



KERIO VALLEY DEVELOPMENT AUTHORITY

**TENDER FOR CONSTRUCTION OF OFFICE BLOCK
AT SAMBURU**

TENDER N0: KVDA/T/05/2020-2021

RECEIPT NO.....

TENDER REG. NO.....

CLOSING DATE 30th SEPTEMBER 2020 AT 10.00 AM

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SECTION 1

STANDARD TENDER DOCUMENT FOR PROCUREMENT OF WORKS

(Building and Associated Civil Engineering Works)

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INTRODUCTION

This standard tender document for procurement of works has been prepared for use by procuring entities in Kenya in the procurement of works (i.e. Buildings and associated Civil Engineering Works).

The following guidelines should be observed when using the document: -

- (a) Specific details should be furnished in the Invitation to tender and in the special conditions of contract (where applicable). The tender document issued to tenderers should not have blank spaces or options.
- (b) The instructions to tenderers and the General Conditions of Contract should remain unchanged. Any necessary amendments to these parts should be made through Appendix to instructions to tenderers and special conditions of contract respectively.

Information contained in the invitation to tender shall conform to the data and information in the tender documents to enable prospective tenderers to decide whether or not to participate in the tender and shall indicate any important tender requirements.

The invitation to tender shall be as an advertisement in accordance with the regulations or a letter of invitation addressed to tenderers who have been pre-qualified following a request for prequalification.

SECTION 1(ii)

Letter of Invitation to tender

SECTION I - INVITATION TO TENDER

Tender No. **KVDA/T/05/2020/2021**

Tender Name:

TENDER FOR CONSTRUCTION OF OFFICE BLOCK AT SAMBURU.

1.1 KVDA invites tenders from eligible candidates for construction of office Block at Samburu

1.2 Interested candidates may obtain further information and inspect the tender documents at **KVDA** at the address given below.

1.3 A complete tender document may be obtained by any interested tenderer upon payment of a non-refundable fee of **Kshs. 1,000 (Kenya Shillings One Thousand)** payable to **KVDA**. Candidates are advised that the fee does not include postage charges and are strongly advised to arrange for direct collection of the tender documents. The tenders documents can also be downloaded **free of charge** from the following websites: www.kvda.go.ke; www.co.ke or/and IFMIS supplier portal: **supplier.treasury.go.ke**;

1.4 Completed tenders should be submitted accompanied by a tender security issued by a reputable bank or insurance company in the amount of **Kshs. 100,000 (Kenya Shillings One Hundred Thirty Thousand)** to be received on or before (**Wednesday, 30TH September 2020 at 10.30AM**). Failure to provide tender security will lead to disqualification of the tender.

1.5 Prices quoted shall be inclusive of duty and other taxes and shall remain valid for **90 (ninety days)** from the closing date of the tenders

Completed tender documents shall be submitted in plain sealed envelopes clearly marked with the Tender number and name and marked

“DO NOT OPEN BEFORE

Wednesday, 30TH SEPTEMBER 2020 at 10.30AM

Tender No.

TENDER FOR OFFICE CONSTRUCTION OF OFFICE BLOCK AT SAMBURU.

And addressed to:

**The Managing Director
Kerio Valley Development Authority (KVDA)
P.O. Box 2660-30100
Eldoret**

1.6 Tenders will be opened immediately after the closing time in the presence of tenderers representatives who choose to attend the opening at

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SECTION 1(ii)

Instructions to tenderers

SECTION 1 (ii)

INSTRUCTIONS TO TENDERERS

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INSTRUCTIONS TO TENDERERS

1. General / Eligibility / Qualifications / Joint venture /Cost of Tendering

- 1.1 The Employer as defined in the Appendix to Conditions of Contract invites tenders for Works Contract as described in the tender documents. The successful tenderer will be expected to complete the Works by the Intended Completion Date specified in the tender documents.

- 1.2 All tenderers shall provide the Qualification Information, a statement that the tenderer (including all members of a joint venture and subcontractors) is not associated, or has not been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to tender.
- 1.3 All tenderers shall provide in the Form of Tender and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.
- 1.4 In the event that the pre-qualification of potential tenderers has been undertaken, only tenders from pre-qualified tenderers will be considered for Award of Contract. These qualified tenderers should submit their tenders and information updating their original pre-qualification applications or, alternatively, confirm in their tenders that the originally submitted pre-qualification information remains essentially correct as of the date of tender submission.
- 1.5 Where no pre-qualification of potential tenderers has been done, all tenderers shall include the following information and documents with their tenders, unless otherwise stated:
 - (a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the tender to commit the tenderer:
 - (b) total monetary value of construction work performed for each of the last five years:
 - (c) experience in works of a similar nature and size for each of the last five years, and details of work under way or contractually committed; and names and addresses of clients who may be contacted for further information on these contracts;
 - (d) major items of construction equipment proposed to carry out the Contract and an undertaking that they will be available for the Contract,

- (e) qualifications and experience of key site management and technical personnel proposed for the Contract and an undertaking that they shall be available for the Contract,
- (f) reports on the financial standing of the tenderer, such as profit and loss statements and auditor's reports for the past five years;
- (g) evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);
- (h) authority to seek references from the tenderer's bankers;
- (i) information regarding any litigation, current or during the last five years, in which the tenderer is involved, the parties concerned and disputed amount; and
- (j) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.

1.6 Tenders submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated:

- (a) the tender shall include all the information listed in clause 1.5 above for each joint venture partner;
- (b) the tender shall be signed so as to be legally binding on all partners;
- (c) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
- (d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of all the partners of the joint venture; and
- (e) The execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

1.7 To qualify for award of the Contract, tenderers shall meet the following minimum qualifying criteria; **(Refer to Section 1 (iv) : Appendix to Conditions of Contract)**

- (a) annual volume of construction work of at least 2.5 times the estimated annual cash flow for the Contract;
- (b) experience as main contractor in the construction of at least ten years
- (c) two works of a nature and complexity equivalent to the Works over the last 10 years (to comply with this requirement, works cited should be at least 70% complete);
- (d) proposals for the timely acquisition (own, lease, hire, etc) of the essential equipment listed as required for the Works;
- (e) a Contract manager with at least five years' experience in works of an equivalent nature and volume, including no less than three years as Manager; and
- (f) liquid assets and / or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than 4 months of the estimated payment flow under this Contract.

- 1.8 The figures for each of the partners of a joint venture shall be added together to determine the tenderer's compliance with the minimum qualifying criteria of clause 1.7 (a) and (e); however, for a joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 1.7 (a), (b) and (e) for an individual tenderer, and the partner in charge of at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's tender. Subcontractor's experience and resources will not be taken into account in determining the tenderer's compliance with the qualifying criteria, unless otherwise stated.
- 1.9 Each tenderer shall submit only one tender, either individually or as a partner in a joint venture. A tenderer who submits or participates in more than one tender (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the tenderer's participation to be disqualified.
- 1.10 The tenderer shall bear all costs associated with the preparation and submission of his tender, and the Employer will in no case be responsible or liable for the costs.

- 1.11 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.
- 1.12 The procuring entity's employees, committee members, board members and their relative (spouse and children) are not eligible to participate in the tender.
- 1.13 The price to be charged for the tender document shall not exceed Kshs. 1,000/=
- 1.14 The procuring entity shall allow the tenderer to review the tender document free of charge before purchase.

2. Tender Documents

- 2.1 The complete set of tender documents comprises the documents listed below and any addenda issued in accordance with clause 2.4.

- i) These Instructions to Tenderers ii) Form of Tender and Qualification Information iii) Conditions of Contract iv) Appendix to Conditions of Contract v) Specifications**
- vi) Drawings**
- vii) Bills of Quantities**
- viii) Forms of Securities**

- 2.2 The tenderer shall examine all instructions, forms to be filled and Specifications in the tender documents. Failure to furnish all information required by the tender documents, or submission of a tender not substantially responsive to the tendering documents in every respect will be at tenderer's risk and may result in rejection of his tender.
- 2.3 A prospective tenderer making an inquiry relating to the tender documents may notify the Employer in writing or by cable, telex or facsimile at the address indicated in the letter of invitation to tender. The Employer will only

respond to requests for clarification received earlier than seven days prior to the deadline for submission of tenders. Copies of the Employer's response will be forwarded to all persons issued with tendering documents, including a description of the inquiry, but without identifying its source.

- 2.4 Before the deadline for submission of tenders, the Employer may modify the tendering documents by issuing addenda. Any addendum thus issued shall be part of the tendering documents and shall be part of the tendering documents and shall be communicated in writing or by cable, telex or facsimile to all tenderers. Prospective tenderers shall acknowledge receipt of each addendum in writing to the Employer.
- 2.5 To give prospective tendered reasonable time in which to take an addendum into account in preparing their tenders, the Employer shall extend, as necessary, the deadline for submission of tenders, in accordance with clause 4.2 here below.

3 Preparation of Tenders

- 3.1 All documents relating to the tender and any correspondence shall be in English language.
- 3.2 The tender submitted by the tenderer shall comprise the following:
 - (a) These Instructions to Tenderers, Form of Tender, Conditions of Contract, Appendix to Conditions of Contract and Specifications.
 - (b) Tender Security
 - (c) Priced Bills of Quantities
 - (d) Qualification Information Form and Documents
 - (e) Alternative offers where invited; and
 - (f) Any other materials required to be completed and submitted by the tenderers.
- 3.3 The tenderer shall fill in the rates and prices for all items of the Works described in the Bills of Quantities. Items for which no rate or price is entered

by the tenderer will not be paid for when executed and shall be deemed covered by the other rates and prices in the Bills of Quantities. All duties, taxes, and other levies payable by the Contractor under the Contract, as of 30 days prior to the deadline for submission of tenders, shall be included in the tender price submitted by the tenderer.

3.4 The rates and prices quoted by the tenderer shall only be subject to adjustment during the performance of the Contract if provided for in the Appendix to Conditions of Contract and provisions made in the Conditions of Contract.

3.5 The unit rates and prices shall be in Kenya Shillings.

3.6 **Tenders shall remain valid for a period of ninety (90) days from the date of submission. However, in exceptional circumstances, the Employer may request that the tenderers extend the period of validity for a specified additional period. The request and the tenderers' responses shall be made in writing.** A tenderer

may refuse the request without forfeiting the Tender Security. A tenderer agreeing to the request will not be required or permitted to otherwise modify the tender, but will be required to extend the validity of the Tender Security for the period of the extension, and in compliance with clause 3.7 – 3.11 in all respects.

3.7 The tenderer shall furnish, as part of the tender, a Tender Security in the amount and form specified in the appendix to invitation to tenderers. This shall be in the amount not exceeding 2 percent of the tender price.

3.8 The format of the Tender Security should be in accordance with the form of Tender Security included in Section G – Standard forms or any other form acceptable to the Employer. Tender Security shall be valid for 30 days beyond the validity of the tender.

3.9 Any tender not accompanied by an acceptable Tender Security shall be rejected. The Tender Security of a joint venture must define as "Tenderer" all joint venture partners and list them in the following manner: a joint venture consisting of ".....", ".....", and ".....".

3.10 **The Tender Securities of unsuccessful tenderers will be returned within 28 days of the end of the tender validity period specified in clause 3.6.**

- 3.11 The Tender Security of the successful tenderer will be discharged when the tenderer has signed the Contract Agreement and furnished the required Performance Security.
- 3.12 The Tender Security may be forfeited
- (a) if the tenderer withdraws the tender after tender opening during the period of tender validity;
 - (b) if the tenderer does not accept the correction of the tender price, pursuant to clause 5.7;
 - (c) in the case of a successful tenderer, if the tenderer fails within the specified time limit to
 - (i) Sign the Agreement, or
 - (ii) Furnish the required Performance Security.
- 3.13 Tenderers shall submit offers that comply with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications. Alternatives will not be considered, unless specifically allowed in the invitation to tender. If so allowed, tenderers wishing to offer technical alternatives to the requirements of the tendering documents must also submit a tender that complies with the requirements of the tendering documents, including the basic technical design as indicated in the Drawings and Specifications. In addition to submitting the basic tender, the tenderer shall provide all information necessary for a complete evaluation of the alternative, including design calculations, technical specifications, breakdown of prices, proposed construction methods and other relevant details. Only the technical alternatives if any, or the lowest evaluated tender conforming to the basic technical requirements shall be considered.
- 3.14 The tenderer shall prepare one original of the documents comprising the tender documents as described in clause 3.2 of these Instructions to Tenderers, bound with the volume containing the Form of Tender, and clearly marked "**ORIGINAL**". In addition, the tenderer shall submit copies of the tender, in the number specified in the invitation to tender, and clearly marked as "**COPIES**". In the event discrepancy between them, the original shall prevail.

- 3.15 The original and all copies of the tender shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the tenderer, pursuant to clause 1.5 (a) or 1.6 (b), as the case may be. All pages of the tender where alterations or additions have been made shall be initialled by the person or persons signing the tender.
- 3.16 Clarification of tenders shall be requested by the tenderer to be received by the procuring entity not later than 7 days prior to the deadline for submission of tenders.
- 3.17 The procuring entity shall reply to any clarifications sought by the tenderer within 3 days of receiving the request to enable the tenderer to make timely submission of this tender.
- 3.18 The tender security shall be in the amount of 0.5 – 2 percent of the tender price.

4 Submission of Tenders

(Refer to Section 1 (iv) : Appendix to Conditions of Contract)

- 4.1 The tenderer shall seal the original and all copies of the tender in two inner envelopes and one outer envelope, duly marking the inner envelopes as **“ORIGINAL”** and **“COPIES”** as appropriate. The inner and outer envelopes shall:
 - (a) be addressed to the Employer at the address provided in the invitation to tender;
 - (b) bear the name and identification number of the Contract as defined in the Invitation To Tender; and
 - (c) Provide a warning not to open before the specified time and date for tender opening.
- 4.2 Tenders shall be delivered to the Employer at the address specified above not later than the time and date specified in the invitation to tender. However, the Employer may extend the deadline for submission of tenders by issuing an amendment in accordance with sub-clause 2.5 in which case all rights and obligations of the Employer and the tenderers previously subject to the original deadline will then be subject to the new deadline.

- 4.3 Any tender received after the deadline prescribed in clause 4.2 will be returned to the tenderer unopened.
- 4.4 Tenderers may modify or withdraw their tenders by giving notice in writing before the deadline prescribed in clause 4.2. Each tenderers modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with clause 3.13 and 4.1, with the outer and inner envelopes additionally marked **“MODIFICATION”** and **“WITHDRAWAL”** as appropriate. No tender may be modified after the deadline for submission of tenders.
- 4.5 Withdrawal of a tender between the deadline for submission of tenders and the expiration of the period of tender validity specified in the invitation to tender or as extended pursuant to clause 3.6 may result in the forfeiture of the Tender Security pursuant to clause 3.11.
- 4.6 Tenderers may only offer discounts to, or otherwise modify the prices of their tenders by submitting tender modifications in accordance with clause 4.4 or be included in the original tender submission.

5 Tender Opening and Evaluation

- 5.1 The tenders will be opened by the Employer, including modifications made pursuant to clause 4.4 in the presence of the tenderer's representatives who choose to attend at the time and in the place specified in the invitation to tender. Envelopes marked **“WITHDRAWAL”** shall be opened and read out first. Tenderers' and Employer's representatives who are present during the opening shall sign a register evidencing their attendance.
- 5.2 The tenderers' names, the tender prices, the total amount of each tender and of an alternative tender (if alternatives have been requested or permitted), any discounts, tender modifications and withdrawals, the presence or absence of Tender Security and such other details as may be considered appropriate, will be announced by the Employer at the opening. Minutes of the tender opening, including the information disclosed to those present will be prepared by the Employer.
- 5.3 Information relating to the examination, clarification, evaluation and comparison of tenders and recommendations for the award of Contract shall not be disclosed to tenderers or any other persons not officially concerned with such process until the award to the successful tenderer has been announced. Any effort by a tenderer to influence the Employer's

officials, processing of tenders or award decisions may result in the rejection of his tender.

- 5.4 To assist in the examination, evaluation and comparison of tenders, the Employer at his discretion, may ask any tenderer for clarification of the tender, including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable, telex or facsimile but no change in the price or substance of the tender shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered in the evaluation of the tenders in accordance with clause 5.7.
- 5.5 Prior to the detailed evaluation of tenders, the Employer will determine whether each tender (a) meets the eligibility criteria defined in clause 1.7 (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the tendering documents. A substantially responsive tender is one which conforms to all the terms, conditions and specifications of the tendering documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the works; (b) which limits in any substantial way, inconsistent with the tendering documents, the Employer's rights or the tenderer's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other tenderers presenting substantially responsive tenders.
- 5.6 If a tender is not substantially responsive, it will be rejected, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.
- 5.7 Tenders determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows:
- (a) where there is a discrepancy between the amount in figures and the amount in words, the amount in words will prevail; and
 - (b) Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will prevail, unless in the opinion of the Employer, there is an obvious typographical error, in which case the adjustment will be made to the entry containing that error.

