should be filled in by the Procuring Entity prior to issuance of the bidding document. Schedules and reports to be provided by the Procuring Entity should be annexed.

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
<b>A. General</b>	
<b>GCC 1.1 (q)</b>	The Procuring Entity is : <b>Thika Water and Sewerage Company Ltd</b> <b>P.o Box 6103-01000,Thika.</b>
<b>GCC 1.1 (u)</b>	The Intended Completion Date for the whole of the Works shall be <i>[insert date]</i>  <i>[If different dates are specified for completion of the Works by section ("sectional completion" or milestones), these dates should be listed here]</i>
<b>GCC 1.1 (x)</b>	The Project Manager is:  <b>Eng. Mburu Kiemo</b> <b>Thika Water and Sewerage Company Ltd</b> <b>P.o Box 6103-01000, Thika.</b>
<b>GCC 1.1 (z)</b>	The Site is located at <i>[main officesThika Water Treatment Works ]</i> and is defined in drawings No. <i>[all drawings are attached as appendix 1 and 2]</i>
<b>GCC 1.1 (cc)</b>	The Start Date shall be <i>[insert date]</i> .
<b>GCC 1.1 (gg)</b>	The Works consist of <i>[PROPOSED OFFICE BLOCK FOR THIKA WATER AND SEWERAGE COMPANY LTD.]</i> .
<b>GCC 2.2</b>	Sectional Completions are: <i>[not appropriate]</i>
<b>GCC 5.1</b>	The Project manager <i>[may]</i> delegate any of his duties and responsibilities.
<b>GCC 8.1</b>	Schedule of other contractors: <i>[not appropriate]</i>
<b>GCC 9.1</b>	<p><b>Key Personnel</b> GCC 9.1 is replaced with the following:</p> <p>9.1 Key Personnel are the Contractor's personnel named in this GCC 9.1 of the Special Conditions of Contract. The Contractor shall employ the Key Personnel and use the equipment identified in its Bid, to carry out the Works or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of Key Personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.</p> <p><i>[insert the name/s of each Key Personnel agreed by the Procuring Entity prior to Contract signature.]</i></p>
<b>GCC 13.1</b>	<p>The minimum insurance amounts and deductibles shall be:</p> <ul style="list-style-type: none"> <li>(a) for loss or damage to the Works, Plant and Materials: <i>[1,000,000]</i>.</li> <li>(b) For loss or damage to Equipment: <i>[2,000,000]</i>.</li> <li>(c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract <i>[2,000,000]</i>.</li> <li>(d) for personal injury or death:</li> </ul>

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
	<p>(i) of the Contractor's employees: <i>[2,000,000]</i>.</p> <p>(ii) of other people: <i>[1,500,000]</i></p>
<b>GCC 14.1</b>	Site Data are: <i>[14 days after Contract signing]</i>
<b>GCC 20.1</b>	The Site Possession Date(s) shall be: <i>[insert location(s) and date(s)]</i>
<b>GCC 23.1 &amp; GCC 23.2</b>	Appointing Authority for the Adjudicator: <i>[Nyongesa Nafula and Company advocate (tel. no. 2021001150 ,p.o box 42540-00100,Nairobi.</i>
	Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: <i>[11,600 per hour]</i> .
<b>B. Time Control</b>	
<b>GCC 26.1</b>	The Contractor shall submit for approval a Program for the Works within <i>[14]</i> days from the date of the Letter of Acceptance.
<b>GCC 26.3</b>	The period between Program updates is <i>[30]</i> days.
	The period for submission of progress reports is 30days.
	The amount to be withheld for late submission of an updated Program & progress reports is <i>[100,000]</i> .
<b>C. Quality Control</b>	
<b>GCC 34.1</b>	The Defects Liability Period is: <i>[12]</i> months.
<b>D. Cost Control</b>	
<b>GCC 38.9</b>	If the value engineering proposal is approved by the Procuring Entity the amount to be paid to the Contractor shall be 10% <i>(insert appropriate percentage. The percentage is normally up to 50%)</i> of the reduction in the Contract Price.
<b>GCC 44.1</b>	The currency of the Procuring Entity's Country is: <i>[Kenya shillings]</i> .
<b>GCC 45.1</b>	The Contract <i>[“is not”]</i> subject to price adjustment in accordance with GCC Clause 45, and the following information regarding coefficients <i>[ “does not”]</i> apply.
	The coefficients for adjustment of prices are:
	(a) <i>[not applicable]</i> percent nonadjustable element (coefficient A).
	(ib) <i>[not applicable]</i> percent adjustable element (coefficient B).
<b>GCC 46.1</b>	(c) The Index I for shall be <i>[not applicable]</i> .
	The proportion of payments retained is: <i>[10%]</i>
<b>GCC 47.1</b>	The liquidated damages for the whole of the Works are <i>[0.1%]</i> per day. The maximum amount of liquidated damages for the whole of the Works is <i>[10%]</i> of the final Contract Price.
<b>GCC 48.1</b>	The Bonus for the whole of the Works is <i>[Not applicable]</i> per day. The maximum amount of Bonus for the whole of the Works is <i>[Not applicable]</i> of the final Contract Price.
	<i>Not applicable</i>
<b>GCC 49.1</b>	The Advance Payments shall be: <i>[Not applicable]</i> and shall be paid to the Contractor no later

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
	<p>than <i>[Not applicable]</i>.</p> <p><i>Not applicable</i></p>
<b>GCC 50.1</b>	<p>The Performance Security amount is <i>[insert amount(s) denominated in the types and proportions of the currencies in which the Contract Price is payable, or in a freely convertible currency acceptable to the Procuring Entity]</i></p> <p>(a) Performance Security – Bank Guarantee: in the amount(s) of <i>[10.0%]</i> percent of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount.</p> <p>(b) Performance Security – Performance Bond: in the amount(s) of <i>[10.0%]</i> percent of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount.</p>
<b>E. Finishing the Contract</b>	
<b>GCC 56.1</b>	<p>The date by which operating and maintenance manuals are required is <i>[30 days after expiry of Time for Completion of Works]</i>.</p> <p>The date by which “as built” drawings are required is <i>[30 days after expiry of Time for Completion of Works]</i>.</p>
<b>GCC 56.2</b>	<p>The amount to be withheld for failing to produce “as built” drawings and/or operating and maintenance manuals by the date required in GCC 58.1 is <i>[500,000]</i>.</p>
<b>GCC 57.2 (g)</b>	<p>The maximum number of days is: <i>[60]</i>.</p>
<b>GCC 58.1</b>	<p>The percentage to apply to the value of the work not completed, representing the Procuring Entity’s additional cost for completing the Works, is <i>[Not applicable]</i>.</p>

## **FORM No 1: NOTIFICATION OF INTENTION TO AWARD**

This Notification of Intention to Award shall be sent to each Tenderer that submitted a Tender. Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form on the format below.

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### **FORMAT**

1. For the attention of Tenderer's Authorized Representative

- i) Name: *[insert Authorized Representative's name]*
- ii) Address: *[insert Authorized Representative's Address]*
- iii) Telephone: *[insert Authorized Representative's telephone/fax numbers]*
- iv) Email Address: *[insert Authorized Representative's email address]*

*[IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]*

2. Date of transmission: *[email]* on *[date]* (local time)

This Notification is sent by *(Name and designation)* \_\_\_\_\_

3. Notification of Intention to Award

- i) Procuring Entity: *[insert the name of the Procuring Entity]*
- ii) Project: *[insert name of project]*
- iii) Contract title: *[insert the name of the contract]*
- iv) Country: *[insert country where ITT is issued]*
- v) ITT No: *[insert ITT reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

4. Request a debriefing in relation to the evaluation of your tender

Submit a Procurement-related Complaint in relation to the decision to award the contract.

a) The successful tenderer

i) Name of successful Tender \_\_\_\_\_

ii) Address of the successful Tender \_\_\_\_\_

iii) Contract price of the successful Tender Kenya Shillings \_\_\_\_\_ (in words \_\_\_\_\_)

b) Other Tenderers

Names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out. For Tenders not evaluated, give one main reason the Tender was unsuccessful.

SNo	Name of Tender	Tender Price as read out	Tender's evaluated price (Note a)	One Reason Why not Evaluated
1				
2				
3				
4				
5				

(Note a) State NE if not evaluated

#### 5. How to request a debriefing

- a) DEADLINE: The deadline to request a debriefing expires at midnight on *[insert date]* (local time).
- b) You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (5) Business Days of receipt of this Notification of Intention to Award.
- c) Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:
  - i) Attention: *[insert full name of person, if applicable]*
  - ii) Title/position: *[insert title/position]*
  - ii) Agency: *[insert name of Procuring Entity]*
  - iii) Email address: *[insert email address]*
- d) If your request for a debriefing is received within the 3 Days deadline, we will provide the debriefing within five (3) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (3) Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.
- e) The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.
- f) If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Days from the date of publication of the Contract Award Notice.

#### 6. How to make a complaint

- a) Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, *[insert date]* (local time).
- b) Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement-related Complaint as follows:
  - i) Attention: *[insert full name of person, if applicable]*
  - ii) Title/position: *[insert title/position]*
  - iii) Agency: *[insert name of Procuring Entity]*
  - iv) Email address: *[insert email address]*
- c) At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.
- d) Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its Regulations available from the Website [info@ppra.go.ke](mailto:info@ppra.go.ke) or [complaints@ppra.go.ke](mailto:complaints@ppra.go.ke).  
You should read these documents before preparing and submitting your complaint.
- e) There are four essential requirements:
  - i) You must be an 'interested party'. In this case, that means a Tenderer who submitted a Tender in this tendering process, and is the recipient of a Notification of Intention to Award.

- ii) The complaint can only challenge the decision to award the contract.
- iii) You must submit the complaint within the period stated above.
- iv) You must include, in your complaint, all of the information required to support your complaint.

7. Standstill Period

- i) DEADLINE: The Standstill Period is due to end at midnight on [*insert date*] (local time).
- ii) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.
- iii) The Standstill Period may be extended as stated in paragraph Section 5 (d) above.

If you have any questions regarding this Notification please do not hesitate to contact us. On behalf of the Procuring Entity:

**Signature:** \_\_\_\_\_ **Name:** \_\_\_\_\_

**Title/position:** \_\_\_\_\_ **Telephone:** \_\_\_\_ **Email:** \_\_\_\_\_



**FORM NO. 2 - REQUEST FOR REVIEW**

**FORM FOR REVIEW(r.203(1))**

**PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD**

**APPLICATION NO.....OF.....20.....**

**BETWEEN**

**.....APPLICANT**

**AND**

**.....RESPONDENT (Procuring Entity)**

Request for review of the decision of the..... (Name of the Procuring Entity of .....dated the...day of .....20.....in the matter of Tender No.....of .....20..... for .....(Tender description).

**REQUEST FOR REVIEW**

I/We.....,the above named Applicant(s), of address: Physical address.....P. O. Box No..... Tel. No.....Email ....., hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds , namely:

- 1.
- 2.

By this memorandum, the Applicant requests the Board for an order/orders that:

- 1.
- 2.

SIGNED .....(Applicant) Dated on.....day of ...../...20.....

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FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on.....day of .....20.....

**SIGNED**

**Board Secretary**

### **FORM NO 3: LETTER OF AWARD**

*[letterhead paper of the Procuring Entity] [date]*

To: *[name and address of the Contractor]*

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is hereby accepted by ..... (*name of Procuring Entity*).

You are requested to furnish the Performance Security within 30 days in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature:.....

Name and Title of Signatory:.....

Name of Procuring Entity.....

Attachment: *Contract Agreement*.....

## FORM NO 4: CONTRACT AGREEMENT

THIS AGREEMENT made the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, between \_\_\_\_\_ of \_\_\_\_\_ (hereinafter “the Procuring Entity”), of the one part, and \_\_\_\_\_ of \_\_\_\_\_ (hereinafter “the Contractor”), of the other part:

WHEREAS the Procuring Entity desires that the Works known as \_\_\_\_\_ should be executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
  - a) the Letter of Acceptance
  - b) the Letter of Tender
  - c) the addenda Nos \_\_\_\_\_ (if any)
  - d) the Special Conditions of Contract
  - e) the General Conditions of Contract;
  - f) the Specifications
  - g) the Drawings; and
  - h) the completed Schedules and any other documents forming part of the contract.
3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Procuring Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the Laws of Kenya on the day, month and year specified above.

Signed and sealed by \_\_\_\_\_ (for the Procuring Entity)

Signed and sealed by \_\_\_\_\_ (for the Contractor).

## **FORM NO. 5 - PERFORMANCE SECURITY**

### **[Option 1 - Unconditional Demand Bank Guarantee]**

*[Guarantor letterhead]*

**Beneficiary:** \_\_\_\_\_ *[insert name and Address of Procuring Entity]* **Date:** \_\_\_\_\_

\_\_\_\_\_ *[Insert date of issue]*

**Guarantor:** *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that \_\_\_\_\_ (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ dated \_\_\_\_\_ with (name of Procuring Entity) \_\_\_\_\_ (the Procuring Entity as the Beneficiary), for the execution of \_\_\_\_\_ (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.
3. At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_ (in words),<sup>1</sup> such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.
4. This guarantee shall expire, no later than the .... Day of ....., 2.....<sup>2</sup>, and any demand for payment under it must be received by us at the office indicated above on or before that date.
5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months]* *[one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

*[Name of Authorized Official, signature(s) and seals/stamps].*

**Note:** *All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.*

<sup>1</sup> The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency of the Contract or a freely convertible currency acceptable to the Beneficiary.

<sup>2</sup> Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

## **FORM No. 6 - PERFORMANCE SECURITY**

### **[Option 2– Performance Bond]**

*[Note: Procuring Entities are advised to use Performance Security – Unconditional Demand Bank Guarantee instead of Performance Bond due to difficulties involved in calling Bond holder to action]*


*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** \_\_\_\_\_ *[insert name and Address of Procuring Entity]* **Date:** \_\_\_\_\_  
\_\_\_\_\_ *[Insert date of issue]*.

**PERFORMANCE BOND No.:** \_\_\_\_\_

**Guarantor:** *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. By this Bond \_\_\_\_\_ as Principal (hereinafter called “the Contractor”) and \_\_\_\_\_] as Surety (hereinafter called “the Surety”), are held and firmly bound unto \_\_\_\_\_] as Obligee (hereinafter called “the Procuring Entity”) in the amount of \_\_\_\_\_ for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the \_\_\_\_\_ day of \_\_\_\_\_, 20 , for \_\_\_\_\_ in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.
3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:
  - 1) complete the Contract in accordance with its terms and conditions; or
  - 2) obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or
  - 3) pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.
4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.
5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named herein or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.
6. In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this day \_\_\_\_\_ of \_\_\_\_\_ 20\_\_\_\_\_.