- (c) In the event of a discrepancy between the tender amount as stated in the Form of Tender and the corrected tender figure in the main summary of the Bill of Quantities, the amount as stated in the Form of Tender shall prevail.
 - (d) The Error Correction Factor shall be computed by expressing the difference between the tender amount and the corrected tender sum as a percentage of the corrected Builder's Work (i.e. Corrected tender sum less P.C. and Provisional Sums).
 - (e) The Error Correction Factor shall be applied to all Builder's Work (as a rebate or addition as the case may be) for the purposes of the valuations for Interim Certificates and valuation of variations.
 - (f) The amount stated in the tender will be adjusted in accordance with the above procedure for the correction of errors and, with concurrence of the tenderer, shall be considered as binding upon the tenderer. If the tenderer does not accept the corrected amount, the tender may be rejected and the Tender Security may be forfeited in accordance with clause 3.11.
- 5.8 The Employer will evaluate and compare only the tenders determined to be substantially responsive in accordance with clause 5.5.
- 5.9 In evaluating the tenders, the Employer will determine for each tender the evaluated tender price by adjusting the tender prices as follows:
- (a) making any correction for errors pursuant to clause 5.7;
 - (b) Excluding provisional sums and the provision, if any, for contingencies in the Bill of Quantities, but including Dayworks where priced competitively.
 - (c) Making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with clause 3.12; and
 - (d) Making appropriate adjustments to reflect discounts or other price modifications offered in accordance with clause 4.6
- 5.10 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other

factors which are in excess of the requirements of the tender documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in tender evaluation.

- 5.11 The tenderer shall not influence the Employer on any matter relating to his tender from the time of the tender opening to the time the Contract is awarded. Any effort by the tenderer too influence the Employer or his employees in his decision on tender evaluation, tender comparison or Contract award may result in the rejection of the tender.
- 5.12 Firms incorporated in Kenya where indigenous Kenyans own 51% or more of the share capital shall be allowed a 10% preferential bias provided that they do not sub-contract work valued at more than 50% of the Contract Price excluding Provisional Sums to a non-indigenous sub-contractor.

6 Award of Contract

- 6.1 Subject to clause 6.2, the award of the Contract will be made to the tenderer whose tender has been determined to be substantially responsive to the tendering documents and who has offered the lowest evaluated tender price, provided that such tenderer has been determined to be (a) eligible in accordance with the provision of clauses 1.2 and (b) qualified in accordance with the provision s of clauses 1.7 and 1.8.
- 6.2 notwithstanding clause 6.1 above, the Employer reserves the right to accept or reject any tender, and to cancel the tendering process and reject all tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected tenderer or tenderers or any obligation to inform the affected tenderer or tenderers of the grounds for the action.
- 6.3 The tenderer whose tender has been accepted will be notified of the award prior to expiration of the tender validity period in writing or by cable, telex or facsimile. This notification (hereinafter and in all Contract documents called the "Letter of Acceptance") will state the sum (hereinafter and in all Contract documents called the "Contract Price") that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract. At the same time, the other tenderers shall be informed that their tenders have not been successful.

The contract shall be formed on the parties signing the contract.

- 6.4 The Agreement will incorporate all agreements between the Employer and the successful tenderer. Within 14 days of receipt, the successful tenderer will sign the Agreement and return it to the Employer.
- 6.5 Within 21 days after receipt of the Letter of Acceptance, the successful tenderer shall deliver to the Employer a Performance Security in the amount stipulated in the Appendix to Conditions of Contract and in the form stipulated in the Tender documents. The Performance Security shall be in the amount and specified form.
- 6.6 Failure of the successful tenderer to comply with the requirements of clause 6.5 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Tender Security.
- 6.7 Upon the furnishing by the successful tenderer of the Performance Security, the Employer will promptly notify the other tenderers that their tenders have been unsuccessful.
- 6.8 Preference where allowed in the evaluation of tenders shall not be allowed for contracts not exceeding one year (12 months)
- 6.9 The tender evaluation committee shall evaluate the tender within 30 days of the validity period from the date of opening the tender.
- 6.10 The parties of the contract shall have it signed within 30 days from the date of notification of contract award unless there is an administrative review request.
- 6.11 Contract price variations shall not be allowed for contracts not exceeding one year (12 months)
- 6.12 Where contract price variation is allowed, the valuation shall not exceed 15% of the original contract price.
- 6.13 Price variation request shall be processed by the procuring entity within 30 days of receiving the request.
- 6.14 The procuring entity may at any time terminate procurement proceedings before contract award and shall not be liable to any person for the termination.

- 6.15 The procuring entity shall give prompt notice of the termination to the tenderers and on request give its reasons for termination within 14 days of receiving the request from any tenderer.
- 6.16 A tenderer who gives false information in the tender document about its qualification or who refuses to enter into a contract after notification of contract award shall be considered for debarment from participating in future public procurement.

7 Corrupt and Fraudulent Practices

- 7.1 The procuring entity requires that tenderers observe the highest standards of ethics during procurement process and execution of contracts. A tenderer shall sign a declaration that he has not and will not be involved in corrupt and fraudulent practices.

SECTION 1(iii)

Conditions of Contract

SECTION 1(iii)

CONDITIONS OF CONTRACT

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CONDITIONS OF CONTRACT

1. Definitions

In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated;

“Bill of Quantities” means the priced and completed Bill of Quantities forming the part of the tender.

“Compensation Events” are those defined in clause 24 hereunder.

“The Completion Date” means the date of completion of the Works as certified by the Project Manager, in accordance with clause 31.

“The Contract” refers to the person or corporate body whose tender to carry out the Works has been accepted by the Employer.

“The Contractor’s Tender” is the completed tendering document submitted by the Contractor to the Employer

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

“Days” are calendar days; **“Months”** are calendar months.

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

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

“The Defects Liability Period” is the period named in the Contract Data and calculated from the Completion Date

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

“Dayworks” are Work inputs subject to payment on a time basis for labor and the associates materials and plant

“Employer”, or the **“Procuring Entity”** as defined in the Public Procurement Regulations (i.e. Central or Local Government administration, Universities, Public Institutions and Corporations, etc) is the party who employs the Contractor to carry out the Works.

“Equipment” is the Contractor’s machinery and vehicles brought temporarily to the Site for the execution of the Works.

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

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

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

“Project Manager” is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract and shall be an “Architect” or a “Quantity Surveyor” registered under the Architects and Quantity Surveyors Act Cap 525 or an “Engineer” registered under Engineers Registration Act Cap 530.

“Site” is the area defined as such in the Appendix to Condition of Contract.

“Site Investigation Reports” are those reports that may be included in the tendering documents which are factual and interpretative about the surface and sub-surface conditions at the Site.

“Specifications” means the Specifications of the Works include in the Contract and any modification or addition made or approved by the Project Manager.

“Start Date” is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with the Site possession date(s).

“A Sub-contractor” is a person or corporate body who has a Contract with the Contractor to carry out a part of the Work in the Contract, which includes Work on the Site.

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

“A Variation” is an instruction given by the Project Manager which varies the Works.

“The Works” are what the Contract requires the Contractor to construct, install, and turnover to the Employer, as defined in the Appendix to Conditions of Contract.

2. Interpretation

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

2.2 If sectional completion is specified in the Appendix to Conditions of Contract, reference in the Conditions of Contract to the Works, the Completion Date applies to any section of the Works (other than the references to the Intended Completion Date for the whole of the Works).

2.3 The following documents shall constitute the Contract documents and shall be interpreted in the following order of priority;

(1) Agreement,

- (2) Letter of Acceptance,**
- (3) Contractor's Tender,**
- (4) Appendix to Conditions of Contract,**
- (5) Conditions of Contract,**
- (6) Specifications,**
- (7) Drawings,**
- (8) Bills of Quantities,**
- (9) Any other documents listed in the Appendix to Conditions of Contract as forming part of the Contract.**

Immediately after the execution of the Contract, the Project Manager shall furnish both the Employer and the Contractor with two copies each of all Contract documents. Further, as and when necessary the Project Manager shall furnish the Contractor [always with a copy to the Employer] with three [3] copies of such further drawings or details or descriptive schedules as are reasonably necessary either to explain or amplify the Contract drawings or to enable the Contractor to carry out and complete the Works in accordance with these Conditions.

3. Language And Law

- a. Language and the Contract and the law governing the Contract shall be English language and the Laws of Kenya respectively unless otherwise stated.

4. Project Manager's Decision

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

5. Delegation

- 5.1 The Project Manager may delegate any of his duties and responsibilities to others after notifying the Contractor.

6. Communications

- 6.1 Communication between parties 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 Employer 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, etc. as listed in the Appendix to Conditions of Contract and also with the Employer, as per the directions of the Project Manager. The Contractor shall also provide facilities and services for them. The Employer may modify the said List of Other Contractors, etc., and shall notify the Contractor of any such modification.

9. Personnel

- 9.1 The Contractor shall employ the key personnel named in the Qualification Information, to carry out the functions stated in the said Information or other personnel approved by the Project Manager. The Project Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Qualification Information. 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.

10. Works

- 10.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings. The Works may commence on the Start Date and shall be carried out 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.

11. Safety and Temporary Works

- 11.1 The Contractor shall be responsible for the design of temporary works. However, before erecting the same, he shall submit his designs including specifications and drawings to the Project Manager and to any other relevant third parties for their approval. No erection of temporary works shall be done until such approvals are obtained.
- 11.2 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary works and all drawings prepared by the Contractor for the execution of the temporary or permanent Works, shall be subject to prior approval by the Project Manager before they can be used.
- 11.3 The Contractor shall be responsible for the safety of all activities on the Site.

12. Discoveries

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

13. Work Program

- 13.1 Within the time stated in the Appendix to Conditions of Contract, the Contractor shall submit to the Project Manager for approval a program showing the general methods, arrangements, order, and timing for all activities in the Works. 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 all changes to the sequence of the activities.

The Contractor shall submit to the Project Manager for approval an updated program at intervals no longer than the period stated in the Appendix to Conditions of Contract. If the Contractor does not submit an updated program within this period, the Project Manager may withhold the amount stated in the said Appendix 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. 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.

14. Possession of Site

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

15. Access To Site

- 15.1 The Contractor shall allow the Project Manager and any other 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.

16. Instructions

- 16.1 The Contractor shall carry out all the instructions of the Project Manager which are in accordance with the Contract.

17. Extension or Acceleration of Completion Date

- 17.1 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. 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 in writing 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 caused by such failure shall not be considered in assessing the new (extended) Completion Date.
- 17.2 No bonus for early completion of the Works shall be paid to the Contractor by the Employer.

18. Management Meetings

- 18.1 A Contract management meeting shall be held monthly and attended by the Project Manager and the Contractor. Its business shall be to review the plans for the remaining Work and to deal with matters raised in accordance with the early warning procedure. The Project Manager shall record the minutes of the management meetings and provide copies of the same to those attending the meeting and the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

19. Early Warning

- 19.1 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.
- 19.2 The Contractor shall cooperate with the Project Manager in making and considering proposals on 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 instructions of the Project Manager.

20. Defects

- 20.1 The Project Manager shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection 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. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor. However, if there is no defect found, the cost of uncovering and making good shall be treated as a variation and added to the Contract Price.
- 20.2 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 Appendix to Conditions of Contract. The Defects Liability Period shall be extended for as long as defects remain to be corrected.

- 20.3 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. If the Contractor has not corrected a defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the defect corrected by other parties and such cost shall be treated as a variation and be deducted from the Contract Price.

21. Bills of Quantities

- 21.1 The Bills of Quantities shall contain items for the construction, installation, testing and commissioning of the Work to be done by the Contractor. The Contractor will be paid for the quantity of the Work done at the rate in the Bills of Quantities for each item.
- 21.2 If the final quantity of Work done differs from the quantity in the Bills of Quantities for the particular item by more than 25 percent and provided the change exceeds 1 percent of the Initial Contract price, the Project Manager shall adjust the rate to allow for the change.
- 21.3 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bills of Quantities.

22. Variations

- 22.1 All variations shall be included in updated programs produced by the Contractor.
- 22.2 The Contractor shall provide the Project Manager with a quotation for carrying out the variations when requested to do so. The Project Manager shall assess the quotation, which shall then be given within seven days of the request or within any longer period as may be stated by the Project Manager and before the Variation is ordered.
- 22.3 If the work in the variation corresponds with an item description in the Bills of Quantities and if in the opinion of the Project Manager, the quantity of work is not above the limit stated in clause 21.2 or the timing of its execution does not cause the cost per unit of quantity to change, the rate in the Bills 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 the items in the Bills of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of Work.

- 22.4 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.
- 22.5 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.
- 22.6 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.
- 22.7 When the Program is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast.

23. Payment Certificates, Currency of Payments And Advance Payments

- 23.1 The Contractor shall submit to the Project Manager monthly applications for payment giving sufficient details of the Work done and materials on Site and the amounts which the Contractor considers himself to be entitled to. The Project Manager shall check the monthly application and certify the amount to be paid to the Contractor within 14 days. The value of Work executed and payable shall be determined by the Project Manager.
- 23.2 The value of the Work executed shall comprise the value of the quantities of the items in the Bills of Quantities completed, materials delivered on Site, variations and compensation events. Such materials shall become the property of the Employer once the Employer has paid the Contractor for their value. Thereafter, they shall not be removed from Site without the Project Manager's instructions except for use upon the Works.
- 23.3 Payments shall be adjusted for deductions for retentions. The Employer shall pay the Contractor the amounts certified by the Project Manager within 30 days of the date of issue of each certificate. If the Employer makes a late payment, the Contractor shall be paid simple interest on the late payment in the next payment. Interest shall be calculated on the basis of the number of days delayed at a rate three percentage points above the Central Bank of Kenya's average rate for base lending prevailing as of the first day the payment becomes overdue.

- 23.4 If an amount certified is increased in a later certificate or as a result of an award by 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.
- 23.5 Items of the Works for which no rate or price has been entered in will not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.
- 23.6 The Contract Price shall be stated in Kenya Shillings. All payments to the Contractor shall be made in Kenya Shillings and foreign currency in the proportion indicated in the tender, or agreed prior to the execution of the Contract Agreement and indicated therein. The rate of exchange for the calculation of the amount of foreign currency payment shall be the rate of exchange indicated in the Appendix to Conditions of Contract. If the Contractor indicated foreign currencies for payment other than the currencies of the countries of origin of related goods and services the Employer reserves the right to pay the equivalent at the time of payment in the currencies of the countries of such goods and services. The Employer and the Project Manager shall be notified promptly by the Contractor of any changes in the expected foreign currency requirements of the Contractor during the execution of the Works as indicated in the Schedule of Foreign Currency Requirements and the foreign and local currency portions of the balance of the Contract Price shall then be amended by agreement between the Employer and the Contractor in order to reflect appropriately such changes.
- 23.7 In the event that an advance payment is granted, the following shall apply: -
- a) On signature of the Contract, the Contractor shall at his request, and without furnishing proof of expenditure, be entitled to an advance of 10% (ten percent) of the original amount of the Contract. The advance shall not be subject to retention money.
 - b) No advance payment may be made before the Contractor has submitted proof of the establishment of deposit or directly liable guarantee satisfactory to the Employer in the amount of the advance payment. The guarantee shall be in the same currency as the advance.

- c) Reimbursement of the lump sum advance shall be made by deductions from the Interim payments and where applicable from the balance owing to the Contractor. Reimbursement shall begin when the amount of the sums due under the Contract reaches 20% of the original amount of the Contract. It shall have been completed by the time 80% of this amount is reached.

The amount to be repaid by way of successive deductions shall be calculated by means of the formula:

$$R = \frac{A(x^1 - x^{11})}{80 - 20}$$

Where:

R = the amount to be reimbursed

A = the amount of the advance which has been granted

X1 = the amount of proposed cumulative payments as a Percentage of the original amount of the Contract. This figure will exceed 20% but not exceed 80%.

X11 = the amount of the previous cumulative payments as a percentage of the original amount of the Contract. This figure will be below 80% but not less than 20%.

- d) With each reimbursement, the counterpart of the directly liable guarantee may be reduced accordingly.

24. Compensation Events

24.1 The following issues shall constitute Compensation Events:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date stated in the Appendix to Conditions of Contract.

- (b) The Employer modifies the List of Other Contractors, etc., in a way that affects the Work of the Contractor under the Contract.
- (c) The Project Manager orders a delay or does not issue drawings, specifications or instructions required for execution of the Works on time.
- (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon the Work, which is then found to have no defects.
- (e) The Project Manager unreasonably does not approve a subcontract to be let.
- (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to tenderers (including the Site investigation reports), from information available and from a visual inspection of the Site.
- (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer or additional work required for safety or other reasons.
- (h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (i) The effects on the Contractor of any of the Employer's risks.
- (j) The Project Manager unreasonably delays issuing a Certificate of Completion.
- (k) Other compensation events described in the Contract or determined by the Project Manager shall apply.

24.2 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 s\and by how much

the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

- 24.3 As soon as information demonstrating the effect of each compensation event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.
- 24.4 The Contractor shall not be entitled to compensation to the extent that the Employer's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the Project Manager.
- 24.5 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Appendix to Conditions of Contract.
- 24.6 The contractor shall give written notice to the project manager of his intention to make a claim within thirty days after the event giving rise to the claim has first arisen. The claim shall be submitted within thirty days thereafter. Provided always that should the event giving rise to the claim of continuing effect, the contractor shall submit an interim claim within the said thirty days and a final claim within thirty days of the end of the event giving rise to the claim.

25. Price Adjustment

- 25.1 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 tenders for the Contract and the date of Completion. The adjustment shall be the change in the amount of tax payable by the Contractor.
- 25.2 The Contract Price shall be deemed to be based on exchange rates current at the date of tender submission in calculating the cost to the Contractor of materials to be specifically imported (by express provisions in the Contract Bills of Quantities or Specifications) for permanent incorporation in the Works. Unless otherwise stated in the Contract, if at any time during the period of the Contract the exchange rates shall be varied and this shall affect the cost to the Contractor of such materials, then the Project Manager shall assess the net difference in the cost of such materials. Any amount from time to

time so assessed shall be added to or deducted from the Contract Price, as the case may be.

25.3 Unless otherwise stated in the Contract, the Contract Price shall be deemed to have been calculated in the manner set out below and in subclauses 25.4 and 25.5 and shall be subject to adjustment in the events specified there under;

- (i) The prices contained in the Contract Bills of Quantities shall be deemed to be based upon the rates of wages and other emoluments and expenses as determined by the Joint Building Council of Kenya (JBC) and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.
- (ii) Upon JBC determining that any of the said rates of wages or other emoluments and expenses are increased or decreased, then the Contract Price shall be increased or decreased by the amount assessed by the Project Manager based upon the difference, expressed as a percentage, between the rate set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the JBC and applied to the quantum of labor incorporated within the amount of Work remaining to be executed at the date of publication of such increase or decrease.
- (iii) No adjustment shall be made in respect of changes in the rates of wages and other emoluments and expenses which occur after the date of Completion except during such other period as may be granted as an expression of time under clause 17.0 of these Conditions.

25.4 The prices contained in the Contract Bills of Quantities shall be deemed to be based upon the basic prices of materials to be permanently incorporated in the Works as determined by the JBC and set out in the schedule of basic rates issued 30 days before the date for submission of tenders. A copy of the schedule used by the Contractor in his pricing shall be attached in the Appendix to Conditions of Contract.

25.5 Upon the JBC determining that any of the said basic prices are increased or decreased then the Contract Price shall be increased or decreased by the amount to be assessed by the Project Manager based upon the difference

between the price set out in the schedule of basic rates issued 30 days before the date for submission of tenders and the rate published by the JBC and applied to the quantum of the relevant materials which have not been taken into account in arriving at the amount of any interim certificate under clause 23 of these Conditions issued before the date of publication of such increase or decrease.

25.6 No adjustment shall be made in respect of changes in basic prices of materials which occur after the date for Completion except during such other period as may be granted as an extension of time under clause 17.0 of these Conditions.

25.7 The provisions of sub-clause 25.1 to 25.2 herein shall not apply in respect of any materials included in the schedule of basic rates.

26. Retention

26.1 The Employer shall retain from each payment due to the Contractor, the proportion stated in the Appendix to Conditions of Contract until completion of the whole of the Works. On Completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and the remaining half when the Defects Liability Period has passed and the Project Manager has certified that all defects notified to the Contractor before the end of this period have been corrected.

27. Liquidated Damages

27.1 The Contractor shall pay liquidated damages to the Employer at the rate stated in the Appendix to Conditions of Contract for each day that the actual Completion Date is later than the Intended Completion Date. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not alter the Contractor's liabilities.

27.2 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 rate specified in clause 23.30.

28. Securities

- 28.1 The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a reputable bank acceptable to the Employer, and in denominated in Kenya Shillings. The Performance Security shall be valid until a date 30 days beyond the date of issue of the Certificate of Completion.

29. Dayworks

- 29.1 If applicable, the Dayworks rates in the Contractor's tender shall be used for small additional amounts of Work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
- 29.2 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.
- 29.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

30. Liability and Insurance

- 30.1 From the Start Date until the Defects Correction Certificate has been issued, the following are the Employer's risks:
- (a) the risk of personal injury, death or loss of or damage to property (excluding the Works, Plant, Materials and Equipment), which are due to;
 - (i) use or occupation of the Site by the Works or for the purpose of the Works, which is unavoidable result of the Works, or
 - (ii) Negligence, breach of statutory duty or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.
 - (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in Employer's design, or due to war or radioactive contamination

directly affecting the place where the Works are being executed.

30.2 from the completion date until the defects correction certificate has been issued, the risk of loss of or damage to the works, plant and materials is the Employer's risk except loss or damage due to;

- (a) a defect which existed on or before the completion date
- (b) An event occurring before the completion date, which was not itself, the employer's risk.
- (c) The activities of the contractor on the site after the Completion Date.

30.3 From the start date until the defects correction certificate has been issued, the risks of personal injury, death and loss of or damage to property (including, without limitation, the works, plant, materials, and equipment) which are not employer's risk are Contractor's risks.

The contractor shall provide, in the joint names of the Employer and the contractor, insurance cover from the start date to the end of the defects liability period, in the amounts stated in the Appendix to conditions of contract for the following events;

- (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

30.4 Policies and certificates for insurance shall be delivered by the contractor to the project manager for his approval before the start date. All such insurance shall provide for compensation required to rectify the loss or damage incurred.

30.5 If the contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the contractor should have provided and recover the premiums from payments otherwise

due to the contractor or if no payment is due, the payment of premiums shall be a debt due.

- 30.6 Alterations to the terms of insurance shall not be made without the approval of the project manager. Both parties shall comply with any conditions of insurance policies.

31. Completion and taking over

- 31.1 Upon deciding that the works are complete the contractor shall issue a written request to the Project manager to issue a certificate of completion of the works. The employer shall take over the site and the works within seven (7) days of the Project manager's issuing a Certificate of completion.

32. Final Account

- 32.1 The contractor shall issue the project manager with a detailed account of the total amount that the contractor considers payable to him by the employer under the contract before the end of the defects liability period. The Project manager shall issue a Defects liability Period. The project manager shall issue a Defects Liability Certificate and certify any final payment that is due to the contractor within 30 days of receiving the contractor's account if it is correct and complete. If it is not, the Project manager shall issue within 30 days a schedule that states the scope of the corrections and 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. The employer shall pay the Contractor the amount due in the final certificate within 60 days.

33. Termination

- 33.1 The Employer or the Contractor may terminate the contract if the other party causes a fundamental breach of the contract. These fundamental breaches of the contract shall include, but shall not be limited to, the following;
- (a) the contractor stops work for 30 days when no stoppage of the work is shown on the current program 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 contractor is declared bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
 - (d) A payment certified by the Project manager is not paid by the Employer to the Contractor within 30 days (for interim certificate) or 60 days (for final certificate) of issue.
 - (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.
- 33.2 when either party to the contract gives notice of breach of contract to the project manager for a cause other than those listed under Clause 33.1 above, the Project Manager shall decide whether the breach is fundamental or not.
- 33.3 Notwithstanding the above, the employer may terminate the contract for convenience.
- 33.4 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. The Project manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the works executed and materials, goods, equipment and temporary buildings onsite.

34 Payment Upon Termination

- 34.1 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 and delivered to site up to the date of the issue of the certificate. Additional liquidated damages shall not apply. If the total amount due to the employer exceeds any payment due to the contractor, the difference shall be a debt payable by the contractor.

- 34.2 If the Contract is terminated for the employer's convenience or because of a fundamental breach of contract by the Employer, the project manager shall issue a certificate for the value of 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.
- 34.3 The Employer may employ and pay other persons to carry out and complete the works and use all materials on site, plant, equipment and temporary works.
- 34.4 The Contractor shall, during the execution or after the completion of the works under this clause remove from the site as and when required, within such reasonable time as the Project manager may in writing specify, any temporary buildings, plant, machinery, appliances, good or materials belonging to or hired by him, and in default the employer may (without being responsible for any loss or damage) remove and sell any such property of the contractor, holding the proceeds less all costs incurred to the credit of the contractor. Until after completion of the works under this clause the employer shall not be bound by any other provision of this contract to make any payment to the contractor, but upon such completion as aforesaid and the verification within a reasonable time of the accounts therefore the Project manager shall certify the amount of expenses properly incurred by the employer and, if such amount added to the money paid to the contractor before such determination exceeds the total amount which would have been payable on due completion in accordance with this contract the difference shall be a debt payable to the employer by the contractor; and if the said amount added to the said money be less than the said total amount, the difference shall be a debt payable by the employer to the contractor.

35 Release from performance

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

36. Corrupt gifts and payments of commission

The contractor shall not;

- (a) Offer or give or agree to give to any person in the service of the employer any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or for showing or forbearing to show favor or disfavor to any person in relation to this or any other contract for the employer.
- (b) Enter into this or any other contract with the employer in connection with which commission has been paid or agreed to be paid by him or on his behalf or to his knowledge, unless before the contract s made particulars of any such commission of the terms and conditions of any agreement for the payment thereof have been disclosed in writing to the employer.

Any breach of this condition by the contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the contractor) shall be an offence under the provisions of the Public Procurement Regulations issued under the Exchequer and audit Act Cap 412 of the laws of Kenya.

37. Settlement of Disputes

37.1 In case any dispute or difference shall arise between the Employer or the Project Manager on his behalf and the Contractor, either during the progress or after the completion or termination of the Works, such 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 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

On the request of the applying party. The institution written to first by the aggrieved party shall take precedence over all the other institutions.

- 37.2 the arbitration may be on the construction of this Contract or on any matter or thing of whatsoever nature arising thereunder or in connection therewith, including any matter or thing left by this Contract to the discretion of the Project Manager, or the withholding by the Project Manager of any certificate to which the Contractor may claim to be entitled to or the measurement and valuation referred to in clause 23.0 of these conditions, or the rights and liabilities of the parties subsequent to the termination of Contract.
- 37.3 Provided that no arbitration proceedings shall be commenced on any dispute or difference where notice of a dispute or difference 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.
- 37.4 Notwithstanding the issue of a notice as stated above, the arbitration of such a dispute or difference shall not commence unless an attempt has in the first instance been made by the parties to settle such dispute or difference amicably with or without the assistance of third parties. Proof of such attempt shall be required.
- 37.5 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:
 - 34.5.1 The appointment of a replacement Project Manager upon the said person ceasing to act
 - 34.5.2 Whether or not the issue of an instruction by the Project Manager is empowered by these Conditions.
 - 34.5.3 Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
 - 34.5.4 Any dispute or difference arising in respect of war risks or war damage.
- 37.6 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 Employer and the Contractor agree otherwise in writing.
- 37.7 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.

37.8 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.

37.9 The award of such Arbitrator shall be final and binding upon the parties.

SECTION 1 (IV)

SECTION 1 (IV)

APPENDIX A - APPENDIX TO CONDITIONS OF CONTRACT

1 THE EMPLOYER IS

Name: KERIO VALLEY DEVELOPMENT AUTHORITY

Address: P. O. Box 2660 -30100, Eldoret, Kenya.

Name of Authorized Representative: The Managing Director

Telephone: +254-053-2063361-2

Facsimile: +254-053-2063364

Email: info@kvda.go.ke

2 **The Project Manager shall be** Employer or Persons designated by the Employer as such.

3 **The name (and identification number) of the contract is**

CONSTRUCTION OF OFFICE BLOCK IN SAMBURU.

TENDER NO.KVDA/T/05/2020-2021

4 **The Work consists of** Renovation works consisting demolitions, wall partitions, ceiling works, floor finishes, Joinery fittings as well as mechanical and Electrical works on a standalone bungalow.

5 **The start date shall be** *(to be determined on award)*

6 **The intended completion date for the whole of the works** *(to be determined on award)*

7 **The following documents also form part of the contract** *(to be determined)* ✦ *Bills of Quantities*

8 **The contractor shall submit a revised program for the works within Seven (7) day of delivery of the letter of acceptance.**

9 **The site possession date shall be** *(to be determined on award)*

10 **The site is located at** KVDA offices upper hill behind World Bank and Equity Centre

11 **The Defect liability period is** 6 months (from date of practical completion)

- 12 **Other Contractors, Utilities, etc to be engaged by the employer** *(to be determined)*
- 13 **The minimum insurance covers shall be;**
- c.1 The minimum cover for insurance of the Works and of Plant and Materials in respect of the Contractor's faulty design** shall be the entire contract value
- c.2 The minimum cover for loss or damage to Equipment is** *(Contractor to determine)*
- c.3 The minimum for insurance of other property is** Ksh 5 million
- c.4 The minimum cover for personal injury or death insurance**
- ✦ **for the contractor's employees is** Ksh 10 million
- ✦ **and for other people is** Ksh 10 million
- 14 **The following events shall also be compensation events** *(to be determined)*
- 15 **The period between Program updates is** every One (1) months
- 16 **The amount to be withheld for late submission of an updated program** *(to be determined)*
- 17 **The proportion of payments retained is** 10% percent subject to a limit of 5% of the contract value
- 18 **The Price Adjustment Clause** shall not apply if a **fixed price** contract is awarded
- 19 **The liquidated and ascertained damages for the whole of the works is** Ksh 200,000 per month
- 20 **The performance security shall be for the following minimum amounts equivalent as a percentage of the Contract price** (ten) percent (10%)
- 21 **The completion period of the works is** *(to be determined on award)*

- 22 **The rate of exchange for calculation of foreign currency payment is** *(to be determined)*
- 23 **The schedule of basic rates used in pricing by the contractor is as attached** *(contractor to attach)*
- 24 **Advance payment** shall be granted based on an acceptable bank advance payment bond (guarantee) and to be recovered in accordance with clause 23.

APPENDIX B - APPENDIX TO INSTRUCTIONS TO TENDER

- 1 Number of **sealed bound** copies of tender required to be submitted are: **TWO** number **(the first one clearly and labelled 'Original' and the second one 'Copy')**. Information in the copy labelled Original will prevail in the event of any discrepancy.

2. DELIVERY OF TENDERS

Tenders and all documents in connection therewith, should be put in an envelope, sealed and clearly labelled **ORIGINAL** or **COPY** respectively and addressed as below

Construction of office block in Samburu.

TENDER NO.KVDA/T/05/2020-2021

**The Managing Director
KVDA
P.O. Box 2660-30100
Eldoret**

Tenders should be deposited in the Tender Box by **Wednesday, 30TH September 2020 at 10.30AM**, the Offices of KVDA..... as specified in the letter of invitation to tender.

Thereafter, the tenders will be opened at the place and time as specified in the same letter.

Tenders arriving later than the specified time will not be considered.

3. COMPLETION OF TENDERS

- a) All documents forming the tender must be completed in ink and the offer must be made in the Form of Tender.
- c) The contractor is required to check the numbers of the pages and should any be found to be missing or in duplicate or the figures or writing indistinct, he must inform the quantity surveyor at once and have the same rectified. Should the contractor be in doubt about the precise meaning or any item, word or figure, for any reason whatsoever, or observe any apparent omission

of works or figures, he must inform the quantity surveyor immediately in order that the correct meaning may be decided upon before the date of the submission of the tender.

- d) No liability whatsoever will be admitted nor claim allowed in respect of errors in the contractor's tender due to mistakes in the documents which should have been rectified in the manner described above.
- e) The contractor shall not alter or otherwise qualify the text of these documents. Any alteration or qualification made without authority will be ignored and the text of these documents as printed will be adhered to.
- f) The contractor shall be deemed to have made allowance in his prices generally to cover items in the preliminaries or additions to prime cost sums or other items, if these have not been priced against the respective items.