SIGNED ON \_\_\_\_\_ on behalf of By \_\_\_\_ in the capacity of In the  
presence of

SIGNED ON \_\_\_\_\_ on behalf of By \_\_\_\_ in the capacity of In the  
presence of

## **FORM NO. 7 - ADVANCE PAYMENT SECURITY**

### **[Demand Bank Guarantee]**

*[Guarantor letterhead]*

**Beneficiary:** \_\_\_\_\_ *[Insert name and Address of Procuring Entity]*

**Date:** \_\_\_\_\_ *[Insert date of issue]*

**ADVANCE PAYMENT GUARANTEE No.:** \_\_\_\_\_ *[Insert guarantee reference number]* **Guarantor:** \_\_\_\_\_  
\_\_\_\_\_ *[Insert name and address of place of issue, unless indicated in the letterhead]*

1. We have been informed that \_\_\_\_\_ (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ dated \_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_ (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum \_\_\_\_\_ (in words) is to be made against an advance payment guarantee.
3. At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_ (in words \_\_\_\_\_)<sup>1</sup> upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:
  - a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
  - b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.
4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Contractor on its account number \_\_\_\_\_ at \_\_\_\_\_.
5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the \_\_\_\_\_ day of \_\_\_\_\_, 2<sup>2</sup>, whichever is earlier. Consequently, demand for payment under this guarantee must be received by us at this office on or before that date.
6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months]* *[one year]*, in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

*[Name of Authorized Official, signature(s) and seals/stamps]*

***Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.***

<sup>1</sup>The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency of the advance payment as specified in the Contract.

<sup>2</sup>Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

## FORM NO. 8 - RETENTION MONEY SECURITY

### [Demand Bank Guarantee]

[Guarantor letterhead]

**Beneficiary:** \_\_\_\_\_ [Insert name and Address of Procuring Entity]

**Date:** \_\_\_\_\_ [Insert date of issue]

**Advance payment guarantee no.** [Insert guarantee reference number]

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

1. We have been informed that \_\_\_\_\_ [insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture] (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ [insert reference number of the contract] dated \_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_ [insert name of contract and brief description of Works] (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of [insert the second half of the Retention Money] is to be made against a Retention Money guarantee.
3. At the request of the Contractor, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of [insert amount in figures] \_\_\_\_\_ [insert amount in words \_\_\_\_\_] upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.
4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number \_\_\_\_\_ at \_\_\_\_\_ [insert name and address of Applicant's bank].
5. This guarantee shall expire no later than the ..... Day of ....., 2.....<sup>2</sup>, and any demand for payment under it must be received by us at the office indicated above on or before that date.
6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

[Name of Authorized Official, signature(s) and seals/stamps]

**Note:** All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

<sup>1</sup>The Guarantor shall insert an amount representing the amount of the second half of the Retention Money.

<sup>2</sup>Insert a date that is twenty-eight days after the expiry of retention period after the actual completion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.



## FORM NO. 9 BENEFICIAL OWNERSHIP DISCLOSURE FORM

### **INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM**

*This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.*

*For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the Tenderer by meeting one or more of the following conditions:*

- Directly or indirectly holding 25% or more of the shares.*
- Directly or in directly holding 25% or more of the voting rights.*
- Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer.*

Tender Reference No.: \_\_\_\_\_ [insert identification no]

Name of the Assignment: \_\_\_\_\_ [insert name of the assignment] to:  
\_\_\_\_\_ [insert complete name of Procuring Entity]

In response to your notification of award dated \_\_\_\_\_ [insert date of notification of award] to furnish additional information on beneficial ownership: \_\_\_\_\_ [select one option as applicable and delete the options that are not applicable]

I) We here by provide the following beneficial ownership information.

#### **Details of beneficial ownership**

<b>Identity of Beneficial Owner</b>	<b>Directly or indirectly holding 25% or more of the shares (Yes / No)</b>	<b>Directly or indirectly holding 25 % or more of the Voting Rights (Yes / No)</b>	<b>Directly or indirectly having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer (Yes / No)</b>
<i>[include full name (last, middle, first), nationality, country of residence]</i>			

OR

ii) *We declare that there is no Beneficial Owner meeting one or more of the following conditions: directly or indirectly holding 25% or more of the shares. Directly or indirectly holding 25% or more of the voting rights. Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer.*

OR

*We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Tenderer shall provide explanation on why it is unable to identify any Beneficial Owner]*

*Directly or indirectly holding 25% or more of the shares. Directly or indirectly holding 25% or more of the voting rights.*

*Directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Tenderer]"*

*Name of the Tenderer: .....\*[insert complete name of the Tenderer]\_\_\_\_\_*

*Name of the person duly authorized to sign the Tender on behalf of the Tenderer: \*\* [insert complete name of person duly authorized to sign the Tender]*

*Title of the person signing the Tender: ..... [insert complete title of the person signing the Tender]*

*Signature of the person named above: ..... [insert signature of person whose name and capacity are shown above]*

*Date signed ..... [insert date of signing] day of..... [Insert month], [insert year]*



# PROPOSED OFFICE BLOCK THIKA WATER AND SEWERAGE COMPANY LIMITED.



**W+D**  
ARCHITECTS & PROJECT MANAGERS

BRIEF INTERPRETATION AND ANALYSIS

ZONE	SPACE	QUALITIES	no.of people	Min. area/ person/function	TOTAL AREA M²	Spatial Requirements	Space	Quantity	Min. area/ M²	TOTAL AREA M²	TOTAL M²
01 SECOND FLOOR	MD's Office	Private ,Low traffic, Restricted access,Quiet and serene atmosphere	01	N/A	18.5	*Office Space with ample storage space *Lounge for the MD,Chief Commercial Manager and Secretaries. *Ensuite Toilet, Sh, Dressing room for the MD * Break Out area for the Board Room. *Common Reception.	Office Space	04	N/A		
	Board Room		20	2	40		Lounge	04	4	16	
	Executive Secretary's Office		03	10	30		WC/sh/ Dressing room	01	10	10	
	Chief Commercial Manager		01	N/A	16		Break out area	20.Pple	1	20	
							Reception	01	10	10	
		TOTAL AREA			104.5					56	160.5
02 FIRST FLOOR	Internal Audit	Semi-Private High traffic, Controlled access	03	5	15	* Staff Room *Reception. * Toilets( Ladies & Gents) *Lounge	Staff Room	01	60	40	
	Corporate Relations		04	5	20		Reception	01	20	20	
	Human Resource Manager		01	N/A	16		Toilets	02	6.5	13	
	Human Resource Section		04	5	20		Lounge	01	4	4	
		TOTAL AREA			71					67	148
03 GROUND FLOOR	Reception	Public High traffic, Easily Accessed	N/A	20	20	* Toilets( Ladies & Gents) *Lounge/Waiting Area	Toilets	02	6.5	13	
	Administrative Section		04	5	20		Lounge	01	15	15	
	Kitchen		01	N/A	40						
	O&M Water		04	5	20						
	O&M Sewer		04	5	20						
		TOTAL AREA			120					28	148
04 BASEMENT FLOOR	Development Office	Semi-Private High traffic, Controlled access	02	5	10	*Common Reception. *Archives/ Records Store	Reception	01	5	5	
	Development - W.Stations		06	5	30		Records	05	20	100	
	Registry		03	5	15						
		TOTAL AREA			55					105	160
										TOTAL AREA	616.5
										add 25% circulation space	154.125
										GRAND TOTAL	770.625

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH STRUCTURAL, MECHANICAL, ELECTRICAL AND/OR OTHER CONSULTANT'S DOCUMENTATION THAT MAY BE APPLICABLE PRIOR TO COMMENCEMENT OF THE WORK AND IN ITS DURATION.  
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NOTES	
I.C. MEANS INSPECTION CHAMBER M.H. MEANS MAN HOLE P.V. MEANS PERMANENT VENT G.T. MEANS GALLEY TRAP ALL WALLS 150MM WIDE OR LESS TO BE REINFORCED WITH HOOP IRON AT ALTERNATE COURSES ALL DRAINS PASSING BENEATH BUILDING AND DRIVEWAYS TO BE ENCASED IN 150MM THICK CONCRETE	ALL PIPEWORK AND CONDUITS TO BE TESTED BEFORE PLASTERWORK ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

REVISIONS					
No.	Description	Date	No.	Description	Date

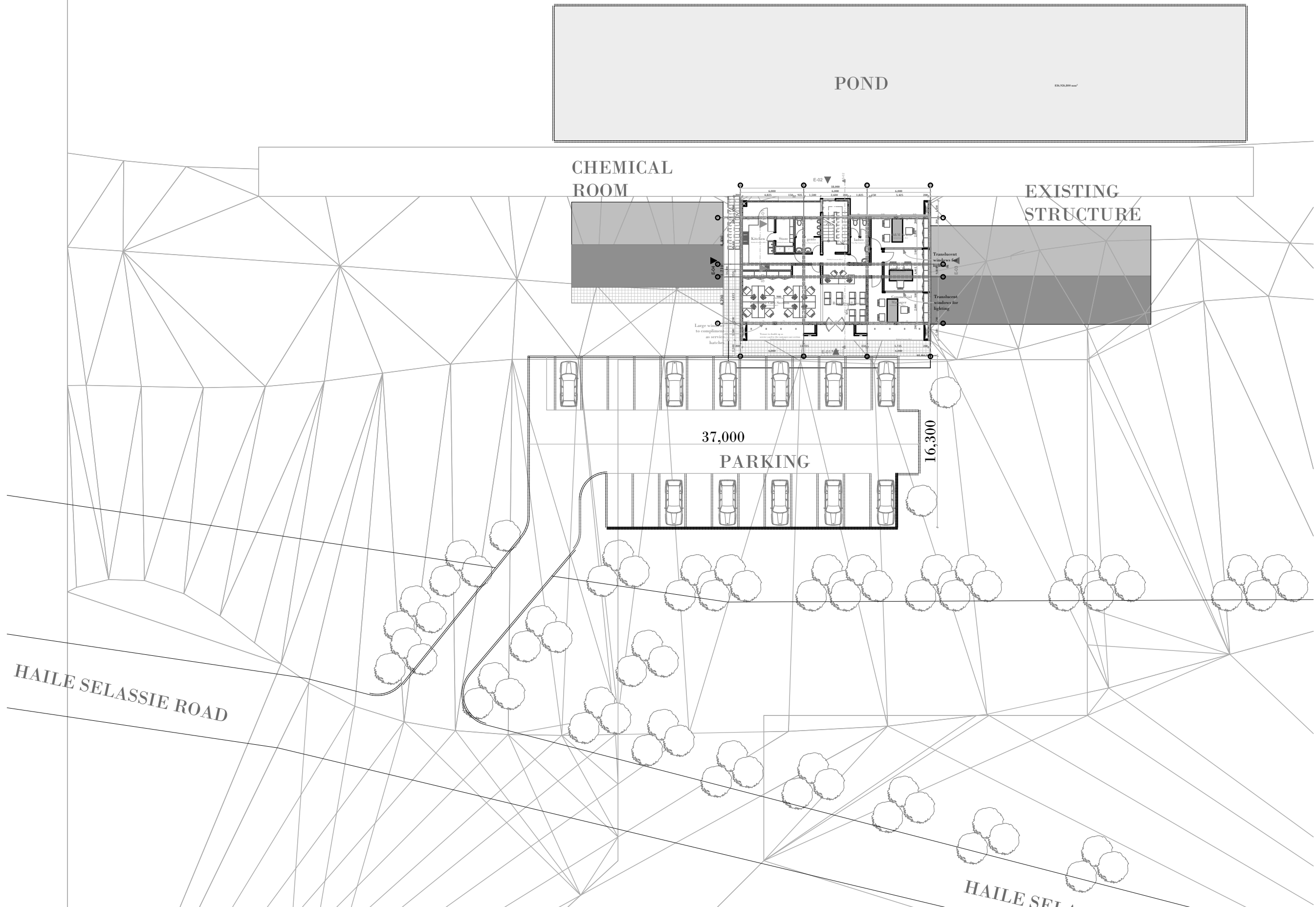
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#Project Name	
site ref:	
job no.: 2018/TKW/01	
drw no.: A.02.5.2	rev:

DRAWING DESCRIPTION	
BRIEF ANALYSIS	
scale:	date: 12/14/2018
drawn: wagema .M.	checked: wagema .M.

CLIENT	
THIKA WATER AND SEWERAGE COMPANY LIMITED.	
CLIENT'S SIGNATURE : .....	
ARCHITECTS' SIGNATURE : .....	

PROJECT LEAD	
 Quantycosts Consultants Muthaiga Suites, 2nd Floor Suite 16, Vuli Lane, Off Thika Road P.O. Box 29363-00100 Nairobi.	





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## NOTES

I.C. MEANS INSPECTION CHAMBER  
M.H. MEANS MAN HOLE  
P.V. MEANS PERMANENT VENT

G.T. MEANS GULLEY TRAP

ALL WALLS 150MM WIDE OR LESS TO BE REINFORCED WITH HOOP IRON  
AT ALTERNATE COURSES

ALL DRAINS PASSING BENEATH BUILDING AND DRIVEWAYS TO BE ENCASED  
IN 150MM THICK CONCRETE

ALL PIPEWORK AND CONDUITS TO BE TESTED BEFORE PLASTERWORK.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

## REVISIONS

No.	Description	Date	No.	Description	Date

## PROJECT DESCRIPTION

#Project Name

site ref:

job no.: 2018/TKW/01

drw no.: A.02.5.3

rev:

~~DRAWING DESCRIPTION~~

## SITE LAYOUT

scale:

drawn: wagem a .M.

date:	12/14/2018
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	checked: wagemma .M.
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CLIENT

THIKA WATER AND SEWERAGE  
COMPANY LIMITED.