4. TENDER RATES TO BE INCLUSIVE OF VAT (Value added tax)

The Tenderers rates or prices shall be deemed to be inclusive of VAT at the prevailing rate.

- 5. The minimum acceptable tender security shall be **Kshs 100,000/=**.
- 6. The tender shall remain valid for period of ninety (90) days from date of submission. However, under exceptional circumstances the Employer may request that tenderers extend the valid period for specific period.

7. Construction programme - condition precedent

It will be a contractual condition that the tenderer shall execute the contract to completion within the accepted time period. The tenderer will provide a realistic Programme of execution of the works (progress chart) that shall become binding in the event of the tender being awarded and subject to any amendments that may be made with the approval of the Architect.

APPENDIX C – SPECIAL CONDITIONS OF CONTRACT

1. Bidder attention is drawn to item 1.7 of the instructions to tender on page 8 and the table below.
2. **All bidders must submit the requisite additional technical information as per the table below which shall be evaluated as shown:**

| Ref | Particulars / Criterion | | Maximum score |
|------|---|------------|---------------|
| (i). | Mandatory Requirements (failure to adhere will lead to automatic disqualification thus no further evaluation of your tender) <ul style="list-style-type: none"> i. Valid Tender Security (<i>refer to proposed format</i>) ii. Completed signed site visit certification form (<i>refer to format</i>) iii. Company registration particulars (certificate of incorporation, memorandum and articles and of association, registered office and address) iv. Company PIN <i>I-tax</i> generated (Kenyan Companies) v. Valid tax compliance certificate (Kenyan Companies) vi. NCA registration certificate vii. Summarized audited financial statements for the last 3 years viii. All pages to be serialized (<i>i.e. all pages to be numbered</i>) | | |
| (ii) | Technical Details and Methodology Comprehensive Methodology | (20 marks) | 35% |

| | | | |
|------------|---|------------|----------------------|
| | Proposed programme from award, procurement, site installation and commissioning (bidder to clearly state any necessary assumptions made) | | |
| Ref | Particulars / Criterion | | Maximum score |
| | <p><i>10 marks for presentable logical practical program including key planning, design & construction activities & task, long lead items, proposed approval stages, etc</i></p> <p><i>5 marks for notable special / specific attribute / rapid execution and construction approach</i></p> | (15 marks) | |
| (ii) | <p>Major items of construction tools and equipment available to carry out the contract</p> <p>Proposal for the timely acquisition and mobilization (owned, lease, hire, etc) of the essential equipment listed as required for the works)</p> <p><i>5marks for relevant list of plant and equipment to be used for works and undertaking of availability</i></p> <p><i>5marks for off- site facilities and undertaking of availability off-site activities, logistics, fabrication and preparation</i></p> | | 10% |
| (iii) | <p>Evidence of relevant past experience in similar works and current work load and completion status disclosure</p> <p>Provide list showing project name & location in Kenya, contract period, commencement date, completion date, percentage currently complete</p> | | |

| | | | |
|------------|---|------------------------------------|----------------------|
| | <p>Evidence of 5 no. similar projects either completed in the last 5 years or currently ongoing.</p> <p><i>Photos of the relevant projects demonstrating contractor's capability to handle similar projects 4 marks</i></p> | (4 marks per relevant project) | 20% |
| (iv) | Evidence of adequacy of working capital & financial | | 15% |
| Ref | Particulars / Criterion | | Maximum score |
| | <p>capability</p> <p>a) Letter from bank confirming availability of adequate funds to perform the contract (minimum Kshs. 4 million)</p> <p>b) Confirmation of other sources working capital, credit lines and the like.</p> | <p>10%</p> <p>5%</p> | |
| (v) | <p>Qualification and experience of necessary key trades and personnel</p> <p><i>Provision staff CVs for</i></p> <p><i>Overall team leader (with several years' relevant experience), partition/Interior works & supervision staff, building works staff</i></p> | | 10% |
| (vi) | <p>Duly completed tenders</p> <p><i>All relevant forms duly completed tender questionnaire; confidential business questionnaire; details of sub contractors; litigation history; declaration & anti corruption affidavit</i></p> <p><i>(5marks)</i></p> <p><i>Completed form of tender, priced bills of quantities (5marks)</i></p> | | 10% |

| | | | |
|-------|-----------------------------------|--|-------------|
| | | | |
| (vii) | TOTAL TECHNICAL SCORE (ST) | | 100% |

FINANCIAL EVALUATION

The evaluation shall be in two sections

1. Preliminary examinations and
2. Tender sum Comparisons

A) PRELIMINARY EXAMINATIONS

The preliminary examination in the Financial Evaluation shall be in accordance with **clause 5** of Instruction to Tenderers.

The parameter to be considered under this section includes the following:

Arithmetic errors and comparison of rates

(1) Arithmetic Errors

The bid shall be checked for arithmetic errors based on the rates and the total sums indicated in the bills of quantities.

Confirmation shall be sought in writing from the tenderers whose tender sums will be determined to have a significant arithmetic error to their disadvantage, to confirm whether they stand by their tender sums. Discount if any shall be treated as an error.

(2) Comparison of rates

The evaluation committee will compare rates from different bidders and note consistency of rates and front loading. The evaluation committee will judge and make an appropriate decision giving evidence.

B) TENDER SUMS COMPARISONS

In this section, tender sums will be compared to the average of all sums for bidders who have qualified from **STAGE 3A** and score awarded to a maximum of 20 as shown below.

(1) Preliminary Average

- i) The tender sums of various bidders, who qualify at **STAGE 3A** and the engineer's estimates, be compared against their **average**.
- ii) Any tenderer whose tender percentage deviation is 20% higher or lower than the average obtained above, will be deemed to be unreasonably high or low and shall not be included in determining the mean in table 3, their bids will not be evaluated further. The Engineer's estimate will also be subjected to the same treatment.

The detailed scoring plan shall be as shown in table 3 below:

TABLE 3

| Item | Description | Score | Max. score |
|------|--|-------|------------|
| I | <p>Tender Sums: (The tender sums of bidders, who qualify at STAGE 3A and the engineer's estimates, shall be reduced by omitting PC sums, provisional sums and contingency from the respectful amounts. The deviation of the reduced amounts in respect of each bidder from the Engineer's reduced amount shall then be worked out as a percentage of the Engineer's reduced amount (Rounded off to one (1) decimal point) and scores allocated as follows :-)</p> <ul style="list-style-type: none"> ○ Deviation of between 0% and 1% ----- 20 ○ Deviation of between 1.1% and 2% ----- 19 ○ Deviation of between 2.1% and 3% ----- 18 ○ Deviation of between 3.1% and 4% ----- <p style="text-align: center;">17</p> <p style="text-align: center;">Between { 4.1% and 18% } As above</p> | | 20 |

SECTION 1(v)

Standard Forms

SECTION 1(viii)

STANDARD FORMS

- (i) Form of invitation for tender (issued with the tender by the Employer)
- (ii) Form of tender (to be completed)
- (iii) Letter of acceptance (to be issued after award)
- (iv) Form of agreement/signature page (to be left blank)
- (v) Form of tender security (to be completed)

(vi) Performance bank guarantee (to be given before award)

(vii) Bank Guarantee for Advance Payment (to be given before advance payment release)

(viii) Confirmation of sufficiency of information

(ix) Details of Sub-Contractors

FORM OF TENDER

Dear Sir,

Construction of office block in Samburu.

TENDER NO.KVDA/T/05/2020-2021

Having visited the site and examined the tender documents for the execution for the above works, we the undersigned are willing to contract and perform fully, the whole of the said works in accordance with the said **specifications, drawings, Bills of Quantities and Conditions of Contract** and to enter into a contract and complete the whole of the works within the time stated in this Form of Tender.

NON FLUCTUATING / FIXED PRICE TENDER

Tender figure inclusive of **inclusive** of V.A.T, Prime Cost & Provisional sums and contingencies.

KSHS. (FIGURES)

KSHS. (WORDS)

.....

FOR A **COMPETITIVE COMPLETION PERIOD OF.....WEEKS**

COMPLETION PERIOD

Further we the undersigned, agree to complete the whole of the works within the agreed time, which shall be the contract period as defined within the conditions of contract.

PROVISION OF PERFORMANCE BOND

Further we the undersigned, agree that if our tender is accepted we will enter into a Performance Bond for the due performance of the contractor with a bank, insurance company or fidelity guarantee approved by the employer

TENDER VALIDITY PERIOD

Further we, the undersigned, agree that unless and until a formal agreement is executed, this tender together with your acceptance and bid bond thereof, shall constitute a binding contract between us, and it shall remain a valid offer for Ninety (90) days.

EXAMINATION OF TENDER DOCUMENTS

Further we, the undersigned, have examined all the documents, which will form part of this contract, and we have no further questions relating to them. We have personally signed each document as indemnification.

Further, we, the undersigned understand that the lowest or any portion of any tender will not necessarily be accepted nor will any expense incurred by the tenderer in the preparation of this tender be allowed.

SIGNATURE OF TENDERER

NAME & ADDRESS OF TENDERER
(Official rubber stamp)

.....

DATE SIGNED

.....

WITNESSED BY:-

SIGNATURE OF WITNESS

NAME & ADDRESS OF WITNESS

.....

DATE WITNESSED

FORM OF TENDER SECURITY

WHEREAS..... (Hereinafter called "the Tenderer") has submitted his tender datedfor the construction of
..... *[Name of Contract]*

KNOW ALL PEOPLE by these presents that WE having our registered office at (Hereinafter called "the Bank") are bound unto (Hereinafter called "the Employer") in the sum of Kshs For which payment well and truly to be made to the said Employer, the bank binds itself, its successors and assigns by these presents sealed with the Common Seal of the said Bank thisDay of 20.....

THE CONDITIONS of this obligation are:

1. If after tender opening the tenderer withdraws his tender during the period of tender validity specified in the instructions to tenderers

OR

2. If the tenderer, having been notified of the acceptance of his tender by the Employer during the period of tender validity:
 - (a) fails or refuses to execute the form of Agreement in accordance with the Instructions to Tenderers, if required; or
 - (b) fails or refuses to furnish the Performance Security, in accordance with the Instructions to Tenderers;

We undertake to pay to the employer up to the above amount upon receipt of his first written demand, without the employer having to substantiate his demand, provided that in his demand the employer will note that the amount claimed by him is due to him, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including Thirty (30) days after the period of tender validity, and any demand in respect thereof should reach the bank not later than the said date.

(Date)

(Signature of the bank)

(Witness)

(Seal)

SURETY UNDERTAKING

TENDER FOR **Office Renovation works at Kerio Valley Development Authority (KVDA), Nairobi.**

TENDER NO.....

We (Surety)

of P.O. Box

hereby undertake to provide a guarantee in the form of **Performance Bond** supplied with these tender documents, under seal if so required, for the due performance of the contract to the extent to **ten percent (10%)** of the awarded contract sum in the event of

..... (Tenderer)
of (address)

Being awarded the tender for completion and 6 (six) months maintenance TENDER FOR **Office Renovation works at Kerio Valley Development Authority (KVDA), Nairobi.**

TENDER NO.KVDA/T/01/KVDA/2020-2021 FOR **KVDA** in accordance with the standard tender document prepared by Public Procurement Directorate, Ministry of Finance and Planning for use by Central Government Ministries, Local Authorities, State Corporations and other Public Institutions in the Procurement of Works. (ie Buildings and Associated Civil Engineering Works) whose value exceeds Ksh 5,000,000/= by local and international competitive tendering, a copy of which has been inspected by us and without any additions or limitations.

We further agree to execute a performance bond under the forgoing terms within FOURTEEN (14) DAYS of being called upon to do so.

Should the said (tenderer),
.....

Not be awarded the contract, it is understood that this offer shall become null and void.

Signed for and on behalf of surety
(Authorised signatory)

Name & address of surety (official rubber stamp)

Date signed

FORM OF AGREEMENT / SIGNATURE PAGE

THIS AGREEMENT, made the..... Day of20_____ between

_____ of (or whose registered office is

Situated at) _____

(Hereinafter called "the Employer") of the one part AND

_____ of (or whose registered

Office is situated at) _____

(Hereinafter called "the Contractor") of the one part

WHEREAS the Employer is desirous that the Contractor executes

_____ (Name and identification number of Contract) (Hereinafter called "the Works") located at

_____ [place / location of the works] and the Employer has accepted the tender submitted by the Contractor for the execution and completion of such Works and the

Remedying of any defects therein for the Contract Price of Kshs.....[Amount in figures]

Kenya shillings..... [Amount in words].

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form and shall be read and construed as part of this Agreement i.e.

- 1) Letter of Acceptance
- 2) Form of Tender
- 3) Conditions of Contract Part I
- 4) Conditions of Contract Part II and Appendix to Conditions of Contract
- 5) Specifications
- 6) Drawings
- 7) Priced Bills of Quantities

3. In consideration of the payment to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer 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 thereto have caused this Agreement to be executed the day and year first before written.

The common seal of

Was hereunto affixed in the presence of

Signed sealed, and delivered by the said

Binding Signature of Employer

Binding Signature of Contractor

In the presence of (i) Name

Address

Signature

(ii) Name

Address

Signature

.....

(iii) Name

Address

.....

Signature

.....

(iv) Name

Address

Signature

PERFORMANCE GUARANTEE

To: _____ (Name of Employer) _____ (Date)

_____ (Name of employer)

Dear Sir,

WHEREAS..... (Hereinafter called "the Contractor") has undertaken, in pursuance of Contract for.

_____ date _____ to execute (herein after called the "works")

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for a sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee:

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of Kshs.....(*Amount of Guarantee in figures*)

Kshs.....(*amount of Guarantee in words*), and we undertake to pay you, up to your first written demand and without cavil or argument, any sum or sums within the limits of Kshs..... (*Amount of Guarantee in words*) as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change, addition or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any change, addition, or modification.

This guarantee shall be valid until the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR.....

Name of Bank.....

Address.....

Date.....

BANK GUARANTEE FOR ADVANCE PAYMENT

To: _____ [name of Employer] _____ [date]

_____ [address of Employer]

Gentlemen,

Ref: _____ [name of contract]

In accordance with the provisions of the Conditions of Contract f the above mentioned Contract, We, _____ [name and address of Contractor] (hereinafter called "the Contractor") shall deposit with

(Name of Employer) a bank guarantee to guarantee his proper and faithful performance under the said Contract in an amount of Kshs.

_____ [amount of Guarantee in figures]

Kenya Shillings _____ [amount of Guarantee in words]

We, _____ [bank or financial institution], as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to _____ (name of Employer) on his first demand without whatsoever right of objection on our part and without his first claim to the Contractor, in the amount not exceeding Kshs. _____ [amount of guarantee in figures] Kenya Shillings

[Amount of guarantee in words], such amount to be reduced periodically by the amounts recovered by you from the proceeds of the Contract.

We further agree that no change or addition to or other modification of the terms of the Contract or of the works to be performed hereunder or of any of the Contract documents which may be made between _____ [name of Employer] and the Contractor, shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

No drawing may be made by you under this guarantee until we have received notice in writing from you that an advance payment of the amount listed above has been paid to the Contractor pursuant to the Contract.

This guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ [name of Employer] receives full payment of the same amount from the Contract.

Yours faithfully,

Signature and seal

Name of the Bank or Financial institution

Address _____

Date _____

Witness: Name: _____

Address: _____

Signature: _____

Date: _____

CONFIRMATION OF SUFFICIENCY OF INFORMATION PROVIDED / SITE VISIT

1. This is to certify that we _____
(Name of Tenderer)

Of the firm of _____
(Name of firm tendering)

Having studied the contract documents, have made our selves familiar with all local conditions likely to influence the works and cost thereof.

We undertake to treat all provided information with strict confidentiality.

We further certify that we are satisfied with the description of the works and explanations given and confirm as follows:

We visited the site on _____ and confirmed all necessary information.

We did not visit the site but confirm sufficiency of provided information _____

Signed

(Name & Signature of Tenderer)

QUALIFICATION INFORMATION

1. Individual Tenderers or Individual Members of Joint Ventures

1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate);

Place of registration: _____

Principal place of business _____

Power of attorney of signatory of tender _____

1.2 Total annual volume of construction work performed in the last five years

Year

Volume

Currency

Value

1.3 Work performed as Main Contractor on works of a similar nature and volume over the last five years. Also list details of work under way or committed, including expected completion date.

Project name Name of client Type of work Value of

1.7 Evidence of access to financial resources to meet the qualification requirements:

cash in hand, lines of credit, etc. List below and attach copies of supportive documents.

1.8 Name, address and telephone, telex and facsimile numbers of banks that may provide reference if contacted by the Employer.

1.9 Statement of compliance with the requirements of Clause 1.2 of the Instructions to Tenderers.

1.10 Proposed program (work method and schedule) for the whole of the Works.

2 Joint Ventures

2.4 The information listed in 1.1 – 1.10 above shall be provided for each partner of the joint venture.

2.5 The information required in 1.11 above shall be provided for the joint venture.

2.6 Attach the power of attorney of the signatory of the tender authorizing signature of the tender on behalf of the joint venture

2.7 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that:

a) All partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;

- b) One of the partners will be nominated as being in charge, authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture; and
- c) The execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

TENDER QUESTIONNAIRE

Please fill in block letters.

1. Full names of tenderer

.....

2. Full address of tenderer to which tender correspondence is to be sent (unless an agent has been appointed below)

.....

3. Telephone number (s) of tenderer

.....

5. Name of tenderer's representative to be contacted on matters of the tender during the tender period

.....

6. Details of tenderer's nominated agent (if any) to receive tender notices. This is essential if the tenderer does not have his registered address in Kenya (name, address, telephone, telex)

.....

.....

Signature of Tenderer

Make copy and deliver to : _____ (Name of Employer)

CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2 (c) and 2 (d) whichever applies to your type of business.

You are advised that it is a serious offence to give false information on this Form.

Part 1 – General

Business Name

Location of business premises; Country/Town.....

Plot No..... Street/Road

Postal Address..... Tel No.....

Nature of Business.....

Current Trade Licence No..... Expiring date.....

Maximum value of business which you can handle at any time: K.
pound.....

Name of your bankers.....

Branch.....

Part 2 (a) – Sole Proprietor

Your name in full..... Age.....

Nationality..... Country of Origin.....

*Citizenship details

Part 2 (b) – Partnership

Give details of partners as follows:

| | Name in full | Nationality | Citizenship Details | Shares |
|---|--------------|-------------|---------------------|--------|
| 1 | | | | |
| 2 | | | | |

3.....
Part 2(c) – Registered Company:

Private or public.....

State the nominal and issued capital of the Company-

Nominal Kshs.....

Issued Kshs.....

Give details of all directors as follows:

Name in full . Nationality. Citizenship Details*. Shares.

1.....

2.....

3.....

4.....

Part 2(d) – Interest in the Firm:

Is there any person / persons in (Name of Employer) who has interest in this firm? Yes/No..... (Delete as necessary)

I certify that the information given above is correct.

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

- Attach proof of citizenship

DETAILS OF SUB-CONTRACTORS

If the Tenderer wishes to sublet any portions of the Works under any heading, he must give below details of the sub-contractors he intends to employ for each portion. Failure to comply with this requirement may invalidate the tender.

(1) Portion of Works to be sublet:

Full name of Sub-contractor
and address of head office:

Sub-contractor's experience of similar works carried out in
the last 3 years with
Contract value:

(2) Portion of Works to be sublet:

Full name of Sub-contractor
and address of head office:

Sub-contractor's experience of similar works carried out in
the last 3 years with
Contract value:

(2) Portion of Works to be sublet:

Full name of Sub-contractor
And address of head office:

Sub-contractor's experience of similar works carried out in
the last 3 years with
Contract value:

[Signature of Tenderer]

Date

Attach additional schedules if necessary

DECLARATION FORM & ANTI CORRUPTION AFFIDAVIT

Date

To

The tenderer i.e. (name and address)

declare

the following:

- a) Has not been debarred from participating in public procurement.
- b) Has not been involved in and will not be involved in corrupt and fraudulent practices regarding public procurement.
- c) All information provided in this tender is accurate and correct

Title

Signature

Date

(To be signed by authorized representative and officially stamped) **TENDER-SECURING
DECLARATION**

[The Tenderer shall fill in this Form in accordance with the instructions indicated.] Date:
[insert date]

Tender No.: [insert tender number]

To: [insert name of Procuring Entity]

We, the undersigned, declare that: We understand that, according to your conditions, tenders must be supported by a Tenders-Securing Declaration. We accept that we will automatically be suspended from being eligible for tendering in any contract with the Procuring Entity for the period of time as determined by the Authority if we are in breach of our obligation(s) under the tender conditions, because we: (a) have withdrawn our Tender during the period of Tender validity specified in the Form of Tender; or (b) does not accept the Procuring Entity's corrections of arithmetic errors in accordance with the Instructions to Tenderers; or (c) having been notified of the acceptance of our Tender by the Procuring Entity during the period of Tender 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 ITT. We understand this Tender Securing Declaration shall expire if we are not the successful Tenderer, upon the earlier of (i) our receipt of your notification to us of the name of the successful Tenderer; or (ii) twentyeight (28) days after the expiration of our Tender validity period. Signed: [insert signature of person whose name and capacity are shown] Name: [insert complete name of person signing the Tender Securing Declaration] In the capacity of [insert legal capacity of person signing the Tender Securing Declaration] Duly authorized to sign the Tender for and on behalf of: [insert complete name of Tenderer] 50

Dated on _____ day of _____, _____ [insert date of signing]
Corporate Seal (where appropriate) [Note: In case of a Joint Venture, the Tender Securing Declaration must be in the name of all partners to the Joint Venture that submits the tender.]

SECTION 2

SPECIFICATIONS

GENERAL SPECIFICATIONS

BUILDING AND CIVIL ENGINEERING WORKS

SPECIFICATIONS

| PART NO | TITLE | Page |
|---------|---------------------------|------|
| 1. | GENERAL | 84 |
| 2. | DEMOLITIONS & ALTERATIONS | 86 |
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| 4. | CONCRETE WORK | 97 |
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GENERAL

A. MATERIAL GENERALLY

All materials used on the works shall be new and of the qualities and kinds specified herein and equal to approved samples. Deliveries shall be made sufficiently in advance to enable samples to be taken and tested if required. No materials shall be used until approved and all materials which are not approved or which are

damaged, contaminated or have deteriorated in any way or do not comply in any way with the requirements of this specification shall be immediately removed from the site at the Contractor's expense.

B. MATERIALS FOR WHICH THERE IS A KENYA BUREAU OF STANDARDS SPECIFICATION

All materials used in the works for which a Kenya Bureau of Standard Specification has been published shall conform with the latest edition thereof in every way. The Architect reserves the right to demand that the Contractor shall obtain at his own expense a certificate in respect of any material to state that it is in accordance with the Kenya Bureau of Standard Specifications.

C. MATERIALS FOR WHICH THERE IS NO KENYA BUREAU OF STANDARDS SPECIFICATION

All materials used in the works for which no Kenya Bureau of Standard Specification has been published shall conform with the British Standard Specifications for such material. If there are no published standard as specified for any materials, the quality of such materials shall be generally of a Standard equal to those for which there is a Kenya Bureau of Standard or British Standard Specification.

D. ALTERNATIVES TO PROPRIETARY BRANDS

Where materials are specified by their proprietary names or where fittings are specified by catalogue numbers, or descriptions, the contractor may offer material or fittings of alternative manufacture which are of equal quality. Such alternatives must be approved before being used in the works and the Contractor shall allow for this, but prior to tendering he may submit to the Architect for approval the names of any suppliers or manufacturers whose products he intends to use, together with catalogue numbers and descriptions and/or samples but the decision of the Architect will be final.

E. SAMPLES

The Contractor shall furnish for approval, with reasonable promptness all samples of material and workmanship required by the Architect. The Architect shall check and approve such for conformance with the design concept of the works and for compliance with the information given in the Contract Documents. The work shall be in accordance with approved samples.

- (a) All material samples shall be delivered to the Architect's Office with all charges in connection therewith paid by the Contractor.

- (b) Duplicate final approved samples, in addition to any required for the Contractor's use, shall be furnished to the Architect, one for office use and one for the site.
- (c) Samples shall be furnished so as not to delay fabrication, allowing the Architect reasonable time for consideration of the sample submitted.
- (d) Each sample shall be properly labelled with the name and quality of the material, manufacturer's name, name of project, the Contractor's name and the date of submission and the specification number to which the sample refers.

GENERAL SPECIFICATIONS

A MEASUREMENT AND TESTING EQUIPMENT

The Contractor shall provide the following equipment for carrying out measuring and control tests on the site and maintain in full working order:

- (a) Straight edges 2 metres and 4 metres long for testing the accuracy of the finished concrete.
- (b) A glass graduated cylinder for use in the silt test of organic impurities in the sand.
- (c) Slump test apparatus
- (d) 150 mm steel cube moulds with base plates and tamping rod to BS 1881.
- (e) Two 30 metre steel tapes
- (f) One dumpy or quickset level and staff.
- (g) Micrometer

DEMOLITIONS & ALTERATIONS S

DEMOLITIONS AND ALTERATIONS

A. DEMOLITIONS

Demolitions, taking out and cutting away shall be carefully performed and every precaution shall be taken to ensure the safety of the work. If damage should occur in the carrying out the demolitions or alterations the contractor shall reinstate and make good the same at his own expense.

B. PROTECTION

Supply, erect and maintain during the cutting of openings etc., all necessary protection to the existing premises against damage by weather or other cases.

C. LAYING THE DUST

Allow for laying the dust as far as possible during the alteration by watering with a hose or other means

D. MAKING GOOD

All making good of block work, building up of opening etc., shall be solid block work unless otherwise described, in cement mortar (1:4) properly cut, toothed and bonded and pinned up to existing work and pointed where necessary.

E. CREDIT FOR MATERIALS

Unless otherwise specified materials arising from the demolitions and alterations will become the property of the contractor. If the Contractor wishes to allow a credit for any such materials the appropriate allowance should be included in the credit column of the Bills of Quantities. In the event that the Employer wishes to take possession of any such materials the contractor will only be entitled to receive compensation to the amount of credit indicated.

F. DEFINITIONS OF TERMS

The following definitions explain and simplify the terms indicated in the description of the works.

Removal shall include:

Dismantling/pulling down/taking out/taking up/stripping etc., at the site of the works, getting from the site of the works to the outside of building by whatever means is necessary and disposal.

Disposal shall include:

Handling on site to store or to pick up point for loading

Loading into skips or lorries

Transporting away from site to yard, store or tip

Payment of all tip charges.

Making out shall include:

infilling to voids, openings, gaps and the like and matching materials and construction to existing work as last described consequent on the carrying out of other work.

DEMOLITIONS & ALTERATIONS SPECIFICATIONS

Definitions of Terms (cont'd)

Form opening in brickwork or blockwork shall include:

Shoring up and needling as required, cutting the opening

Designing, providing and inserting required beam or lintol and providing any calculations if required and obtaining building regulation approval.

Providing and inserting cavity gutters and the like forming new arches and the like in facework to match existing.

quoining up jambs

Sealing cavity of hollow walls, at jambs and cill and providing and inserting damp proof course

Making good facework and features to match existing

Forming new external sub-cill or sub-thresholds to match existing

Making good the plasterwork or other applied finishes including making out into reveals and providing metal angle beads to arises where required. Removing debris.

Block in/ Blank off/ Fill in opening in brick work or block work shall include:

Carefully cutting out any flooring in opening and levelling and preparing for raising new work

Cutting toothing for bonding in new work

Filling the opening with brickwork or block work to match existing

Making out facework including cutting out arches, cills or ornamentation around the opening and continuing any general facework pattern

Wedging and pinning to existing soffits

Providing and inserting matching damp proof course

Making out plasterwork including and continuing any existing patterns of labours and making good between new and old work so that after decoration or weathering the original opening cannot be discerned. Remove debris

Remove partition shall include:

Sorting up if required

Sizing, providing and inserting required timber beam if the partition is load bearing

Taking off skirting, picture rails and the like

Stripping off lath plaster or other finished and insulation quilts

Taking out doors, borrowed lights, hatches and the like, frames, linings and architraves and the like within any area of partitioning to be removed

Dismantling and taking studding or framed work

Making good plasterwork or other wall and ceiling finishes including cornices and other enrichments

Making good or making out floor boarding and any applied finishes

Taking out timber skirting, picture rails and the like and removing debris.

Repair roof covering shall include:

The term repair as applied to a tiled or slatted roof includes any or all of the following operations as are necessary:

Renew broken or missing tiles/slates to match existing including nailing with composition nails securing with copper tingles

Re-wedge and re-point flashings and making out with new as required

Re-make tile/slate verges or eaves including any bedding and pointing
Renew defective or missing ridge or hip tiles Remove debris.

DEMOLITIONS & ALTERATIONS SPECIFICATIONS

Definitions of Terms (cont'd)

Renew roof covering shall include:

The term renew roof covering as applied to a tiled or slatted roof includes:

Lift and afterwards re-fix flashings, soakers, ridge, hip and valley coverings etc.

Strip existing roofing and battens, sort and set aside sound tiles/slates

Renew battens and re-lay existing tiles/slates together with new tiles/slates as required all to

Match existing including skirting felt underlay whether previously provided or not, and including any special tile/slates to eaves, verges, ridges and valleys

Re-wedge and re-point flashings

Remove debris

The term renew roof covering as applied to a sheet metal, felt or asphalt roof includes:

Strip existing roofing

Remove sub-base as required

Lift and afterwards re-fix flashing

Renew roof covering to match existing

Re-wedge and re-point flashings Remove debris.

Renew flashings and the like shall include:

The terms renew flashings and the like as applied to pitched or flat roofs includes any or all of the following as may be applicable:

Strip existing flashings, soakers, gutters, ridge and hop covering

Renew all work previously removed in material or similar quality and substance

Re-wedge and re-point all new flashings Remove debris.

Ease and adjust shall include:

The term and adjust as applied to doors, cupboards doors, casement sashes and the like includes:

Re-hanging on existing hinges

Planing edges as necessary

Oiling locks and hinges and leaving in working order

Overhaul shall include:

The term overhaul applied to doors, cupboard doors, casement sashes and the like includes any or all of the following operations as are necessary:

Cramp up loose tenon joints and wedge or re-wedge including gluing wedges

Piercing in any existing hinges or renewing hinges if required

Plane edges

Plane off protruding tenons

Re-fix ironmongery and locks or renew if required

Oil locks and hinges

Renew glass where cracked or broken

Renew putties where loose, missing or defective

Strip existing installation shall include:

The term strip existing installation in relation to electrical installation includes:

Disconnecting at mains and making safe

Disconnecting and taking out all existing conduit, wiring and fittings (except where conduit is to be re-used)

DEMOLITIONS & ALTERATIONS SPECIFICATIONS

Definitions of Terms (cont'd)

Strip existing installations in relation to plumbing and engineering installations shall include:

Turning off incoming supplies

Disconnecting and taking out all existing appliances, fittings and pipework

Removing defunct pipeclips, fixing and the like

Making good walls, floors, ceiling as required
Removing debris

EXCAVATIONS & EARTHWORKS

EXCAVATION AND EARTHWORKS

A. CODES OF PRACTICE

The contractor shall comply with the following codes of practice:

Site Investigations C.P 2001

Earthworks C.P 2003

Foundations C.P 2004

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

B. INSPECTION OF SITE

The contractor is deemed to have visited the site and to have ascertained the nature of the soil and sub-soils to be excavated. No claim will be allowed on account of these being of a different nature from that for which he had allowed in his prices.

C. PROCEDURE

The excavations and fillings shall be carried out in such a manner and order as the Architect may direct.

D. EXISTING TREES SHRUBS AND GRUBBING UP ROOTS

(a) Directions

Cut down and remove shrubs and trees as directed. No shrubs, trees, plants etc., shall be removed except as directed by the Architect and the contractor shall be held responsible for any damage caused by the building operations to those shrubs, trees etc., not so directed to be removed.

(b) Grubbing up roots

Grubbing up roots etc. shall include the following and disposal shall be described under the foregoing clause:

- (1) Stumps and roots of large trees shall be completely removed.
- (2) Stumps and roots of small trees, bushes or other vegetation shall be completely removed to a depth of at least 600mm below formation.
- (3) Smaller stumps and roots of vegetation up to 25mm thick shall be completely removed to a depth of 230mm below formation.
- (4) Fine roots shall be removed to as great depth as is practicable by hand.

Except where the area of grubbing is to be excavated, all resulting holes shall be filled up solid with approved material compacted to the same relative density as the surrounding.

E. SITE CLEARANCE

All grass, vegetable matter etc., must be removed from or burned on site at the commencement of the contract over areas as directed by the Architect.