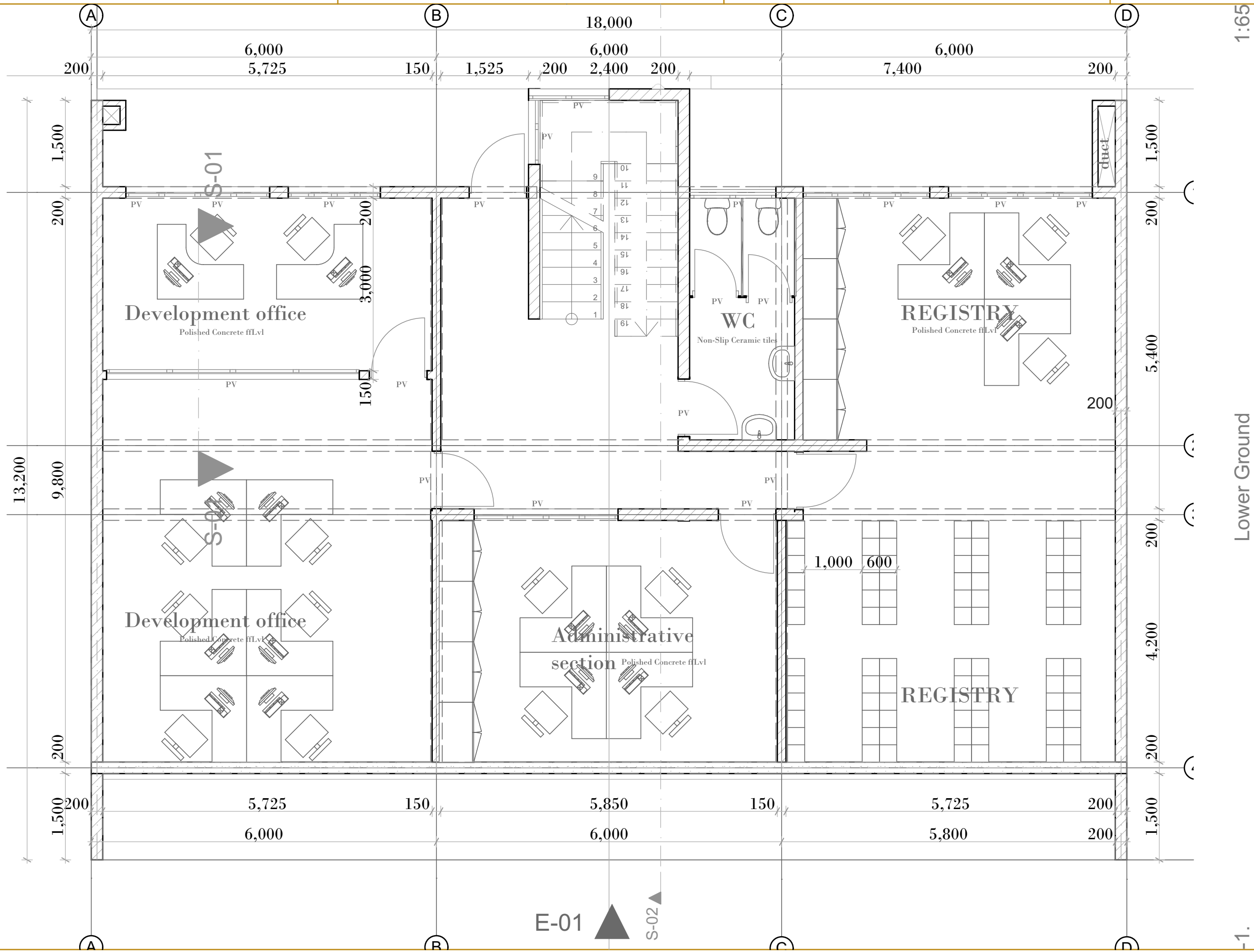
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ARCHITECTS' SIGNATURE : .....

## PROJECT LEAD

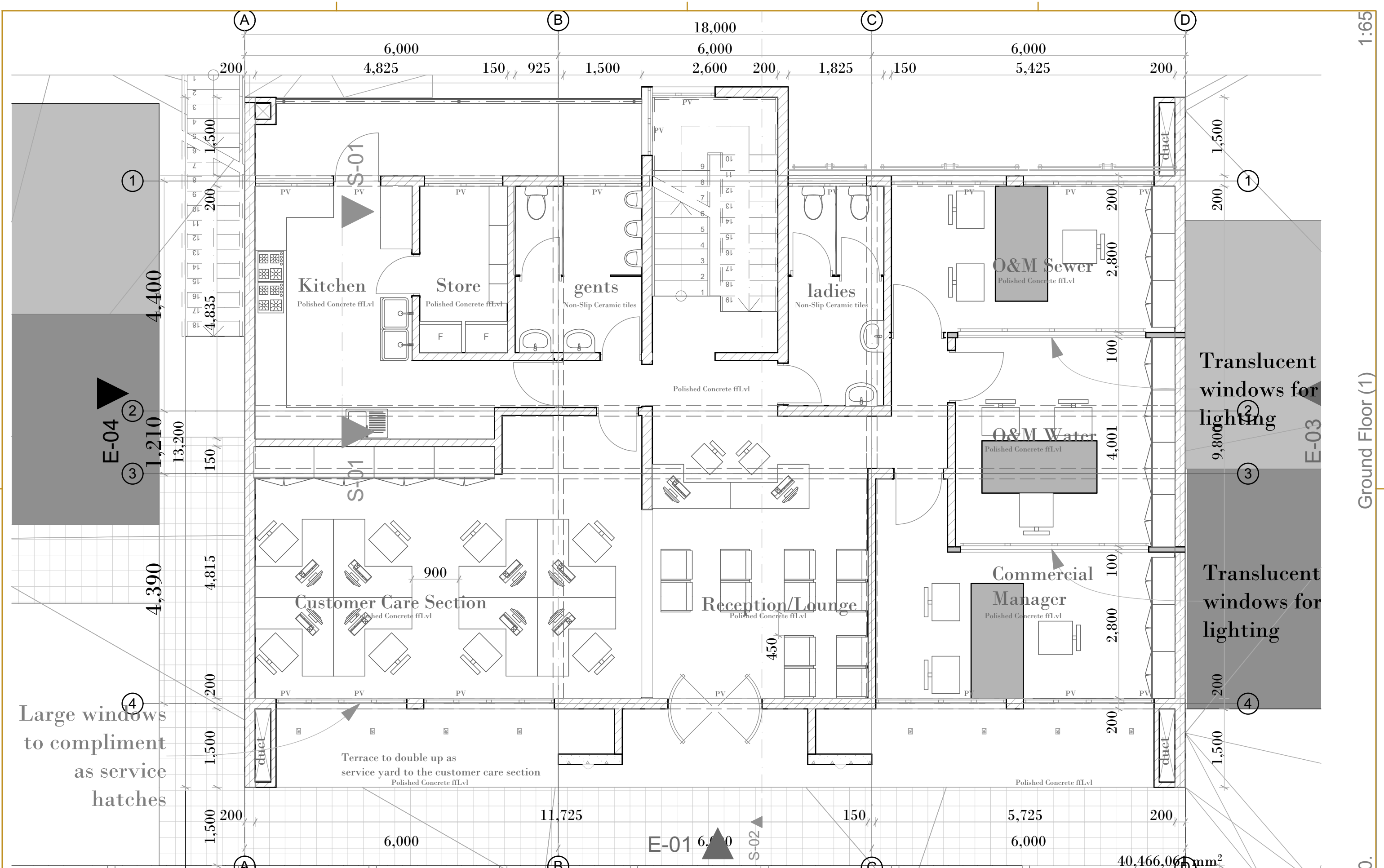



Quantycosts Consultants  
Muthaiga Suites, 2nd Floor Suite 16,  
Vuli Lane, Off Thika Road  
P.O. Box 29363-00100  
Nairobi.



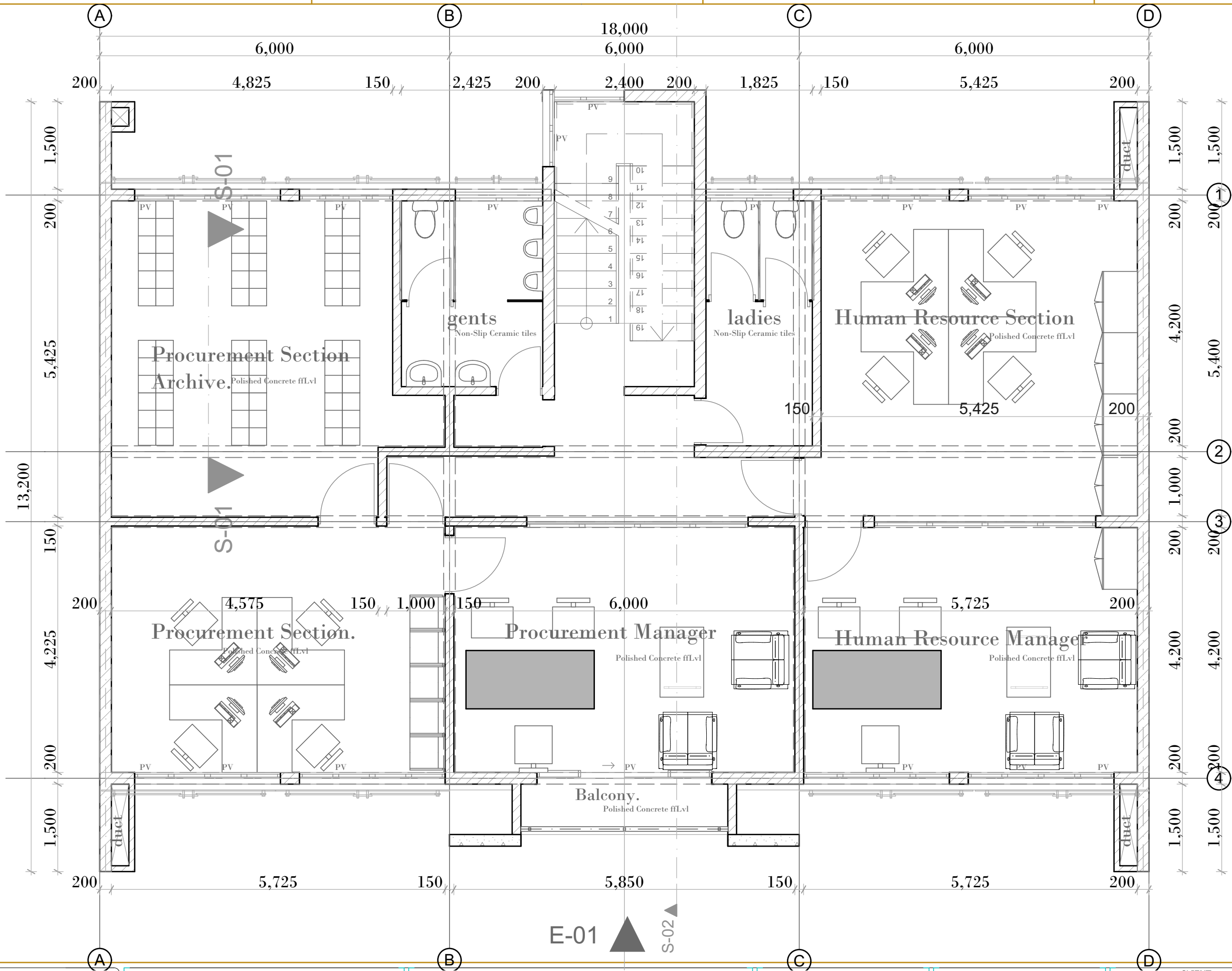
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Lower Ground

NOTES		REVISIONS		PROJECT DESCRIPTION		DRAWING DESCRIPTION		CLIENT		PROJECT LEAD	
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No.		Description		Date		site ref:		scale:		CLIENT'S SIGNATURE : .....	
No.		Description		Date		job no.: 2018/TKW/01		date: 12/14/2018		ARCHITECT'S SIGNATURE : .....	
No.		Description		Date		drw no.: A.02.5.4		drawn: wagama .M.		checked: wagama .M.	
No.		Description		Date		rev:		drawn: wagama .M.		checked: wagama .M.	



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				No.	Description	Date	No.	Description	Date																				
				site ref:		scale:		date: 12/14/2018		CLIENT'S SIGNATURE : .....		<div><p>Quantycosts Consultants Muthaiga Suites, 2nd Floor Suite 16, Vuli Lane, Off Thika Road P.O. Box 29363-00100 Nairobi.</p></div>																	
job no.: 2018/TKW/01		drawn: wagama .M.		checked: wagama .M.		ARCHITECTS' SIGNATURE : .....																							
drw no.: A.02.5.5		rev:																											





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First Floor

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P.V. MEANS PERMANENT VENT  
G.T. MEANS GULLY TRAP  
ALL WALLS 150MM WIDE OR LESS TO BE REINFORCED WITH HOOP IRON AT ALTERNATE COURSES  
ALL DRAINS PASSING BENEATH BUILDING AND DRIVEWAYS TO BE ENCASED IN 150MM THICK CONCRETE

**REVISIONS**  
ALL PIPEWORK AND CONDUITS TO BE TESTED BEFORE PLASTERWORK  
ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

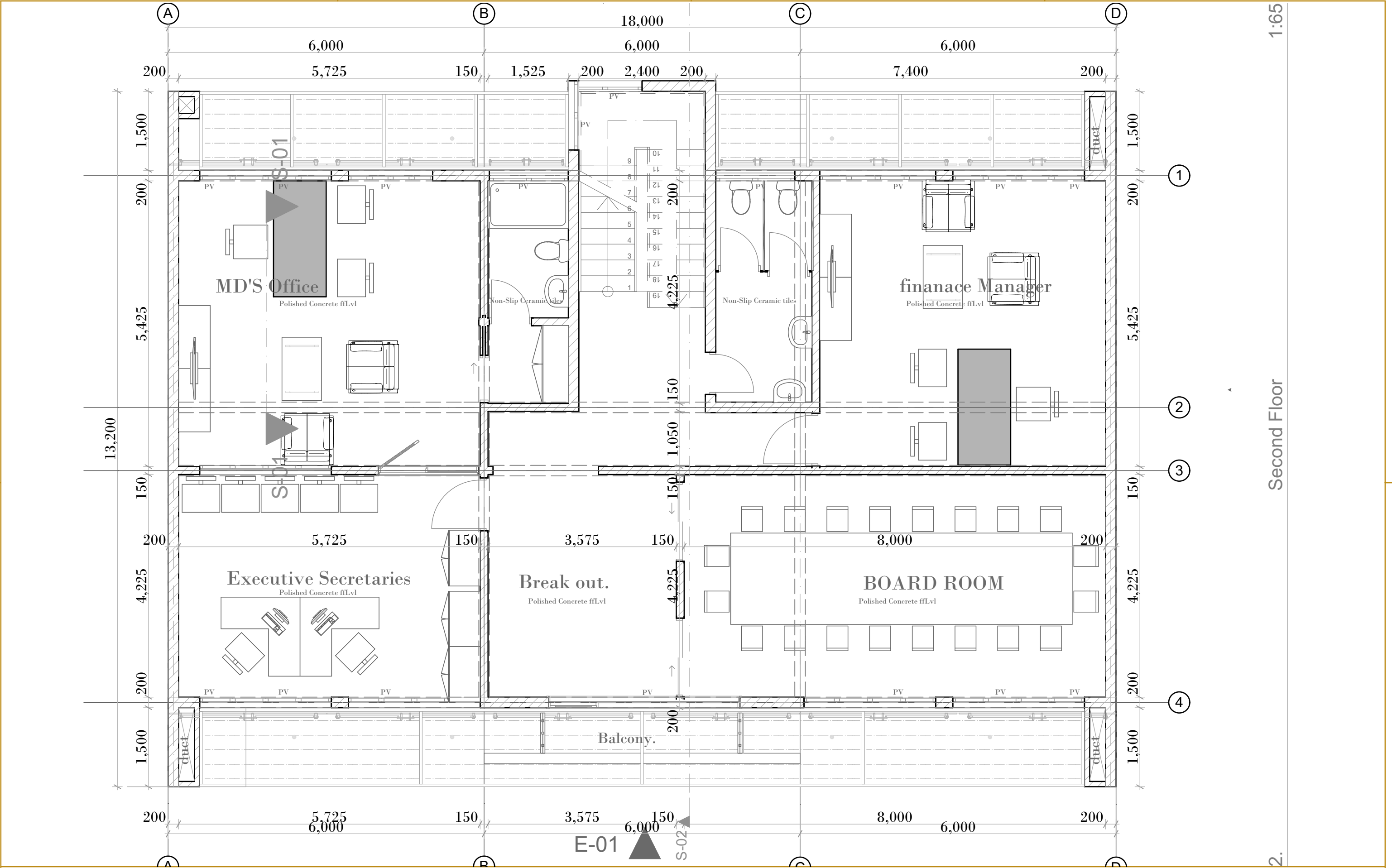
No.		Description	Date	No.		Description	Date

**PROJECT DESCRIPTION**  
#Project Name  
site ref:  
job no.: 2018/TKW/01  
drw no.: A.02.5.6 rev:

**DRAWING DESCRIPTION**  
**FIRST FLOOR**  
scale:  
date: 12/14/2018  
drawn: wagama .M.  
checked: wagama .M.

**CLIENT**  
**THIKA WATER AND SEWERAGE COMPANY LIMITED.**  
CLIENT'S SIGNATURE : .....  
ARCHITECTS' SIGNATURE : .....

**PROJECT LEAD**  
Quantycosts Consultants  
Muthaiga Suites, 2nd Floor Suite 16,  
Vuli Lane, Off Thika Road  
P.O. Box 29363-00100  
Nairobi.