F. WHITE ANT-INSECTICIDE TREATMENT

The Contractor must destroy any white ant's nests found within the perimeter of the buildings and within a distance of 20 metres from the buildings externally and take out and destroy queen ants, impregnate holes and tunnels with approved insecticides and back-fill with hard materials well rammed and consolidated.

EXCAVATIONS & EARTHWORKS SPECIFICATIONS

Excavations (cont'd)

G. EXCAVATION

- (i) The excavations are to be executed to the widths shown on the Drawings, and to the depth below existing ground levels as directed by the Architect in order to obtain satisfactory foundations. If the contractor excavates to any widths or depths greater than those shown on the drawings or as instructed by the Architect he shall at his own expense fill in such widths or depths of excavation beyond that instructed or shown with concrete to the satisfaction to the Architect.
- (ii) Level and ram bottoms of all excavations to receive concrete, form stepping if necessary or directed to allow for sloping ground, and well water excavations before pouring concrete.
- (iii) The contractor shall report to the Architect when secure bottoms to the excavations have been obtained. Any concrete of other work executed before the excavations have been inspected and approved shall, if so directed, be removed and new work substituted after the excavations have been approved all at the contractor's expense.
- (iv) Excavation made below required levels shall be filled with mass concrete (1:4:8) at the contractor's expense.

A. ROCK

(a) Definition

Rock is defined as any material met within the excavations which are of such size or position that it can only be removed by means of wedges, compressed air plant, or other special plant. All top soils, black cotton and other clay soils, murrum, stone, other fill and all similar materials will NOT be classified as rock.

(b) Rock classification

Soft rock shall be deemed to mean any material which cannot reasonably be removed without the use of mechanical plant such as rippers, compressors, traxcavators, but which does not require drilling, wedging or blasting. Local tuffs, Magadi highly-consolidated laterite, weathered lavas, boulders or outcrops of harder rock not exceeding one cubic metre in volume, Nairobi building stone and similar material shall be classified as soft rock.

Hard rock shall be classified as material which is massive and geologically homogeneous and which requires the use of drilling, wedging or blasting for its removal such as black trap or similar material.

(c) Classification authority

The Engineer's decision shall be final with regard to the classification of excavated materials.

B. BLASTING

No blasting will be permitted without the prior approval of the Architect and local Authority.

C. BORROW PITS

Borrow pits will only be allowed to be opened up on the site on receipt of permission from the Architect.

EXCAVATIONS & EARTHWORKS SPECIFICATIONS

Excavations (cont'd)

D. HARDCORE FILLING

Hardcore for filling under floors etc., shall be good hard stone, ballast or quarry waste (not magadi or similar soft stone) to the approval of the Architect broken to pass not greater than a 150mm ring or to be 75% of the finished thickness of the layers being compacted whichever is the lesser and graded to contain sufficient smaller pieces to fill all voids so that it can be thoroughly compacted. The filling is to be laid in layers each of a consolidated thickness not exceeding 225mm and well watered and compacted by hand or mechanical tampers. The top surface of the hardcore shall be levelled or graded to falls as required and blinded with a 75 mm layer of similar material finely crushed and well rolled and watered immediately before concrete is laid.

E. FILLING OBTAINED FROM THE EXCAVATIONS

Filling obtained from surplus excavated materials is to be free from all weeds, roots, vegetable or other unsuitable materials and is to be filled in layers each of not more than 225 mm finished thickness. Each layer to be well watered and consolidated before the subsequent layer is filled in.

F. MATERIALS FOUND IN THE EXCAVATIONS

No sand, aggregate or other materials found in the excavations is to be used in the works without the written permission of the Architect.

G. INSECTICIDE / ANTI-TERMITE TREATMENT

The top surface of all filling shall be treated with an approved chemical treatment, applied in accordance with the manufacturers printed instructions. The approved specialist treatment shall include a ten year guarantee against termites.

H. PROTECTION OF PIPES, CABLES ETC.

Before commencing works which include excavations or ground levelling by manual or mechanical excavation the contractor shall at his expense ascertain in writing from the Post Office, K.P. & L. Co. Ltd., Engineer's Department (water & sewers section) and all other public bodies, companies and persons who may be affected, the positions and depths of their respective ducts, cables mains or pipes and appurtenances. He shall thereupon search for and locate such services.

The contractor shall at his own expense effectually prop, protect, underpin, alter, divert, restore and make good as may be necessary all pipes, cables or ducts, poles or wires and their appurtenance disturbed or damaged during the progress of the works, or in consequence thereof.

Except that such services as required to be removed or altered by virtue of the layout of the permanent work and not the manner in which the work is carried out, shall be so removed or altered at the expense of the Employer. The contractor shall be liable for the cost of repairs to any services damaged as a result of carrying out the works and shall further be liable for any damage which may be shown during the period of maintenance, to have arisen through the execution of these works.

The rates for excavation, including excavation in rock, must include for trimming, levelling and preparing bottoms and all faces to receive concrete, etc., and for and extra excavation required for planking and strutting. Prices shall include for excavating in any material encountered unless specifically otherwise described, handling, etc., of extra bulk after excavating, or before consolidating, any extra excavation required for formwork or planking and strutting, circular work, grubbing up any old drains, roots, etc., that may be encountered, for trimming sides and levelling and ramming bottoms, forming stepping and trimming excavation or filling of embankments and batters as required.

EXCAVATIONS & EARTHWORKS SPECIFICATIONS

Excavations (cont'd)

In his price for the item, keep excavations free from all water, the contractor shall allow and make provision for keeping the whole of the work thoroughly drained and clear of water below the lowest level of any part of them so long as may be required and if considered necessary by the Architect, continuously day and night by petrol or hand pumps or other mechanical appliances, pipes, chutes, dams, manholes, sumps, diversions or any other means necessary for the purpose. Water pumped from the trenches shall be allowed to run down the road channels but shall be conveyed to the nearest surface water sewer, ditch or river through troughs, chutes or pipes.

I. RATES OF DISPOSAL

Rates of disposal of excavated material are to include for the selection of spoil as it arises and for all double handling and re-excavation from spoil heaps not specifically ordered by the Architect.

J. POLYTHENE SHEETING

Polythene sheeting shall be 1000 gauge or as described obtained from an approved manufacturer. Joints in sheeting shall be treble folded with 150 mm fold and taped at 300 mm intervals with 50 mm wide black plastic adhesive tape as manufactured by Cellotape Limited. The sheeting shall not be laid loose with sufficient wrinkles to permit shrinkage up to 15%.

K. GRASSED AREAS

Areas to be grassed shall be cleared of all debris and roots and dug up to a depth of 300 mm. Where outcrops of rock or murrum occur, these will be covered with suitable soil to a depth of 150 mm.

CONCRETE WORK

CONCRETE WORK

GENERAL

A. AUTHORITATIVE STANDARDS AND CODES OF PRACTICE

The following authoritative standards are referred to hereinafter:

British Standard Specifications are published by the British Standards Institutions 2 Park Street London W.1, England (Abbreviated in text to BS)

| BS | Date | Title |
|----------------|---------|--|
| 12:Pt.2 | 1971 | Portland cement (ordinary and rapid hardening) |
| 812 | 1975 | Methods for sampling and testing of mineral aggregates, sand and fillers |
| 882,1201: Pt.2 | 1973 | Aggregate from natural sources for concrete (including granolithic) |
| 1881: | 1970-71 | Methods of testing concrete |
| 1926: | 1962 | Ready mixed concrete |

| | | |
|-------|------|---|
| 2499: | 1973 | Hot applied joint sealants for concrete pavements |
| 3148: | 1959 | Tests for water for making concrete |
| 3921: | 1974 | Clay bricks and blocks |
| 4251 | 1974 | Truck type concrete mixers |
| 4449: | 1969 | Hot rolled steel bars for the reinforcement of concrete |
| 4461 | 1969 | Cold worked steel bars for the reinforcement of concrete |
| 4466 | 1969 | Bending dimensions and scheduling of bars for the reinforcement of concrete |
| 4483 | 1969 | Steel fabric for the reinforcement of concrete |

American society for Testing and Materials Standard as published by the American Society for Testing and Materials, 1916 Race St., Philadelphia PA19103, U.S.A (abbreviated in text to ASTM)

CONCRETE WORK SPECIFICATIONS

General (cont'd)

| ASTM | Date | Title |
|-------|------|---|
| C88- | 73 | Soundness of Aggregates by use of Sodium sulphate |
| C234- | 71 | Comparing Concretes on the basis of the Bond development with Reinforcement steel |

The following codes of practice are referred to hereinafter:

The British Standard Codes of Practice published by the Council of Codes of Practice, British Standards Institution 2 Park St, London W.1 England (Abbreviated in text to C.P)

| C.P | Date | Title |
|---------------|------|--|
| 110:Pt.1,2 &3 | 1972 | The structural use of concrete |
| 116:Pt.2 | 1976 | Structural use of pre-cast concrete |
| BS 5337: | 1969 | The structural use of concrete for retaining aqueous liquids |

Should the Contractor wish to substitute any other authoritative standard or code of practice for any listed above he should submit details of any such together with two complete copies to the Engineer for approval with his Tender. Approval will only be given to the use of such standards where the Engineer considers the proposed standard or code of practice will give a quality or finished work equal to or better than the specified standard.

All in-situ concrete shall be in accordance with CP 110 except where superseded by this Specification. All pre-cast concrete shall be in accordance with CP 116 except where superseded by this specification.

A. BENDING SCHEDULES

The Engineer will issue bar bending schedules in accordance with BS 4466. The Contractor should check these against the drawings before any cutting bending or construction involving the schedule 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.

B. APPROVALS

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 systems and the construction devices, e.g., cranes, chutes, scaffolding, which he proposes to use for the structural work. The information is to be sufficiently detailed to enable the Engineer to approve or otherwise.

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.

CONCRETE WORK SPECIFICATIONS

MATERIALS

A. CEMENT

Cement, unless otherwise specified, shall be ordinary Portland cement complying with BS12. 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.

Notwithstanding the manufacturer's certificate the Engineer may require that any cement delivered to the site be sampled and tested. Any batch so tested which fails to comply with this specification will be rejected.

All cement shall be delivered to the site in the original sealed bags of the manufacturer or in approved bulk containers.

Cement, unless delivered in bulk, shall be stored in a weatherproof shed, the floor of which shall be raised at least 150 mm 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.

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.

Any cement which upon inspection is considered by the Engineer to have deteriorated in any way will be rejected.

B. AGGREGATES OF CONCRETE

Aggregates for concrete shall, unless otherwise specified, be aggregates from natural sources complying with BS 882. Additionally, the flakiness index when determined by the sieve method described in BS 812 shall not exceed 35 for any size of concrete aggregate. Fine aggregate within or finer than zone 4 of BS 882 shall not be used.

When tested for soundness in accordance with ASTM Test C 88 -73 the loss of weight after 5 cycles shall not exceed 5 percent for any aggregate.

Aggregate that is potentially reactive when tested in accordance with ASTM Test C289-71 for the alkali aggregate reaction shall not be used. The standard for acceptance being that test shall plot to the left of the solid which is shown in figure 2 of the test standard.

Well before any concreting work, the Contractor shall forward to the Engineer for approval details of his proposed source of supply of aggregate giving the aggregate group classification and typical physical properties as required by BS 882.

The Contractor shall provide the Engineer with a certificate for his retention showing that all aggregate regularly comply with the requirements of his Specification.

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. The Engineer may require that any aggregate be tested for potential reactivity in accordance with ASTM Test C289-71.

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.

Coarse aggregate shall be delivered ready screened or screened on site separate nominal single sizes within the limits given in BS 882.

CONCRETE WORK SPECIFICATIONS

Aggregate for concrete (cont'd)

Aggregates of different sizes of types shall be stored in different hoppers or different stockpiles or approved well drained paved areas which shall be separated from each other.

Stockpiles shall be protected against contamination from any source.

Any aggregate which has become contaminated or which does not conform with the above requirements may be rejected by the Engineer.

A. WATER FOR USE WITH CEMENT

Water for use in mixing with cement or for curing concrete shall be from any approved source, clean, fresh and free from organic and other deleterious matter. The Engineer may require that any water be sampled and tested by the method given in BS 3148. Water failing the criteria given in the appendix to BS 3148 will be rejected.

Water for use in mixing with cement shall neither be hotter than 25 degrees centigrade (77 degrees Fahrenheit) nor colder than 5 degrees centigrade (41 degrees Fahrenheit) at the time of mixing.

B. STEEL BARS FOR THE REINFORCEMENT OF CONCRETE

Steel bar for reinforcement shall conform to

KS573:2005 KENYA STANDARD SPECIFICATION FOR COLD WORKED (HIGH YIELD)
STEEL BARS

FOR THE REINFORCEMENT OF CONCRETE

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

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.

Where hot rolled high yield deformed bar 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.

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.

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.

C STEEL FABRIC REINFORCEMENT

Steel fabric reinforcement shall be electrically cross welded steel mesh reinforcement complying with BS 4483 and of the size and weight specified and made of wire to B.S. 4482.

D TYING WIRE

Tying wire 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

A SPACERS

Spacers block required for ensuring that the reinforcement is correctly positioned shall be as small as possible consistent with their purpose, of a shape acceptance 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 10 mm maximum aggregate size and mix proportions to produce the same strength as the adjacent concrete.

Wire shall be cast in the block for the purpose of tying it to the reinforcement. Spacer block of concrete shall not be used until at least 7 days old.

B ADMIXTURES

No admixtures or cements 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.

C WALL TIES

Wall Ties between concrete and adjoining block or block walling shall be "Abbey" slots and anchors as supplied by Abbey Building supplies Ltd or similar approved.

D JOINT FILLERS

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

E JOINT SEALANTS

Joint sealants shall be as described in the drawings and approved by the Engineer. Sealant shall be used strictly in accordance with the manufacturer's instructions.

F HOLLOW CLAY POTS

Pots shall be burnt clay blocks conforming to BS 3921 or similar approved. They shall be true to shape and free from cracks or distortion.

G WATER STOPS

Water stops unless otherwise stated shall be Sikawaterbar. As manufactured by Sika International or similar approved and placed and jointed in accordance with the manufacturer's instructions.

WORKMANSHIP

H FIXING STEEL REINFORCEMENT

Reinforcement shall be bent accurately in accordance with BS 4466 to the shape and dimensions shown in the schedules. All reinforcement shall be bent at temperatures in the range of 5 and 100 degrees centigrade.

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 diameter of such bends shall be not less than twice the diameter of the bar.

CONCRETE WORK SPECIFICATIONS

Reinforcement (cont'd)

No welding of reinforcement shall be carried out without the approval of the Engineer. All reinforcement shall at the time of concreting be free from mud, oil mortar droppings, loose rust, paint grease, mill scale or other deleterious still "blue" from the mill shall not be used.

All reinforcement shall be fixed in the position shown on the Drawings by the adequate use of spacers, tying wires, chairs, stools etc., and shall be so maintained during the concreting operations.

Laps in 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 and for mesh reinforcement two complete meshes.

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.

In severe test conditions reinforcement shall be shaded from direct sunlight and hosed down with clean water prior to concreting to keep the reinforcement below 25 degrees centigrade (77 degrees Fahrenheit).

(a) Nominal Concrete Cover to Reinforcement

Unless otherwise directed the nominal concrete cover to steel reinforcing bars (including links and distribution) in any face shall be:-

| | |
|--------------------------------|------|
| Foundations against earth face | 75mm |
| Foundation against blinding | 50mm |
| Columns (main bars) | 40mm |
| Slabs and stairs | 20mm |
| Wall (main bars) | 20mm |

The tolerance on placing of bars achieve nominal cover \pm 5mm

A FORMWORK

Formwork shall include all temporary or permanent forms required for forming the concrete, together with all temporary construction required for their support.

All formwork shall be so constructed that there shall be no loss of material from the concrete. After hardening the concrete shall be in the position and of the sample, dimensions, and surface finish described in this specification or on the Drawings.

Where internal metal ties are permitted they or their removable parts shall be extracted without damage to the concrete and the remaining holes filled with mortar. No permanently embedded metal part shall have less cover than that indicated for adjacent steel reinforcement.

When holes are to be provided in formwork for weep holes and the like, they shall be neatly trimmed to fit the pipe and caulked with the approved material to form a grout tight joint.

When concrete is to be deposited to a steeper slope than 15 degrees to the horizontal top forms shall be used to enable the concrete to be properly compacted. The Engineer may require details and/or calculations of any proposed formwork to be submitted for approval prior to work starting. Such approval if given shall not in any way relieve the contractor of his responsibilities for the safety or adequacy of such for its purposes.

The inside surfaces of forms, except for permanent formwork, or unless agreed by the Engineer, shall be coated with an approved material to prevent adhesion of

the concrete. Such approved material shall be applied strictly and shall not come into contact with reinforcement or other cast-in items.

Immediately before concreting, all formwork shall be thoroughly cleaned out. In the case of deep sections an opening shall be left at the base to enable such cleaning to be adequately completed.

CONCRETE WORKSPECIFICATIONS

Formwork (cont'd)

In the case of beams, slabs or like members the formwork shall be so arranged that the sides or edges may be removed without disturbance to the soffit or propping system. The erection, easing and striking of the formwork shall be done under the personal supervision of a competent foreman.

Formwork shall be struck at such a time and in such a manner as to cause no damage to the structure. The contractor shall inform the Engineer before he intends to strike any formwork. The time at which the formwork is struck shall be the contractor's responsibility but the minimum periods between the completion of any concreting bay and the removal of forms shall be as follows:

| | |
|-------------------|----------|
| Vertical formwork | 24 hours |
| Soffits to beams | 21 days |
| Soffits to slabs | 14 days |
| Cantilevers | 28 days |

The periods given above are based on the removal of all props and formwork using ordinary Portland cement under average 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.

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 2 storey height below the floor being cast unless otherwise stated.

Where sawn formwork finish is specified or in all cases where no alternative finish is specified the surface of the concrete shall be not worse than that obtained by the use of properly designed moulds of closed jointed sawn boards. Small surface blemishes caused by entrapped air will be permitted but the surface should be free of voids, honeycombs or other defects.

Where "fair faced" finish is specified the irregularities of the finish shall be no greater than those obtained from the use of wrought thickened square edge boards arranged in a uniform pattern. The concrete surface shall be smooth, free from fins, lipping, board marks or other irregularities, and even with sharp true edges. Only very minor blemishes or voids shall occur and there shall be no staining or discolouration. The finish is intended to be left as struck and the only treatment generally permitted is light manual abrasion with a Carborundum stone to remove minor marks. Patches of any description will not normally be permitted.

Where a "fair faced" finish or other finish part from sawn formwork finish is 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 system of shuttering and the construction techniques that the contractor proposes for the actual works. The sample when approved will form the standard for the entire works. All unsuccessful samples shall be removed from the site. Should any concrete in the works in the opinion of the Engineer fail to match the standard sample in surface finish then the Engineer may for this sole reason order the removal of all such substandard concrete which shall be replaced with acceptable concrete all at the contractor's expense.

When the striking of formwork would in the opinion of the Engineer cause damage to or prejudice the safety of the structure the formwork shall be left in. If, in the opinion of the Engineer, the necessity for leaving in the formwork arises from the contractor's method of working then the cost shall be borne by the contractor, but if it is due to circumstances beyond his control then formwork shall be paid for at rates to be agreed.

A. CONSTRUCTION, CONTRACTION AND EXPANSION JOINTS

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 sqm of maximum length of 12 m in any one dimension.

CONCRETE WORK SPECIFICATIONS

Formwork (cont'd)

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 faces for each bar. Under no circumstances shall concrete when being deposited be allowed to, tail off. Construction joints formed with expanded metal or similar will not be permitted for reinforced concrete work.

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 form a key for adjacent concrete. This work shall be carried out to the satisfaction of the Engineer by the following or other approved method:

- (a) After the initial set has taken place but before final set of coarse aggregate shall be exposed by the use of a water jet and brushing
- (b) After final set has taken place the laitance shall be removed and coarse aggregate shall be exposed by bush hammering or chiselling.

In both cases the surface is to be thoroughly cleaned after roughening. At least 72 hours shall be left between completion of concreting one bay and the start of concreting any adjacent bay. Contraction joints shall be formed as detailed where shown on the drawings.

Expansion joints shall be formed as detailed at the positions shown on the drawings.

B. CONCRETE MIXES - DESIGNS MIX

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 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 7MN/M2 should be assumed.

Details of any proposed mix design shall be forwarded to the Engineer not less than 60 days before that class of concrete is required to be used on the work for his approval in principle. The details shall include at least the following information:-

- (a) Source nature and grading of coarse and fine aggregate.
- (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

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 I. The maximum water/cement ratio is herein defined as the ratio of the weight of the "free" water to the weight of the cement. The "free" water is that quality of water available for cement. Any water required to be absorbed by aggregate is excluded.

The workability of the concrete shall be the minimum consistent with producing a dense, well compacted mass. Due regard shall be paid to size and shape of the section together with any congestion of reinforcement.

After the Engineer has approved a design mix in principle the contractor shall prepare a trial mix on site using the plant and materials intended for the works. Each batch of concrete shall be sampled and the following prepared, in accordance with BS1881:

CONCRETE WORK SPECIFICATIONS

Concrete mixes-design mix (cont'd)

- (a) nine 150 mm cubes, three for test at 7 days, three for test at 14 days and three for test at 28 days; and
- (b) three slump tests or where the design slump is less than 25 mm then
 - (c) three compacting factor tests.

No structural concrete shall be placed in the works until the Engineer has approved the preliminary tests. Thereafter, the approved mix proportions shall be adhered to throughout the work and may only be varied with the prior approval of the Engineer.

A. CONCRETE MIXES - NOMINAL MIXES

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.

Details of any proposed mix shall be forwarded to the Engineer not less than 5 days before that class of the concrete is required to be used on the works for his approval in principle.

Classes of concrete will be referred to by their nominal mix proportions. Classes of concrete shall meet the criteria shown in Table II.

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. The Engineer may at his discretion require preliminary tests of concrete quality for nominal mixes unless satisfactory evidence of strength is produced from reliable sources. Where required, these tests shall be in accordance with BS 1881.

A. CONCRETE MIXES - GENERAL

The standard of acceptance of any preliminary tests will be similar to the standard for normal works cubes, slump or compacting factor, except that the minimum cube strengths required shall be those given

“minimum Preliminary cube strength at 28 days” in Table I or II.

For all structural concrete the following representative samples shall be taken and tested in accordance with BS 1881.

One each day on which less than 50 cm of concrete is being poured:

- (a) six 150mm cubes - three for test at 7 days and three for test at 28 days; and
- (b) two slump tests; 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 tests shall be carried out for each 50 cm or part thereof.

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.

The concrete cubes tested at 7 days are intended to be indicative only and the target works strengths at 7 days given in Table I are not normally 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. The concrete cubes tested 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:

The cube strength shall be calculated from the maximum load sustained by the cube at failure. The appropriate strength requirements as given in Table I, shall be considered to be satisfied if

CONCRETE WORK SPECIFICATIONS

Concrete mixes-Nominal mixes (cont'd)

- (a) None of the strength of the three cubes is below the specified cube strength, or if
- (b) The average strength of the 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 percent of that average.

The standard of acceptance for the slump test during the production of concrete shall be the design slump ± 25 mm. The standard of acceptance for the compaction factor test during the production of concrete shall be design compacting factor ± 0.03 .

Any concrete which fail to meet the above standards 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. If the strengths required are not attained or maintained throughout the contract will also be required to redesign the mix and resubmit trial mixes in accordance with clause 04.00 of this specification so as to give a concrete which does comply with requirements of this specification.

Mass concrete shall normally be a 1:3:6 mix unless otherwise specified.

Blinding concrete shall normally be a 1:4:8 mix unless otherwise specified.

A. READY MIXED CONCRETE

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 BS 1926 except where these conflicts with this specification shall prevail.

Truck mixer units and their mixing and discharge performance shall comply with the requirements of BS 4251.

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.

Concrete test cubes and slump tests shall be taken on the 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 works.

B. MIXING AND TRANSPORTING CONCRETE

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 percent. Certificates of accuracy shall be submitted immediately to the Engineer.

All concrete shall be mixed in approved power driven mixers of a type and capacity suitable for the work. The mixers shall be checked at weekly intervals at the contractor's expense. Certificates of accuracy shall be submitted immediately to the Engineer.

All materials shall be thoroughly mixed before water is added and the mixing of each batch shall continue for a period of not less than two minutes after the water is added or such longer period as 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 material shall not exceed the rated capacity of the mixer.

Mixers shall at all times be 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 cast the inside of the drum, the surplus material being emptied away and not used in the works.

CONCRETE WORK SPECIFICATIONS

Mixing and transporting concrete (Cont'd)

The moisture content 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. Concrete shall be discharged from the mixer onto a clean, level, water-tight 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 shall not be dropped from a height, thrown or otherwise treated so that segregation, undesirable finish, or defective structure quality results.

No extra water shall be added to the concrete mix after it has left the mixer. The concrete shall take adequate precautions to protect concrete in transit from the effects of the weather.

Pumping of concrete, which will require a special design mix, will only be permitted with the approval of the Engineer. 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 by these stoppages shall be the responsibility of the contractor.

A. PLACING AND COMPACTING CONCRETE

All concrete shall be vibrated unless otherwise specified. The vibration shall be carried out by experienced operators and with immersion type vibrators to the Engineer's satisfaction.

Placing of concrete shall be carried out in layers not exceeding 60mm deep and in sequence from one end of the form to the other. Concrete in foundation and other underground work shall be protected from contamination with fallen earth or rock during and after placing.

Any concrete which shows signs of initial setting before or during placing shall not be used, it shall be removed at the contractor's expense. 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.

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.

Suitable means shall be provided to ensure that the temperature of the concrete on placing does not exceed 30 degrees centigrade (86 degrees Fahrenheit). Concrete shall not be placed around reinforcement or against surfaces which are at temperatures above 30 degrees centigrade (86 degrees Fahrenheit). All surfaces shall be thoroughly damped immediately prior to placing fresh concrete to prevent excessive absorption of water.

B. UNFORMED FINISHES FOR CONCRETE

Where a concrete surface is specified for receiving a further applied finish or in all cases where no other finish is specified the concrete shall be uniformly levelled and screeded to produce a ridged surface. No further work shall be applied to the surface.

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 to produce a uniform surface free from screed marks.

CONCRETE WORK SPECIFICATIONS

C. CURING AND PROTECTING CONCRETE

Immediately after compacting and for 7 days thereafter concrete shall be protected against harmful effects of weather including rain, rapid temperatures 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.

During the curing period horizontal surfaces 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.
- (b) Covering with an impermeable material raised approximately 50mm over the surface so to prevent loss of moisture
- (c) An approved membrane curing compound.

During the curing period other surfaces shall be protected by the following or other approved means:

- (a) Formwork in close contact with the concrete but kept cool at all times.

(b) Direct and continuous application of water preferably in the form of mist so as not to damage the surface.

(c) Covering as (a) to (c) above

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.

Concrete structures shall not 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 after this time but in no case will loading greater than the final design loading be permitted.

A. TOLERANCE

All in situ concrete work shall be dimensionally accurate to within the following tolerances:

(a) Between the centre line of principal members columns or beams

+/- 5mm up to 15 metres c/c

+/- 10mm over 15 metres c/c

Note the +/- 10mm tolerance shall not be accumulative.

(b) In storey height

+/- 5mm floor to floor

(c) In plumb of columns and walls

+/-10mm on any storey or overall the structure

(d) In level of floors

+5mm/- 3mm of the true prescribed horizontal surface level.

(e) In cross sectional dimensions of column beams and walls +5mm/-3mm in any dimension up to 2 metres overall

(f) Cover to reinforcement

+5mm/-0 of the stated covers

B. MISCELLANEOUS ITEMS

Holes, chases, 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.

CONCRETE WORK SPECIFICATIONS

Miscellaneous items (cont'd)

Should the contractor or any sub-contractor require additional hoes or the like these requirements shall be submitted to the Engineer for his approval prior to concreting.

Pipes, conduits, fixing bolts and other such cast-in items shall be provided where indicated on the Drawings.

Should the contractor or any sub-contractor require additional cast-in items these requirements shall be submitted to the Engineer for his approval prior to concreting. Hollow pots shall be laid in the position shown on the Drawings, care being taken to ensure that the units maintain the full specified rib widths throughout. The gaps between adjacent units shall not exceed 3mm.

A. PRE-CAST CONCRETE

The materials for pre-cast work shall be similar to the materials for in situ work. The workmanship for pre-cast work shall comply with CP 116 except where this conflicts with this specification when the specification shall prevail.

The contractor shall prepare, for each type of pre-cast unit, a drawing indicating his proposed formwork construction, casting methods, de-moulding and handling procedure for the Engineer's approval.

Moulds and formwork shall be so constructed that the dimensions of the finished concrete members are within the specified permissible tolerance given clause 407 of CP 116: part 2:1969.

Where pre-cast concrete is described as "fair faced" the mould shall be of 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, fins, and the like.

Pre-cast concrete shall be made of the mixes described on the drawings in suitable moulds, true in form to the shapes required thoroughly tamped into the moulds and around reinforcement and vibrated. All pre-cast 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.

The method of lifting, position of lifting points and curing time before lifting shall be agreed with the Engineer before casting of any units.

Extreme care should be taken when handling pre-cast units and any units damaged during the transporting and/ or positioning shall be replaced at the contractor's expense.

B. CONCRETE FOR WATER RETAINING STRUCTURES

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. In addition to the requirements of clause 4.5 aggregates for concrete in water retaining structures shall have a low drying shrinkage and absorption, as measured in accordance with BS 812 not greater than 3 percent. 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 BS 812. Any aggregate failing to comply with this specification will be rejected.

In addition to the requirements of clause 4.20 concrete for the water retaining structures shall have a maximum cement content of 400 kg/m³.

Blinding concrete under water retaining structures shall be a maximum of 75 mm thick and shall be in class 15/40 concrete.

Class 15/40 concrete shall comply with the following requirements: -

| | |
|--|---------------------|
| Minimum works cube strength at 28 days | 15MN/M ² |
|--|---------------------|

CONCRETE WORK SPECIFICATIONS

Concrete for water retaining structures (cont'd)

| | |
|---|------|
| Maximum size of aggregate | 40mm |
| Mix proportions 1 cement: 2.5 fine aggregate: 5 coarse aggregate | |

This is a nominal mix and no cubes will be required to be taken.

For water retaining structures the provisions of clause 4.19 paragraph are modified. The construction joints will in general be spaced to allow a maximum plan area for any bay of 40 sm or maximum lengths of 7.5m in any one dimension.

For water retaining structures the provisions of clause 4.19 paragraph five are modified. At least 96 hours shall be left between completion of concreting one bay and the start of concreting any adjacent bay.

A kicker of minimum height 150mm shall be cast integrally with the base slab for all water retaining structures.

The surface of all concrete for water retaining structures shall not be permitted to dry out even after the 7 days curing period specified in clause 4.27.

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 20mm greater than the outside diameter of the pipe.

Joint sealants shall be applied not less than 7 days after completion of the structure.

On completion of the water 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 metre 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 sign 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 10mm after making due allowance for evaporation and absorption and no signs of leakage are observed.

Water for testing shall be provided at the contractor's expense.

If the structure fails the test above any defects shall be made good or such taken to eliminate leakage as the Engineer shall direct. All such work shall be at the contractor's expense.

After completion of any repairs the structure shall be retested using the procedure specified above.

Swimming pools should be tested prior to applying internal finishes.

(a) Pre-cast Concrete

General

Unless otherwise approved by the Engineer, all pre-cast concrete construction shall be carried out on the Site and shall conform to requirements given elsewhere in these preambles.

The maximum size of coarse aggregate concrete shall not exceed 20mm except for thickness less than 75mm where it shall not exceed 10mm.

The compacting of pre-cast concrete shall conform with requirements given elsewhere in these preambles except for thin slabs where use of immersion type vibrators is not practicable. The

CONCRETE WORK SPECIFICATIONS

(a) Concrete for water retaining structures (cont'd)

Concrete in these slabs may be consolidating on a vibrating table or by any other methods approved by the Engineer.

Steam curing of pre-cast concrete will be permitted. The procedure for steam curing shall be subject to the approval of the Engineer.

The pre-cast work shall be made under cover and shall remain under the same for seven days. During this period and for a further seven days the concrete shall be shielded by sacking or other approved materials kept constantly wet. It shall then be stacked in the open for at least a further seven days to season before being set in position. Where steam curing is used these times may be reduced subject to the approval of the Engineer.

Pre-cast concrete units shall be constructed in individual forms. The method of handling the pre-cast concrete units after casting, during curing and during transport an direction shall be subject to the approval of the Engineer, providing that such approval shall not relieve the Contractor of responsibility for damage to pre-cast concrete units resulting from careless handling.