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NOTES

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ALL DRAINS PASSING BENEATH BUILDING AND DRIVEWAYS TO BE ENCASED IN 150MM THICK CONCRETE

REVISIONS

No.	Description	Date	No.	Description	Date

PROJECT DESCRIPTION

#Project Name
site ref:
job no.: 2018/TKW/01
drw no.: A.02.5.7
rev:

DRAWING DESCRIPTION

SECOND FLOOR	
scale:	date: 12/14/2018
drawn: wagama .M.	checked: wagama .M.

CLIENT

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CLIENT'S SIGNATURE : .....
ARCHITECT'S SIGNATURE : .....

PROJECT LEAD

	Quantycosts Consultants Muthaiga Suites, 2nd Floor Suite 16, Vuli Lane, Off Thika Road P.O. Box 29363-00100 Nairobi.
---	--



1:100

Perspective

3D-01

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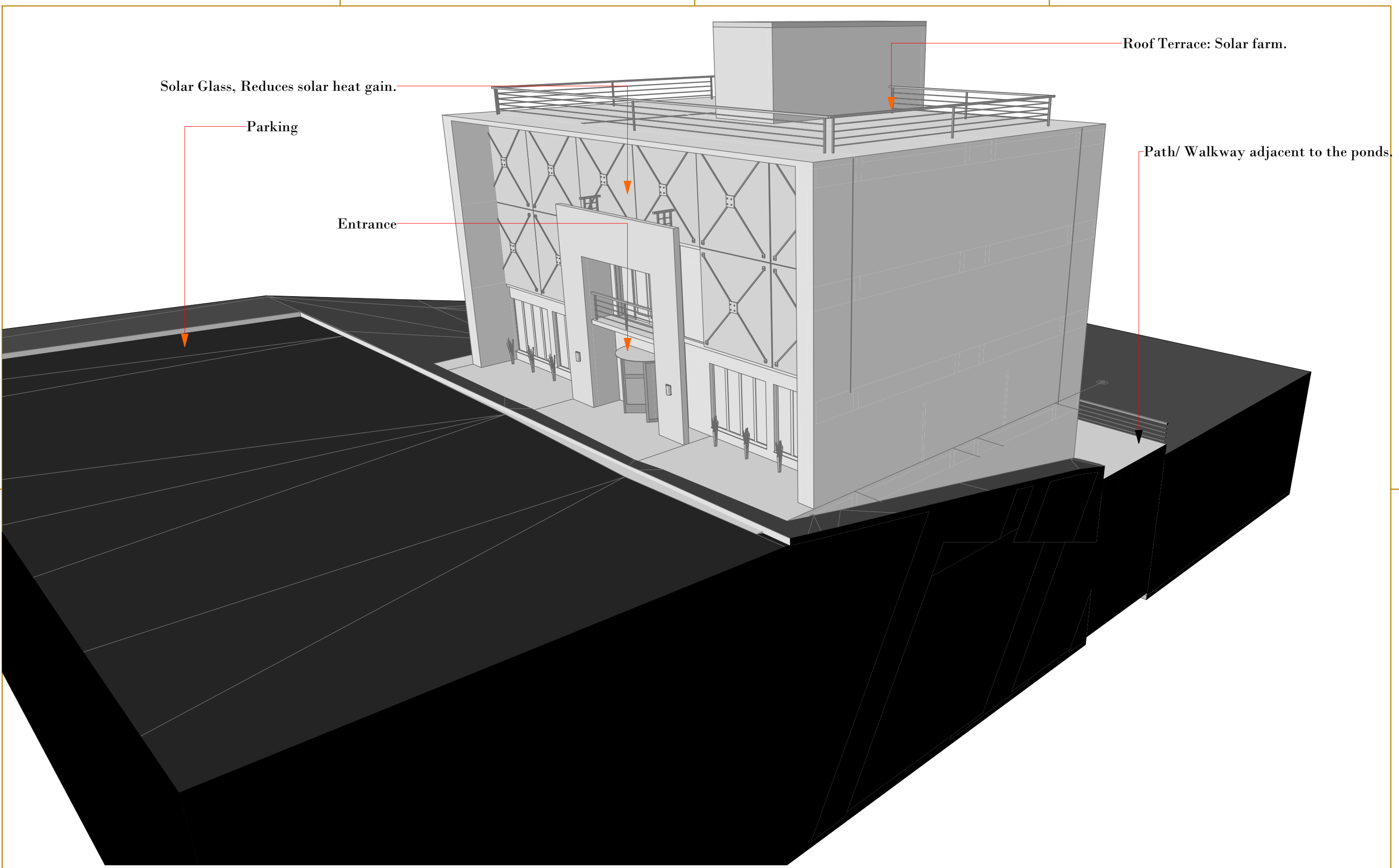
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No.	Description	Date	No.	Description

PROJECT DESCRIPTION	
#Project Name	
site ref:	
job no.: 2018/TKW/01	
drw no.: A.02.5.8	rev:

DRAWING DESCRIPTION	
SECTION 02	
scale:	date: 12/14/2018
drawn: wagema .M.	checked: wagema .M.

CLIENT	
THIKA WATER AND SEWERAGE COMPANY LIMITED.	
CLIENT'S SIGNATURE : .....	
ARCHITECTS' SIGNATURE : .....	

PROJECT LEAD	
 Quantycosts Consultants Muthaiga Suites, 2nd Floor Suite 16, Vuli Lane, Off Thika Road P.O. Box 29363-00100 Nairobi.	



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#### NOTES

I.C. MEANS INSPECTION CHAMBER  
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#### REVISIONS

No.	Description	Date	No.	Description	Date

#### PROJECT DESCRIPTION

#Project Name
site ref:
job no.: 2018/TKW/01
drw no.: A.02.5.9
rev:

#### DRAWING DESCRIPTION

##### SECTION 03

scale:	date: 12/14/2018
drawn: wagama .M.	checked: wagama .M.

#### CLIENT

THIKA WATER AND SEWERAGE  
COMPANY LIMITED.

CLIENT'S SIGNATURE : .....  
ARCHITECTS' SIGNATURE : .....

#### PROJECT LEAD



Quantycosts Consultants  
Muthaiga Suites, 2nd Floor Suite 16,  
Vuli Lane, Off Thika Road  
P.O. Box 29363-00100  
Nairobi.





**OFFICE BLOCK**  
**Entrance&parking..**





**OFFICE BLOCK**  
**Entrance&parking..**





***OFFICE BLOCK***  
***from Walkway/Path adjacent to***  
***ponds..***





**OFFICE BLOCK**  
**Entrance&parking..**





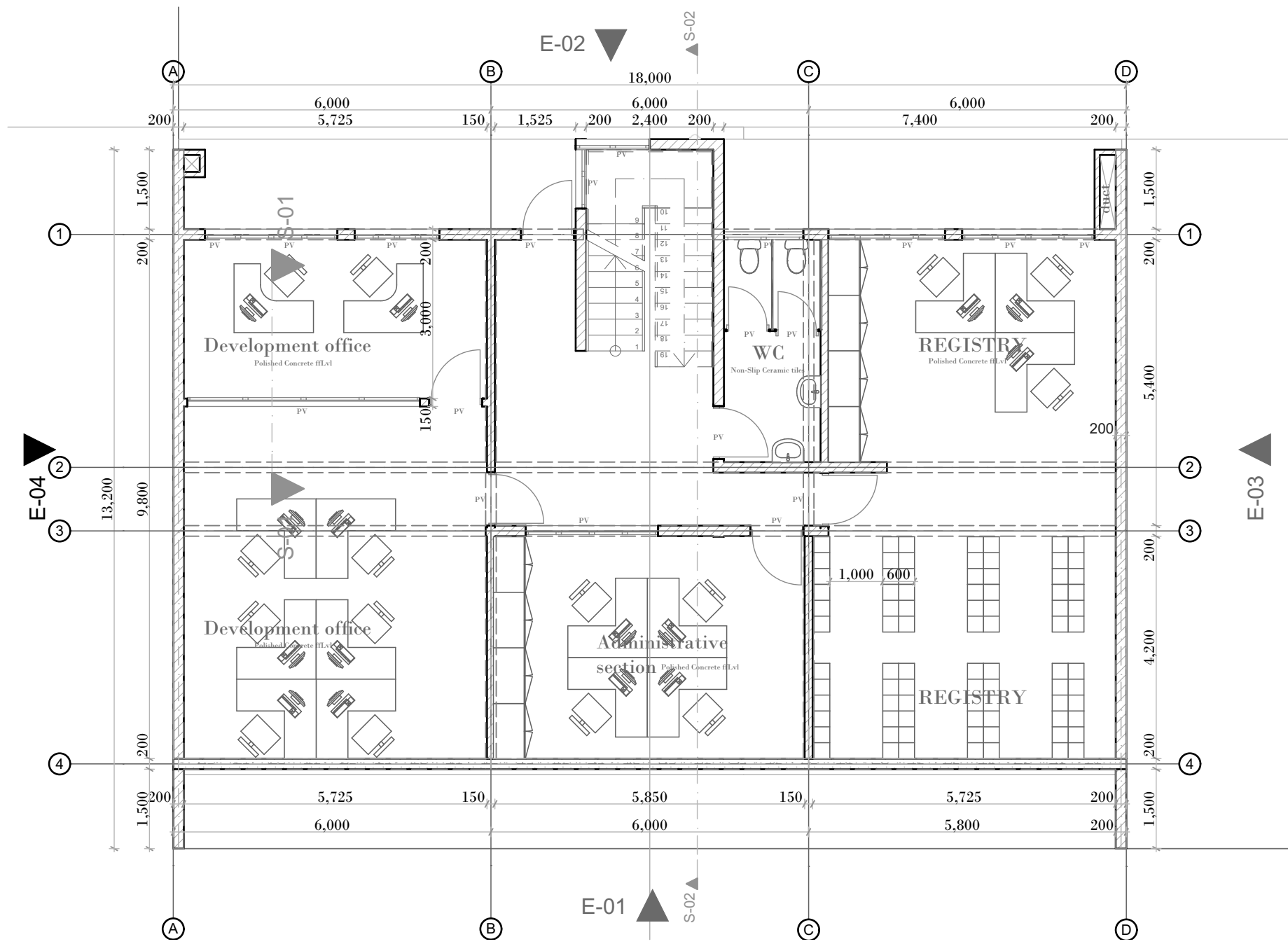
***OFFICE BLOCK***  
***from Walkway/Path adjacent to***  
***ponds..***



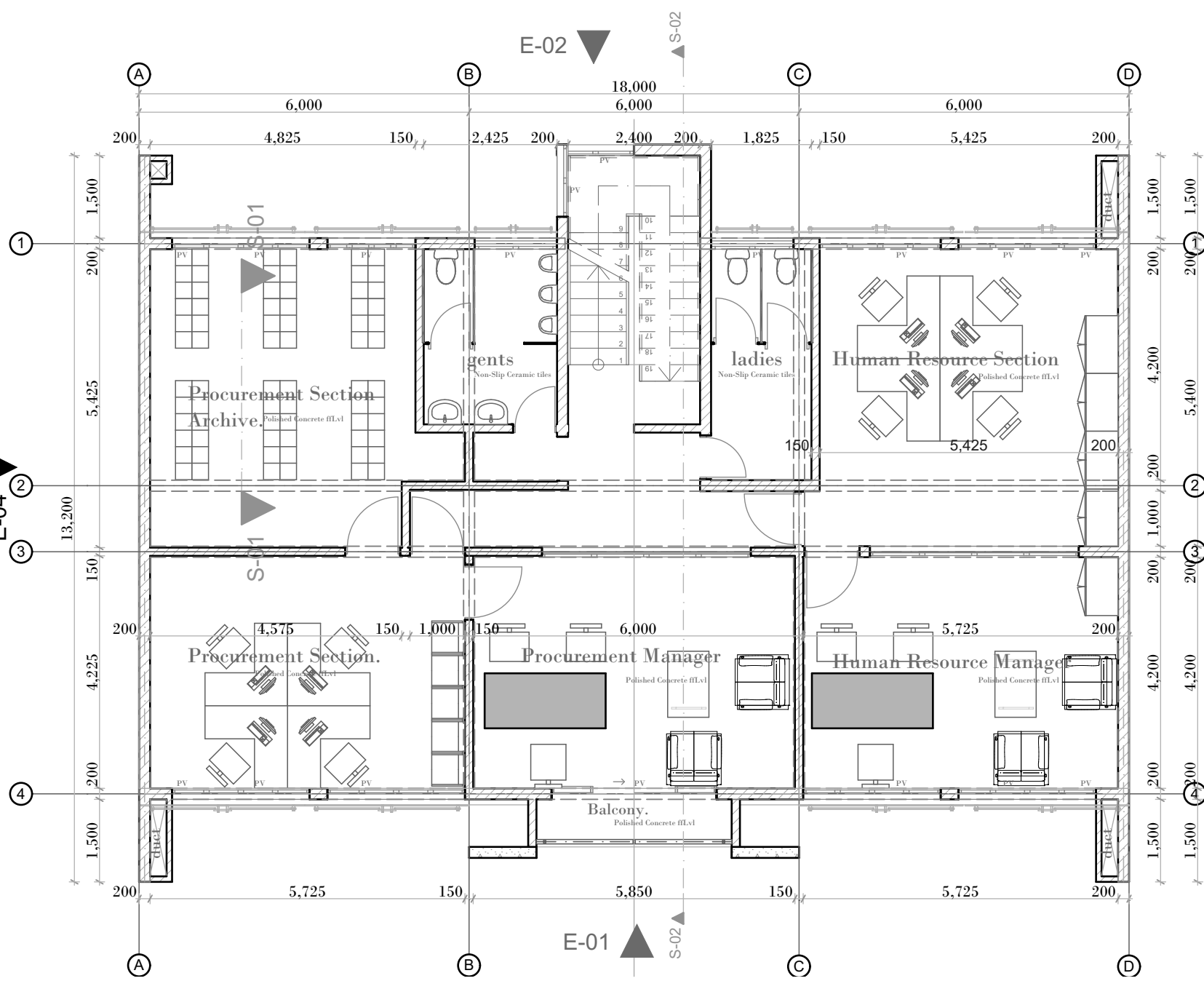


**W+D**  
ARCHITECTS & PROJECT MANAGERS

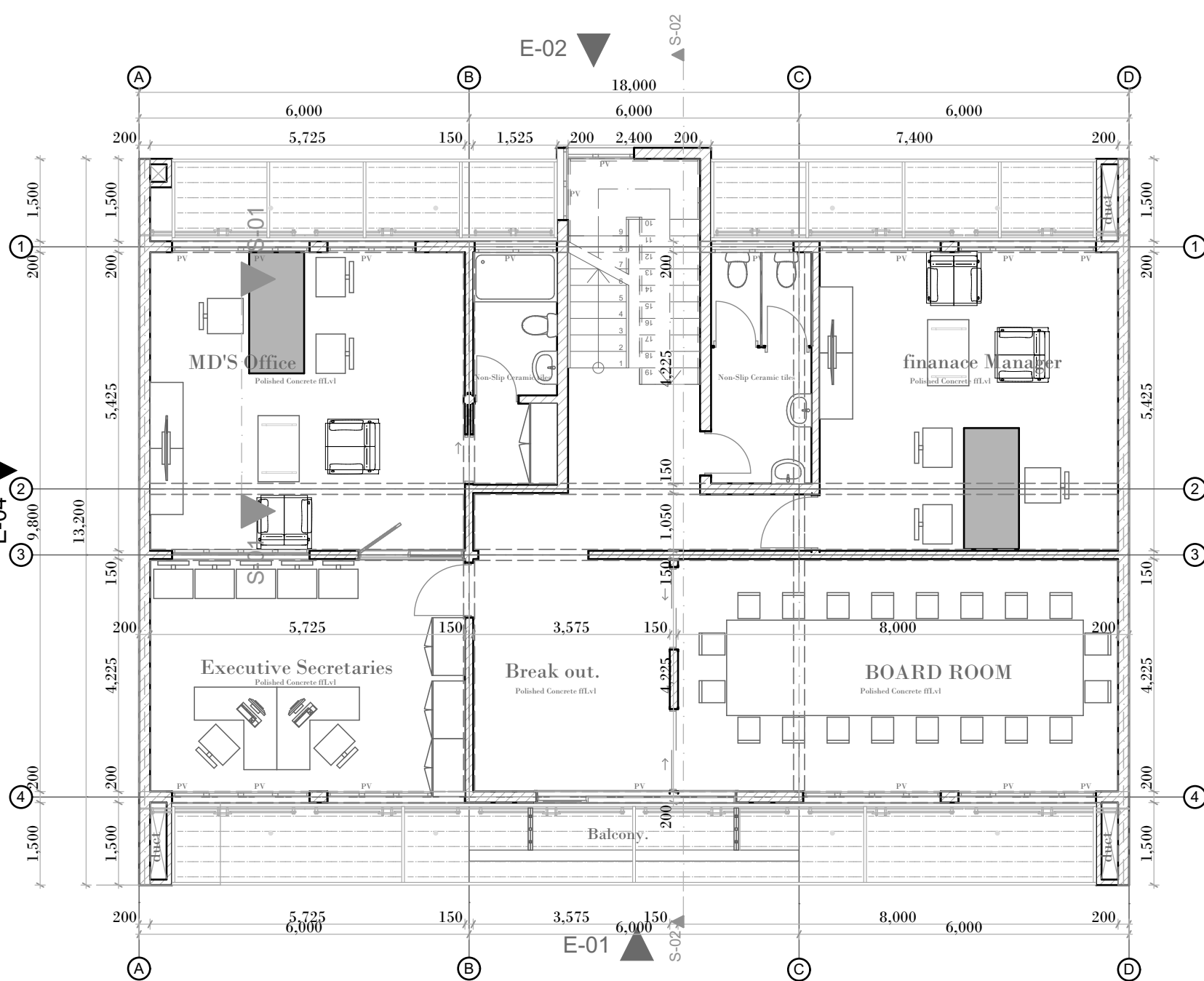




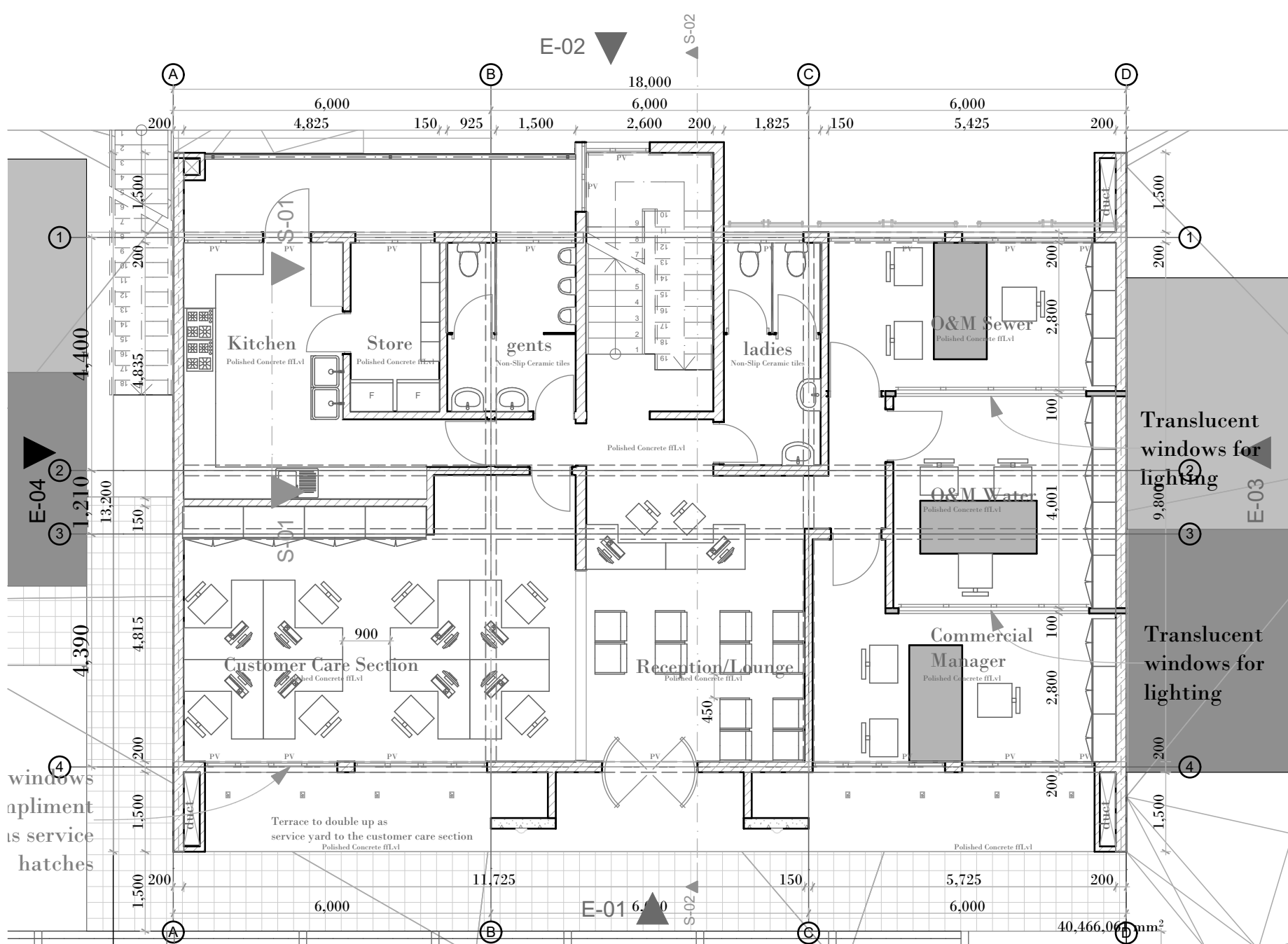
Lower Ground (1) 1:100



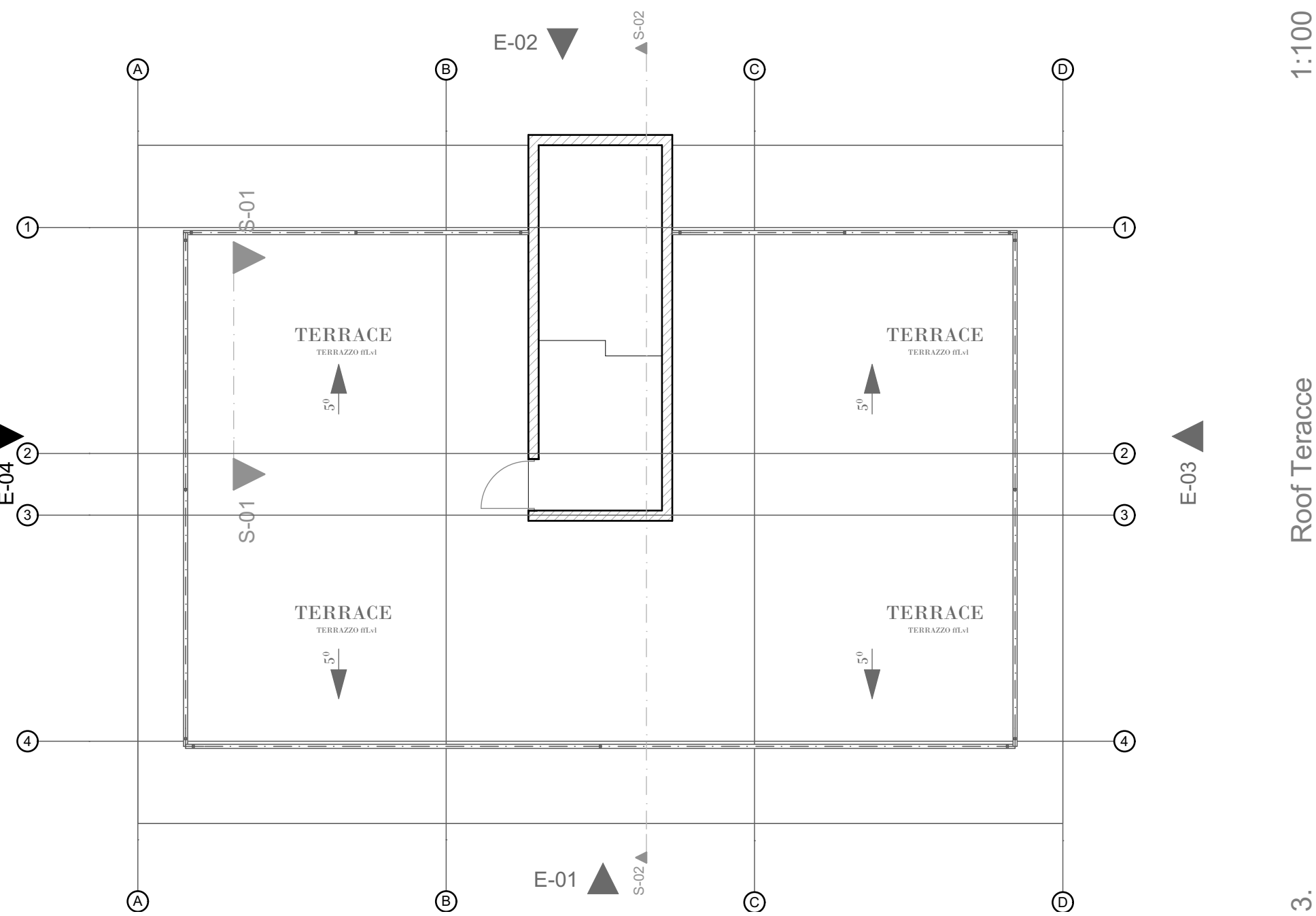
Lower Ground (2) 1:100



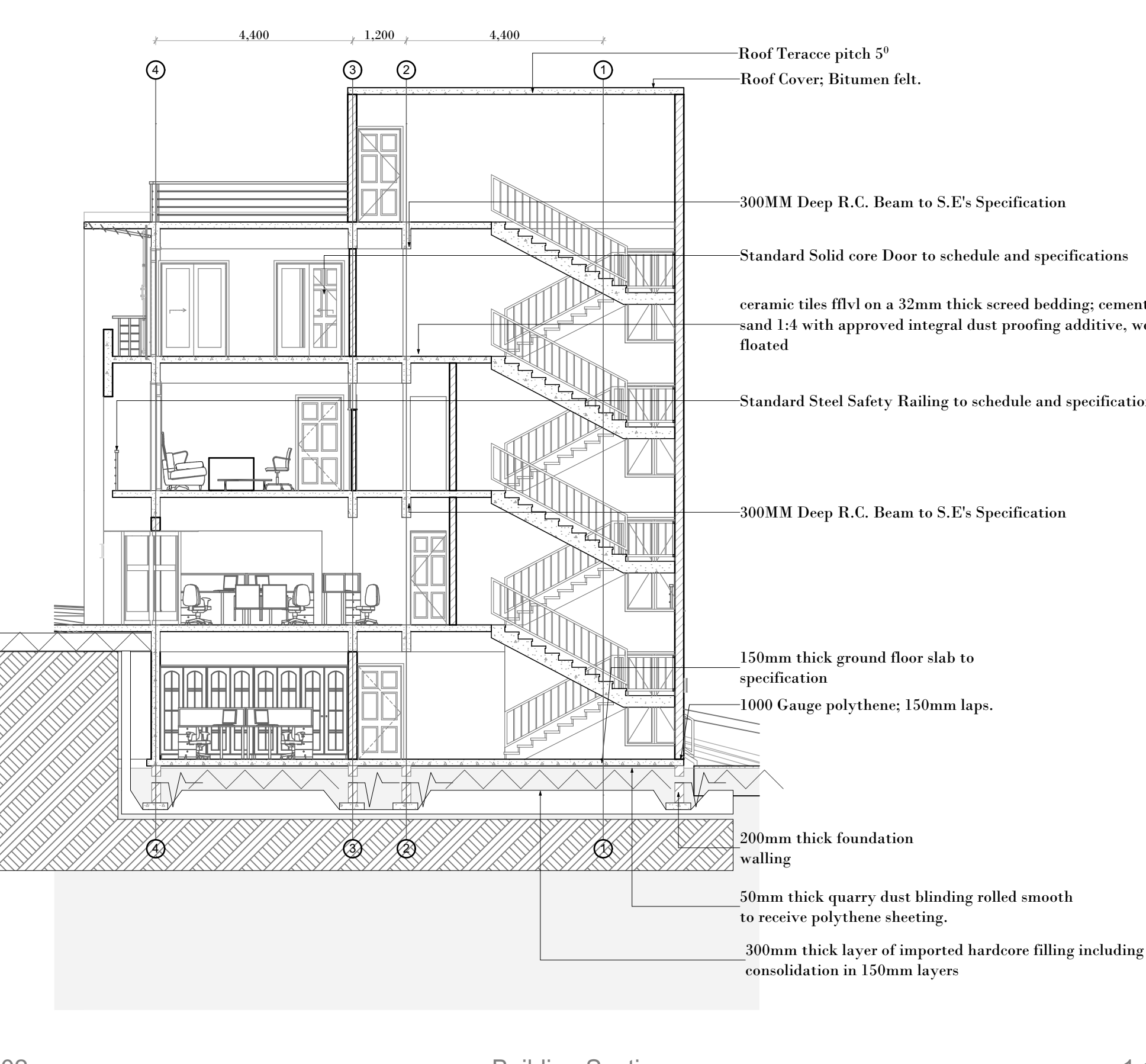
Ground Floor (3) 1:100




First Floor (1) 1:100



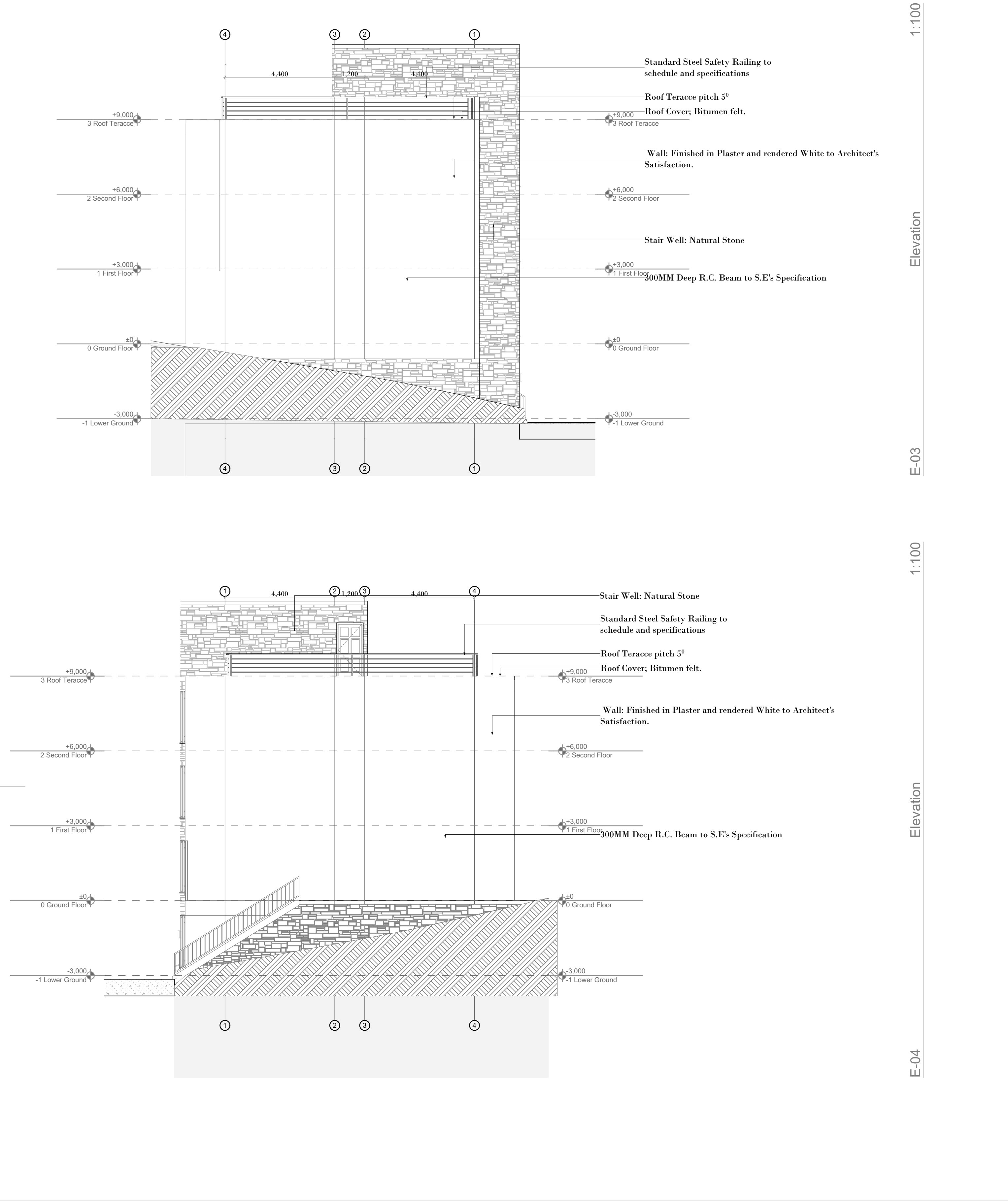
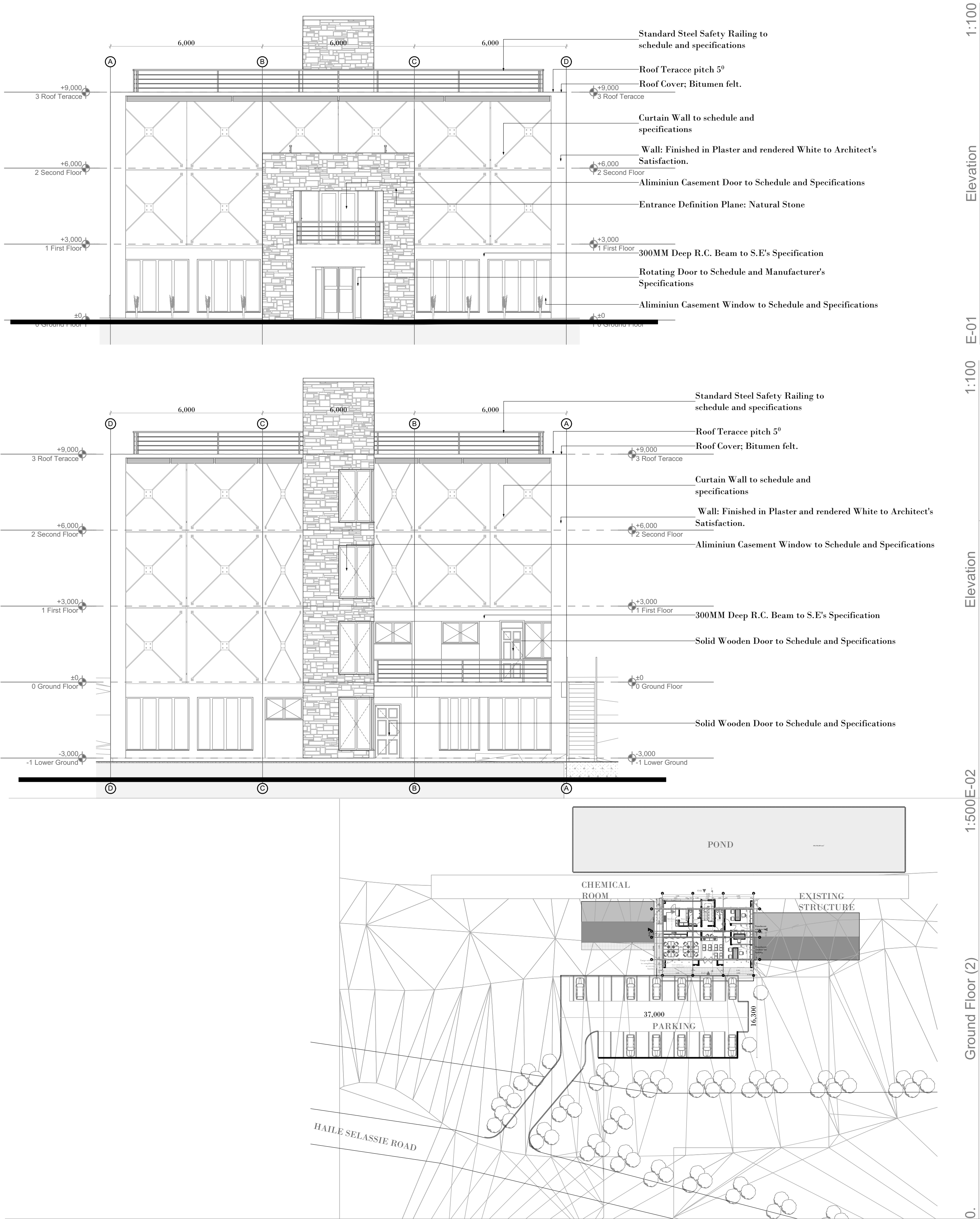
Second Floor (1) 1:100



Building Section 1:100

<div>THIS DRAWING IS TO BE READ IN CONJUNCTION WITH STRUCTURAL, MECHANICAL, ELECTRICAL AND/OR OTHER CONSULTANT'S DOCUMENTATION THAT MAY BE APPLICABLE PRIOR TO COMMENCEMENT OF THE WORK AND IN ITS DURATION.</div> <div>ALL DIMENSIONS TO BE READ AND NOT SCALED OFF. ONLY FIGURED DIMENSIONS TO BE USED.</div> <div>CONTRACTOR TO VERIFY ALL DIMENSIONS, SPOT HEIGHTS AND LEVELS AND ANY DISCREPANCIES REPORTED TO THE ARCHITECT.</div> <div>THIS DRAWING IS PROTECTED BY COPYRIGHT LAW. IT MUST NOT BE RETAINED , COPIED OR USED WITHOUT EXPRESS AUTHORITY.</div>	<div>NOTES</div> <div>I.C. MEANS INSPECTION CHAMBER</div> <div>M.H. MEANS MAN HOLE</div> <div>P.V. MEANS PERMANENT VENT</div> <div>G.T. MEANS GULLEY TRAP</div> <div>ALL WALLS 150MM WIDE OR LESS TO BE REINFORCED WITH HOOP IRON AT ALTERNATE COURSES</div> <div>ALL DRAINS PASSING BENEATH BUILDING AND DRIVEWAYS TO BE ENCASED IN 150MM THICK CONCRETE</div>		<div>REVISIONS</div> <table><tr><th>No.</th><th>Description</th><th>Date</th><th>No.</th><th>Description</th><th>Date</th></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table>				No.	Description	Date	No.	Description	Date							<div>PROJECT DESCRIPTION</div> <div>#Project Name</div> <div>site ref:</div> <div>job no.: 2018/TKW/01</div> <div>dw no.: A.02.5.16</div> <div>rev:</div>		<div>DRAWING DESCRIPTION</div> <div>SCHEME DESIGN DRAWINGS</div> <div>scale:</div> <div>drawn: wagama .M.</div> <div>date: 12/14/2018</div> <div>checked: wagama .M.</div>		<div>CLIENT</div> <div>THIKA WATER AND SEWERAGE COMPANY LIMITED.</div> <div>CLIENT'S SIGNATURE : .....</div> <div>ARCHITECTS' SIGNATURE : .....</div>		<div>PROJECT LEAD</div> <div><div></div><div>Quantycosts Consultants Muthaiga Suites, 2nd Floor Suite 16, Vuli Lane, Off Thika Road P.O. Box 29363-00100 Nairobi.</div></div>	
	No.	Description	Date	No.	Description	Date																				
	<div>File name: D:\works\THIKA WATER\THIKA WATER</div>																									





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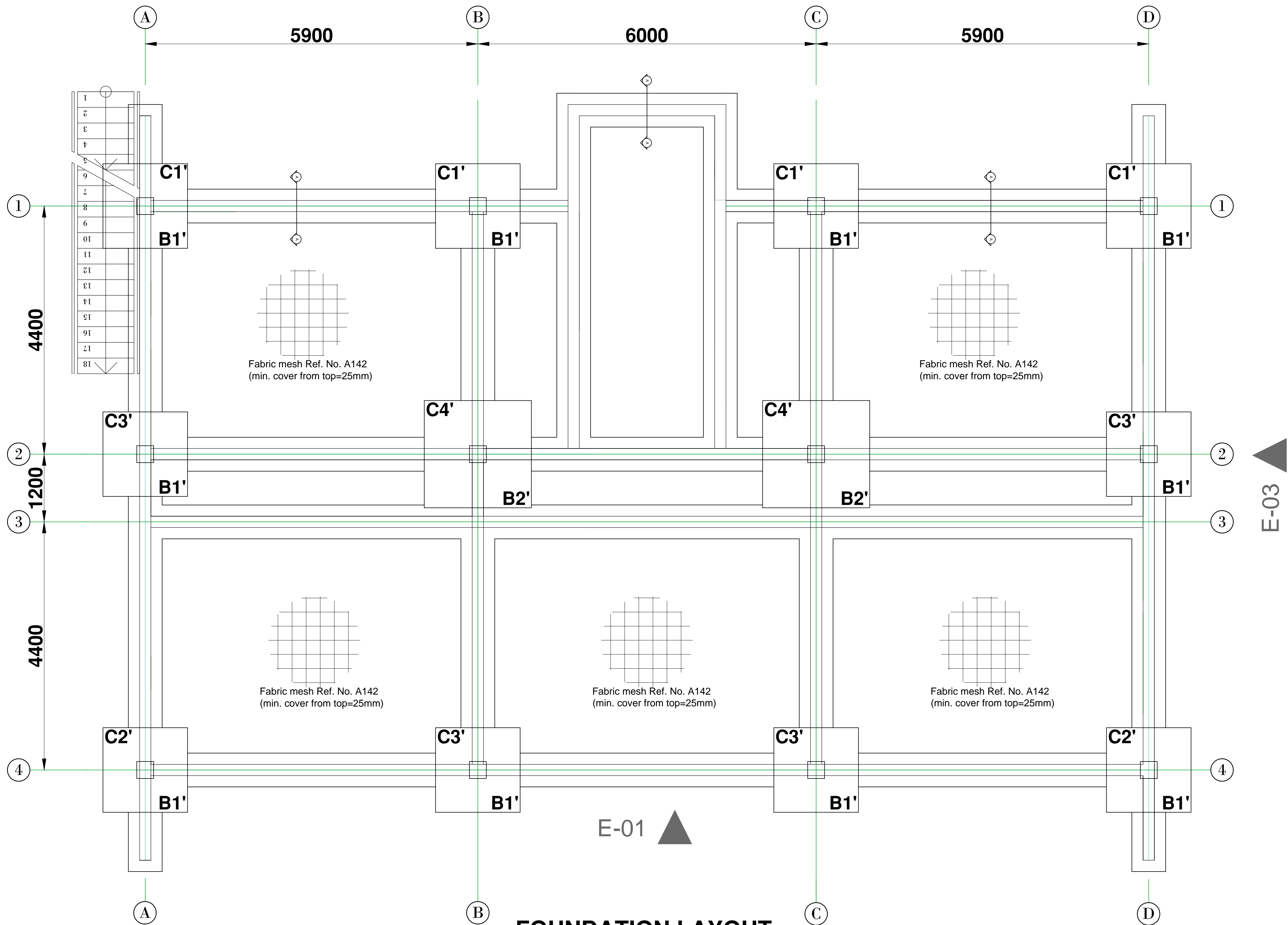
REVISIONS					
No.	Description	Date	No.	Description	Date

PROJECT DESCRIPTION	
#Project Name	
site ref:	
job no.: 2018/TKW/01	
dwg no.: A.02.5.17	rev:

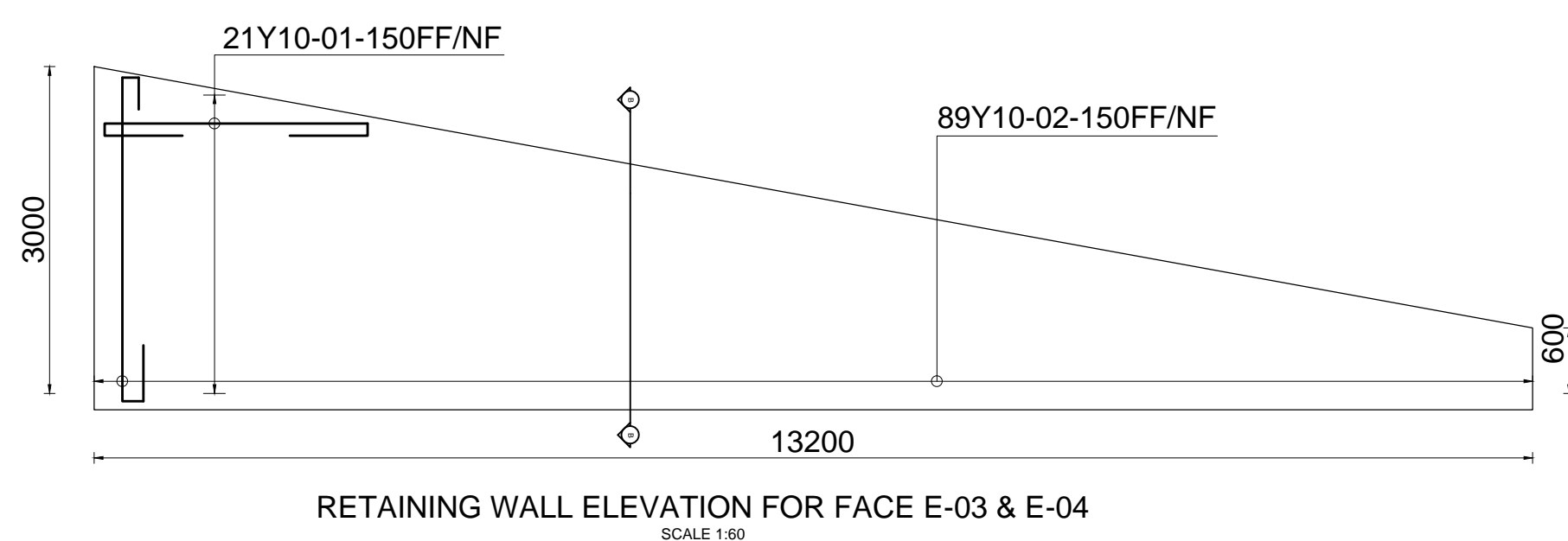
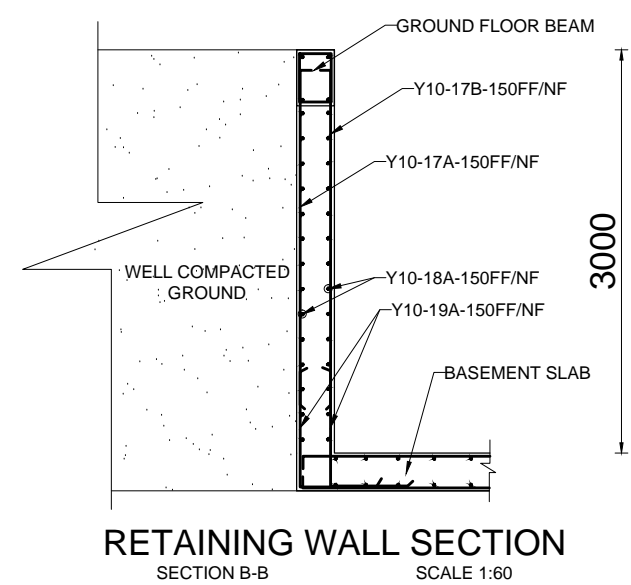
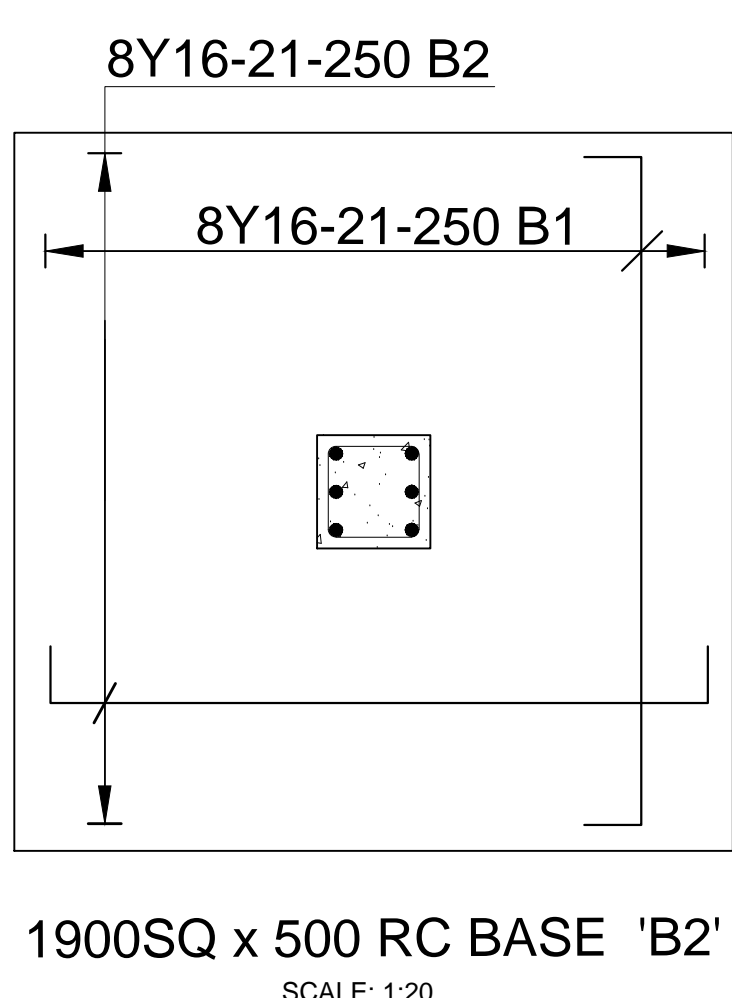
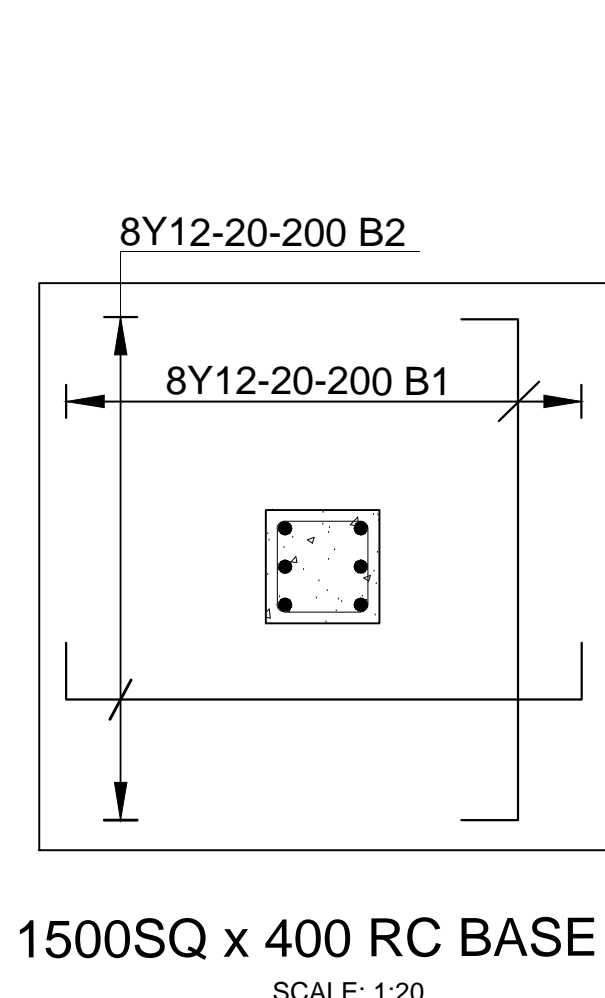
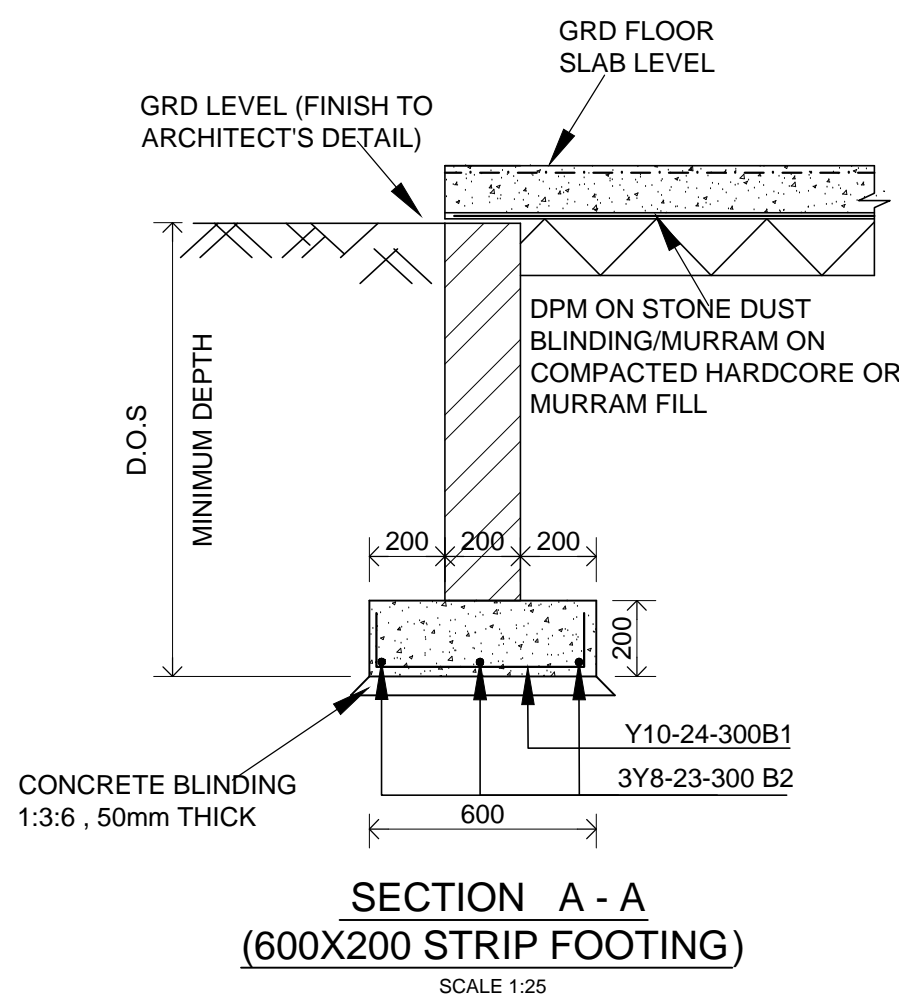
DRAWING DESCRIPTION	
SCHEME DESIGN DRAWINGS	
scale:	date: 12/14/2018
drawn: wagemma .M.	checked: wagemma .M.

CLIENT	
THIKA WATER AND SEWERAGE COMPANY LIMITED.	
CLIENT'S SIGNATURE : .....	
ARCHITECTS' SIGNATURE : .....	

PROJECT LEAD	
 Quantycosts Consultants Muthaiga Suites, 2nd Floor Suite 16, Vuli Lane, Off Thika Road P.O. Box 29363-00100 Nairobi.	



FOUNDATION LAYOUT  
SCALE: 1:40



- NOTES:
- ALL DIMENSIONS AND CONDITIONS MUST BE CHECKED ON SITE AND ANY DISCREPANCIES REFERRED TO THE ENGINEER
  - ALL LEVELS TO BE CHECKED ON SITE BEFORE COMMENCEMENT OF WORK
  - DEPTH OF FOUNDATION TO BE DETERMINED ON SITE. FOUNDATION TO BE LAID ON HARD BASE TO THE APPROVAL OF THE ENGINEER AND ALL SOILS TO BE EXCAVATED AND THE OPENING FILLED WITH HARD CORE
  - FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALE
  - ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE STATED
  - ALL DRAWINGS TO BE READ IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS AND ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER
  - ONLY FIGURED DIMENSIONS TO BE READ, NO SCALING IS ALLOWED ON THIS DRAWING
  - ALL FOUNDATIONS TO BE TAKEN DOWN TO FIRM BEARING STRATA TO ENGINEER'S APPROVAL
  - PROVIDE ANTI-TERMITE TREATMENT UNDER THE SLAB
  - THE CONCRETE USED SHALL BE OF CLASS 25 (1:1.5:3) QUALITY CONTROLLED AND MECHANICALLY VIBRATED IN ACCORDANCE WITH THE SPECIFICATIONS AND TO STRUCTURAL ENGINEER'S APPROVAL
  - CEMENT FOR STRUCTURAL CONCRETE SHALL NOT BE LESS THAN GRADE 32.5 N/mm<sup>2</sup>
  - ALL LOAD BEARING WALLS TO BE 200mm THICK NATURAL STONE/CONCRETE BLOCKS. MINIMUM CRUSHING STRENGTH 10 N/mm<sup>2</sup>
  - ALL MASONRY WALLS MUST BE REINFORCED WITH 25mm HOOP IRON AFTER EVERY 2 ALTERNATIVE COURSES. THE HOOP IRON MUST BE EXTENDED THROUGH THE COLUMNS
  - CONSTRUCTION OF ALL LOAD BEARING WALLS SHALL PRECEDE CASTING OF INFILL COLUMNS. CASTING OF BEAMS / SLABS SHALL BE DIRECTLY ONTO THE LOAD BEARING WALLS (IN ORDER TO REDUCE INCIDENCES OF HAIRLINE CRACKS ALONG THE CONCRETE/MASONRY WALL INTERFACE).
  - TYPICAL COVER TO MAIN REINFORCEMENT SHALL BE AS FOLLOWS:
    - (i) FOUNDATIONS - 50mm
    - (ii) COLUMNS - 40mm
    - (iii) BEAMS - 30mm
    - (iv) SLAB - 20mm
  - ALL LEVELS ARE INDICATED IN m UNLESS SPECIFIED OTHERWISE
  - MAXIMUM TOLERANCE ON CONCRETE ON COVER IS +5mm
  - STEEL REINFORCEMENT TO BS
    - HIGH YIELD - BS4449 (F<sub>y</sub> = 500 MPa)
    - FABRIC MESH - BS4483
  - MINIMUM LAPS TO ALL BARS TO BE 55 $\phi$  UNLESS STATED OTHERWISE
  - NOMINAL AGGREGATE SIZE TO BE 20mm
  - SETTING OUT DIMENSIONS SHALL BE CROSS CHECKED ON SITE WITH THE ARCHITECTURAL DRAWINGS. ANY DISCREPANCIES SHALL IMMEDIATELY BE NOTIFIED TO THE ENGINEER
  - ASSUMED GROUND BEARING CAPACITY OF 300 kPa
  - MASS CONCRETE TO BE GRADE 10(1:4:8 MIX)
  - ALL BACKFILLS TO BE DONE USING MURRAM
  - A GROUND BEAM WAS INTRODUCED TO CURB DIFFERENTIAL SETTLEMENT
  - WALL E-01 IS A RECTANGULAR RETAINING WALL SECTION WHILE E-03 & E-04 ARE TRIANGULAR

DETAILS

SITE REF  
ASSET NO:LR NO. 11151  
ASSET DESCRIPTION: Land 3.237 Ha.

DRAWING TITLE  
FOUNDATION LAYOUT, FOOTING  
DETAILS & RETAINING WALL  
SECTION.

CLIENT  
THIKA WATER AND SEWERAGE  
COMPANY LIMITED.

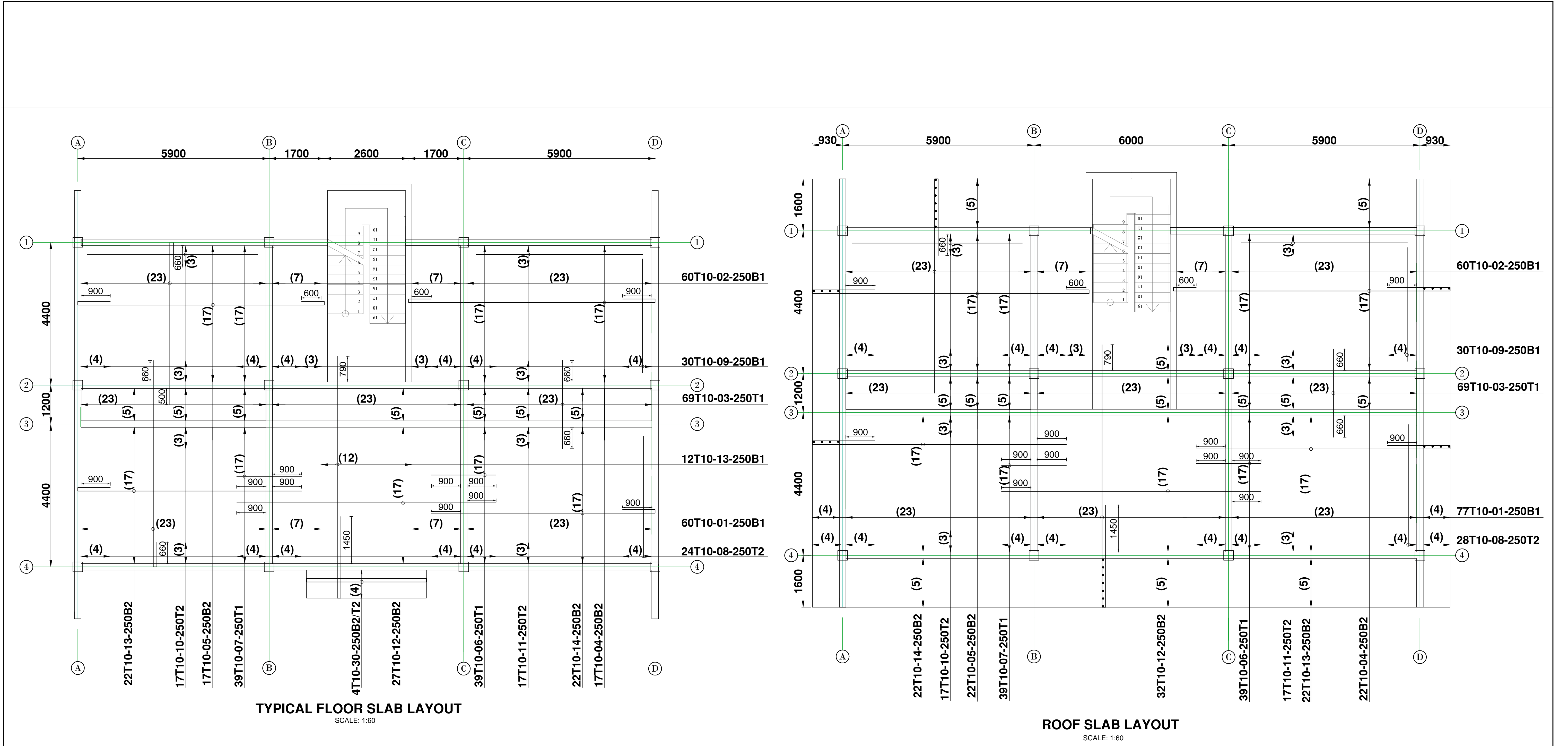
STRUCTURAL ENGINEER


ENGINEER APPROVAL

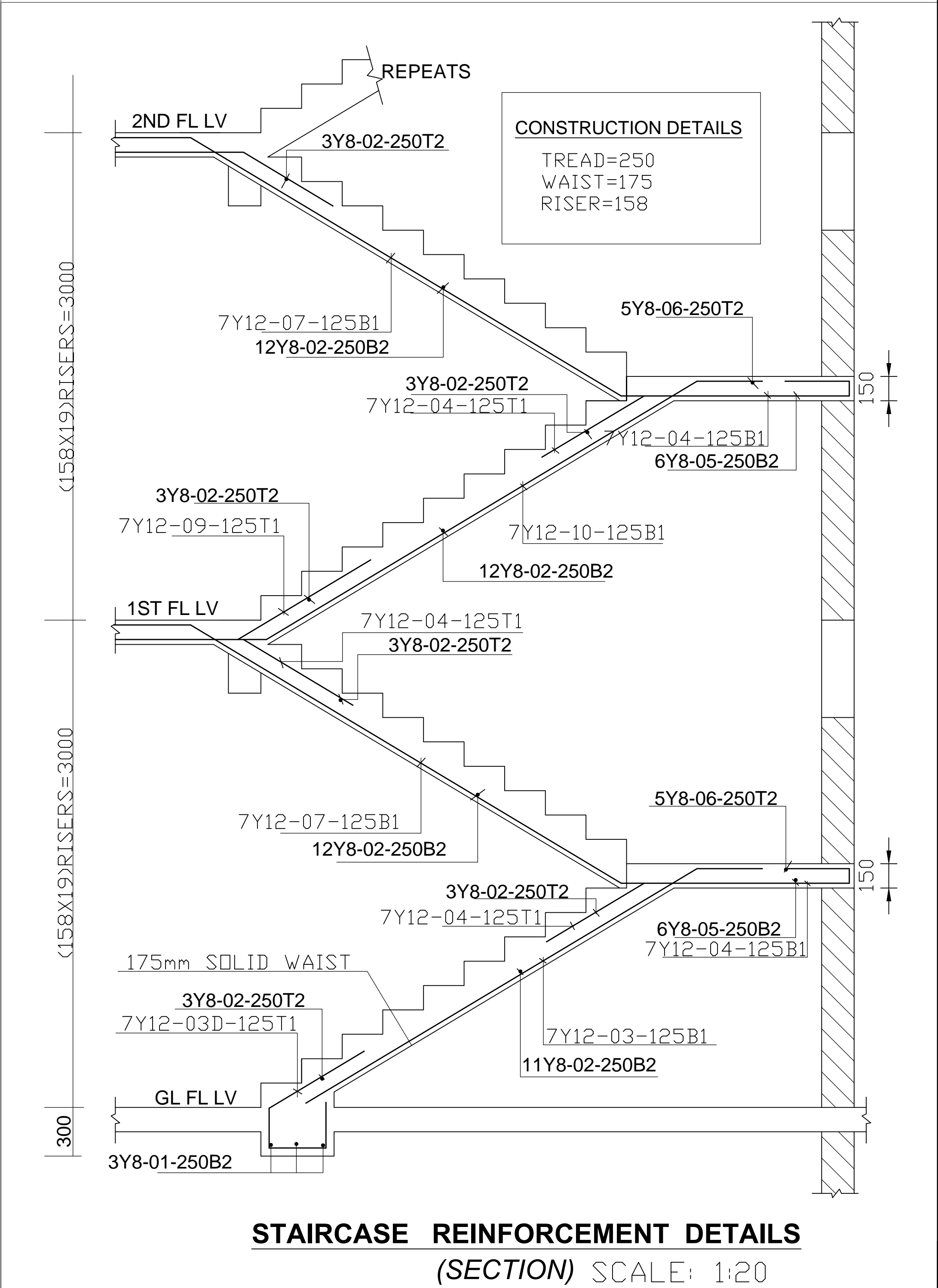
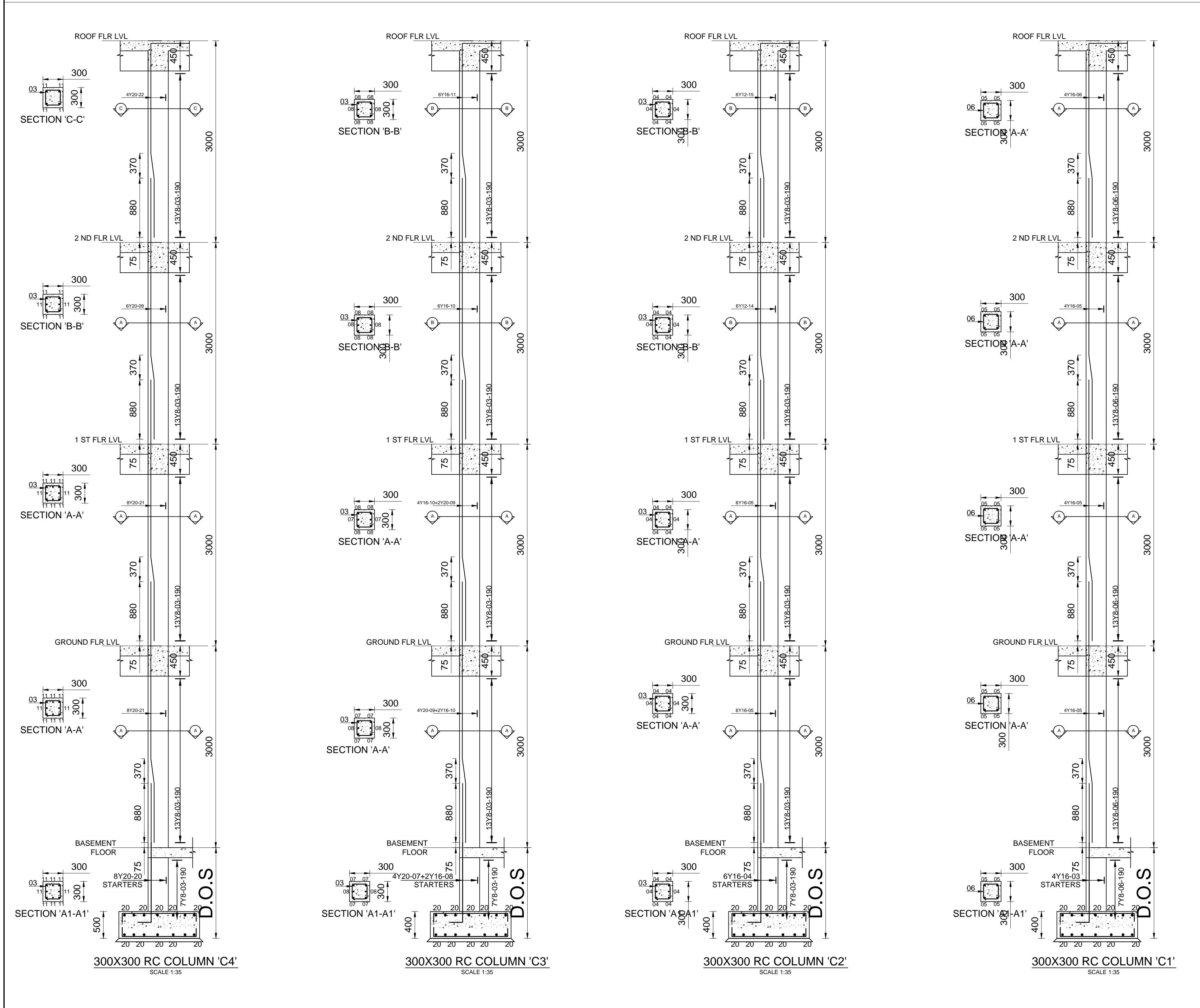
BOSKO ENGINEERING CONSULTANTS LTD  
P.O BOX 25371, 00100 GPO  
TEL: +254-735190997, +254-722555812  
NAIROBI KENYA

DESIGNED BY	DRAWN BY	CHECKED BY	DATE
FKR	FKR	NB	JUN, 2019
	REV	SHEET No.	
SCALE 1:25/20		FR14/12/2018	
SCALE 1:50/40			





CLIENT:	ARCHITECT:	REVISIONS		NOTES:	SITE REF <div>ASSET NO:LR NO. 11151</div> <div>ASSET DESCRIPTION: Land 3.237 Ha.</div>	STRUCTURAL/CIVIL ENGINEER: <div><div></div><div>BOSKO ENGINEERING CONSULTANTS LTD P.O BOX 25371, 00100 GPO TEL: +254-735190997, +254-722555812 NAIROBI KENYA</div></div>	DESIGNED BY FKR	DATE JUN, 2019
							DRAWN BY FKR	CHECKED BY N.B.
							SCALE AS SHOWN	SHEET No.
							DRAWING NO. FR14/12/2018	
				1. FOUNDATION TO BE MIN 1200mm DEEP FROM NATURAL GROUND LEVEL IN RED SOIL & TO ENGINEERS APPROVAL				
				2. CONCRETE: GRADE 25 - FOUNDATION, GROUND FLR SLAB & RING BEAMS GRADE 25 - 1ST FLR SLAB & BEAMS				
				3. MAXIMUM AGGREGATE SIZE 20				
				4. ALL DIMENSIONS IN MILLIMETERS				
				5. MINIMUM MASONRY WALL STRENGTH 3.5 N/mm2 (MIN)				
				6. DWG TO BE READ IN CONJUNCTION WITH ARCH. DWG				
				7. ALL COLUMNS CENTRED ON BASES UNLESS OTHERWISE				
				8. ALL STEEL TO BE OF YIELD STRENGTH 500 N/mm2				



CLIENT:	ARCHITECT:	REVISIONS		NOTES:	SITE REF	STRUCTURAL/CIVIL ENGINEER:	DESIGNED BY	
		MARK	DATE				FKR	DATE
							DRAWN BY	CHECKED BY