Repair of damage to the pre-cast concrete units, except for minor abrasions of the edges which will not impair the installation and/or appearance of the units will not be permitted and the damaged units shall be replaced by the Contractor at his own expense.

Except where pre-cast work is described as "fair face" or as having "exposed aggregate" or terrazzo finishes the moulds shall be made of suitable strong sawn timber true in form to the shapes required. Unless otherwise described faces are to be left rough from the sawn moulds.

Where pre-cast work is described as "fair face" the moulds are to be made of metal or are to have metal or plywood linings or are to be other approved moulds which will produce a smooth dense fair face to the finished concrete suitable to receive a painted finish direct and free from shutter marks, holes, pinnacles, etc. In his prices for such pre-cast work the Contractor shall include for all rubbing down to produce the finish required to the satisfaction and approval of the Engineer. Where pre-cast work is to have an "exposed aggregate" or terrazzo finish the moulds shall be

constructed to the requirements given for moulds "finished fair" work. The method of achieving the exposed aggregate finish shall be aggregate transfer" or other approved method.

(b) Pre-cast Concrete Cladding Units

These shall be cast to the general details shown on the drawings. The Contractor shall submit working/shop drawings for each type of the cladding panels to the Engineer for approval before he commences casting operations

The panels shall be cast in special yards and shall be cured adequately before being hoisted into position in the structure, taking care that no parts are broken in the process. The units shall then be joined together with insitu concrete and flexibility connected to the top and bottom beams to allow for limited movement of the combined unit.

(c) Hollow Block Suspended Construction (Composite Floor Slab)

Concrete hollow blocks for use in the composite floor slabs shall be of the standard sizes required or as shown on the drawings and are to be of adequate strength to support the concrete during placing and consolidation by vibration. Blocks are to be manufactured in accordance with the procedure specified in B.S. 6073 and to be of a mix not weaker than 1:4:8 cement: sandstone using maximum 10mm size aggregate.

Concrete blocks are to be cured for at least 28 days before use on the site. During the first seven days of curing, blocks are to be kept permanently damp and protected from exposure to sun and wind.

Concrete blocks are to be well wetted before the pouring of cement.

CONCRETE WORK SPECIFICATIONS

Hollow Block Suspended Construction (Composite Floor Slab) (cont'd)

Hollow clay filler blocks for use in the composite floor slabs are to be of 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.

Rejected blocks shall immediately be removed from the site and shall not be used in the works. Clay blocks are to be fully cured before delivery or use on site.

Clay blocks are to be well wetted before pouring of concrete.

(d) Composite Floor Construction

The hollow block floor construction is generally to be as shown on the Engineer's Drawings.

Care shall be taken in placing blocks 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 in-situ ribs.

The open ends of hollow blocks, if adjacent to concrete to be placed in situ 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.

The Contractor should note that slip tiles are not to be used to the Soffits of ribs and he is to take this into consideration in pricing the items of formwork to the soffit of hollow block floor construction. Before concreting is carried out the blocks are to be thoroughly wetted.

Care should be taken during concreting that the width of ribs between the rows of blocks and the solid in-situ concrete shown on the Drawings adjacent to supporting beams is not encroached upon by the blocks.

It is essential that the concrete topping be poured at the same time as the ribs between hollow blocks.

Reinforcement shall be positioned accurately with required cover in accordance with the drawings and using the particular spacing blocks with wire ties as previously described. Spacer blocks shall be provided in ribs at not more than 0.2 m centres. Care must be taken during concreting that the reinforcement is not displaced.

Where holes or services occur, the necessary holes or pockets shall be accommodated by the replacing of a hollow block or in-situ concrete or the widening of a rib all in accordance with the Engineer's instructions.

Prices for such holes through block construction are to include the rearrangement or substitution of the hollow block with solid concrete in addition to the actual formation of the hole.

WALLING

MATERIALS

A. CEMENT

Cement used for making mortar shall be as described in concrete work.

B. LIME

The lime for making mortar shall be obtained from an approved source and shall comply with BS 890 Class A for non-hydraulic lime. The lime to be run to putty in an approved lined pit or container. The water to be first run into the pit or container and the lime to be added until it is completely submerged, stirred vigorously until all lumps are disintegrated and shall be kept constantly covered with water and regularly stirred for at least four weeks. The resulting milk-lime then to be through a fine sieve and run into a pit or other container and kept clean and moist for not less than two weeks before being used in the works and moist for not less than two weeks before being used in the works.

C. SAND

Sand used for making mortar shall be clean well graded siliceous sand of good sharp hard quality equal to samples which shall be deposited with and approved by the Architect. It shall be free from lumps of stone, earth, loam, dust, salt, organic matter and other deleterious substances, passed through a fine sieve and washed with clean water if so directed by the Architect.

D. WATER

Shall be as described in concrete work.

E. CONCRETE BLOCKS

Concrete blocks shall comply with the requirements of BS 2028, 1384 except where amended or extended by the following clause. Blocks shall have square arises and corners. For fairfaced work damage to arise and corners shall not exceed the removal of 6mm of the blocks depth or thickness.

Concrete blocks shall have a minimum crushing strength of 3.5 N/mm² except when below the damp course level or in contact with soil when they shall have a minimum crushing strength of 7 N/mm², unless noted otherwise on drawings.

Hollow concrete blocks shall not be used below the damp course level or in contact with soil.

Concrete blocks used for external walls shall be class 'A' and for internal load bearing walls they shall be at least Class 'B'. Class 'C' blocks shall only be used for non-load bearing partitions.

No pre-cast blocks shall be incorporated into the work unless approved by the Architect. The delivery of present blocks from which samples tested do not comply with this specification shall be deemed defective. Any work constructed with blocks from which samples tested do not comply with this specification shall be deemed to be defective.

WALLING SPECIFICATIONS

Concrete blocks (cont'd)

From every 1,000 pre-cast concrete blocks delivered to site ten blocks samples shall be provided for testing. The pre-cast block samples shall be selected in accordance with BS2028, 1364. Samples of pre-cast concrete blocks for testing shall be tested for the following properties in accordance with the methods given in BS 2028, 1364 and the test results shall comply with the requirements of BS 2018, 1364 except where amended by this specification: - (a)

Drying shrinkage

(b) Compressive strength or transverse breaking load (as applicable)

(c) Wetting expansion*

(d) Density

- (e) Dimensional Tolerance
- (f) Cavity size

*Test only applicable for concrete blocks made with clinker aggregate.

Blocks shall also be tested to determine the suction rate. The test shall consist of weighing the block, placing in a tray of water such that only 3mm of the block side is immersed for a period of sixty seconds \pm 2 seconds; quickly wiping off excess water and reweighing. The suction rate is the increase in weight due to water absorbed and shall not exceed 2 kg/m²/minute. Blocks which have a suction rate exceeding 2kg/m²/minute may be used if the contractor uses an approved water reactive additive in the mortar or can show that the blocks will have a suction rate not exceeding 2kgm²/minute for a period of 24 hours from being laid and provided the blocks comply with all other requirements.

Concrete blocks shall be stacked on prepared dry areas free of clinker, ashes and sulphate bearing strata. Blocks of different strengths shall be stacked separately and clearly marked to differentiate the strengths. Blocks shall not be used for a minimum of 7 days after manufacture and shall not be loaded for at least 14 days after laying. For the first 7 days after manufacture, block shall be cured by maintaining in a damp condition, e.g. covering with polythene sheeting after wetting blocks.

F. HOLLOW CLAY BLOCKS

Hollow clay partition blocks shall comply with the provisions of BS 1190 section 1 and are to be hard, well burnt, true to size and shape and with sharp arises and keyed faces and joints are to be obtained from an approved manufacturer and to be equal in every respect to a sample to be deposited with, and approved by the Architect.

Blocks are to be 190 mm high (to give 200mm height including the joint) and of the thickness given herein. Cutting of blocks is to be avoided wherever possible and full use is to be made of quarter, half and three quarter blocks, and blocks with conduit recesses.

G. LOUVRE BLOCK WALLING

- i) To be pre-cast concrete mix 1:1.5:3 or 25N/mm² (12mm aggregate) but with 10mm finished fair on all exposed surfaces, built in cement and sand (1:5) mortar with straight horizontal and vertical joints to flush pointed both sides.

- ii) Each block to be size 200mm x 400mm x 200mm high and consisting of two ends each 200mm x 200mm x 50mm thick joined with a 50 mm thick twice cranked louver with top end of louver projecting 40mm above top of block..

H. STONE

All stone shall comply with the requirements of CP121.202 for masonry and rubble walls respectively except where amended or extended by the following clauses.

WALLING SPECIFICATIONS

Stone (Cont'd)

Unless otherwise noted, all masonry walls shall be course squared rubble walling with mortar joints. The size of stones for rubble walling shall be such that the length of stone does not exceed three times its height. For coursed squared rubble walls block shall not exceed 300 mm in height and shall be not less than 150 mm in height.

Where random rubble walls are specified; the rubble shall not be less than 100mm square on the exposed face. Stone for masonry shall have a minimum compressive strength of 10 N/mm² (stone shall not be required to be tested to failure). The density of stone for masonry shall be not less than 230 kg/m³. The drying shrinkage of stone shall not exceed 0.05%.

Samples of stone provided for testing shall be tested for the following in accordance with the methods given in BS 2028, 1364 and the test results shall comply with the requirements of this specification.

- (a) Compressive strength

- (b) Density
- (c) Drying shrinkage

The colour and texture of stone shall be uniform and consistent. Prior to delivering any stone to site the contractor shall supply the Architect with a sample of stone in order that he may approve the colour and texture. The contractor shall ensure that sufficient suitable stone is available for the whole of the project prior to ordering the stone.

Where cast stone including described as artificial stone, reconstructed stone, etc., is specified the stone shall comply with the requirements of BS 1217. Masonry shall be of stone, having no irregular faces and only the back face if not visible shall be left as from the saw.

Prior to ordering dry stone the contractor shall demonstrate that the stone is durable. This may be done by supplying details of building constructed with stone from the same quarry and which has been exposed to the same environment condition for at least ten years. The maximum projection from the face of stone for rubble walls shall be 20mm beyond the specified face of the wall.

The contractor shall provide six samples of stone measuring 150mm x 150mm for testing prior to delivering any stone to site. As work proceeds the contractor shall provide six samples 150 x 150 x 150mm for testing from every 300sm of work. All stone shall be stacked on prepared dry areas free of clinker, ashes and sulphate bearing strata.

I. WALL REINFORCEMENT

Where described walls and partitions shall be reinforced with a 25mm wide strip of No.20S.W.G hoop iron built into alternate horizontal joints in the wall centre. The reinforcement shall be lapped and hooked at running joints, angles and intersections and carried at least 115mm into abutting walls at junctions.

J. WALL TIES

To be 3mm diameter galvanized mild steel wire twisted butterfly wall ties

K. DAMP - PROOF COURSES

The bituminous felt sheeting for damp-proof courses shall be hessian based bituminous felt complying with BS743 TYPE 4A weighing not less than 3.85 kg per

square metre. The sheeting is to be lapped 150mm at running joints and the full width of walls at angles.

WALLING SPECIFICATIONS

WORKMANSHIP

A. CEMENT MORTAR

Mortar described as cement mortar 1:4 shall be composed of 1 cubic metre (1498 kg) of Portland cement and 4 cubic metres of sand. Other mixes such as 1:3, 1:5 etc. shall be similarly construed.

B. MIXING MORTAR

The constituent materials shall be measured separately when dry in specially prepared gauge boxes of sizes to give the proportions specified without consolidation of the contents by ramming and shaking. The mortar shall be mixed in an approved power driven mixer for not less than two minutes per batch and using the minimum quantity of water necessary to obtain a working consistency. The mixer shall be used as close as practicable to the works and mortar shall be used within 30 minutes of mixing. No partially or wholly set mortar will be allowed to be used or re-mixed.

C. GENERAL CONSTRUCTION

(a) *Setting out*

The contractor shall provide proper setting out rods and set out all work on same for course, openings, heights etc., and shall build the walls, piers etc., to the widths, depths and heights indicated on the Drawings and as directed by the Architect.

(b) *Building in Wood Frames*

Openings for doors, ventilators etc., are to be set out and left un-built until the wooden frames have been fixed in position.

(c) Building in Metal windows and doors

The opening for metal frames shall be wide enough for the frames to fit without being forced into position. Build the lugs into the joints of the walling and fill into the space between the walling and frames with cement mortar well tamped into the channel of the frames and point all round externally.

All frames must be set plumb and level and free from twist.

(d) Walls to Receive Plaster & Similar Finishes

All faces of walls to be plastered etc., to have all projections dressed off and joints raked out as key.

A. BUILDING WALLING

(a) Laying and Jointing

All blocks shall be well wetted before being laid and the top of walling where left off shall be well wetted before commencing. Walls to be kept wet three days after building. All walls throughout the works shall be carried up evenly in 200mm courses except where courses of less depth are required to bring walling up to level of floors, windows and the like and where otherwise described, no part being allowed to be carried up more than one metre higher at one time than any other part and in such cases the joining shall be made in long steps so as to prevent cracks arising and all walls shall be levelled round at each stage. Not more than 3 metres height of wall shall be laid in any one day.

WALLING SPECIFICATIONS

(b) Bonding

The blocks shall be properly bonded together and in such a manner that no vertical joint in any one course shall be within 115mm of a similar in the courses immediately above or below. All walling of 300mm thickness or less shall be built in single thickness of blocks. Walling exceeding 300mm in thickness shall be built with through bonders not more than 1070mm apart in each course as directed by the Architect.

Alternate courses of walling at all angles and intersections shall be carried through the full thickness of the adjoining wall. All perpend, reveals and other angles of the walling shall be built strictly true and square.

(c) Tolerances

All courses of walls shall be level with a maximum deviation of ± 3 mm in any one metre length and a maximum overall deviation of 10 mm for lengths of wall exceeding 3 metres. Walls shall be plumb with a maximum deviation of ± 3 mm in any metre height of wall with a maximum deviation of ± 10 mm in the total height of the wall or any storey.

All corners of walls which are shown as being at right angles shall be square with a maximum deviation of 3 in 1000. All walls should be straight with a maximum deviation of ± 3 mm in any one metre length and a maximum overall deviation of 10 mm in any length exceeding 3 metres.

All bed and vertical joints shall be an average of 10 mm thick with a maximum deviation of ± 3 mm of blockwork, and stone rubble walls. Joints for stone masonry walls shall be 6 mm ± 1 mm thick.

(d) Curing

All walls shall be maintained in a damp condition for at least 24 hours after laying. Walls under construction shall be dampened by applying water with a brush and no hosing directly on to the wall shall be permitted. When work ceases on any section of wall polythene or hessian shall be draped over the wall, for at least 24 hours. If hessian is used, it shall be maintained continuously wet.

(e) Cavities

Cavity walls shall be of the overall thickness shown on the drawings.

Cavities above ground level between leaves of block or masonry shall be free of mortar droppings or their debris. The Contractor shall take proper precautions to prevent mortar or debris entering the cavity.

Cavity below ground level shall be filled with mortar for cavities up to 75 mm wide and for cavities over 75 mm wide filling shall be concrete mix 1:3:6. Cavities shall be filled such that there is maximum of three times the thickness

of the thinner leaf of the wall filled with wet mortar or concrete unless the wall is continuously supported for the depth.

(f) Backfilling

Earth backfilling against walls shall be carried out such that the level of the backfill is always equal on each side of the wall. When a wall has filling material on one side only to a fill width of more than three times the wall thickness, the wall shall be continuously supported during backfilling.

Backfilling shall not be carried out until at least seven days have elapsed since the laying of the blocks or stone.

A. REINFORCEMENT WALLS

Steel reinforcing bars in walls shall be carefully placed and spacers used to ensure that a minimum of 20mm cover is given to the reinforcement unless otherwise specified.

WALLING SPECIFICATIONS

Reinforcement walls (Cont'd)

Horizontal reinforcement in mortar joints shall be laid such that the reinforcement is not contact with the blocks or stone.

B. WALL TIES

Wall ties shall be provided to connect walls to steel or concrete columns and beams to connect two unbounded leaves of wall.

Walls ties shall be provided at 450mm centre both vertically and 900mm centres horizontally and shall be staggered when used to connect two leaves of unbonded wall. Wall ties shall be embedded to each material by a minimum of 50mm.

C. FAIR FACE

All concrete and hollow clay blockwork described as finished with a fair face is to be built to a true and even face with the joints finished as specified hereinafter.

D. POINTING

Pointing of walls shall be carried out as the work proceeds wherever possible. When coloured mortar is specified for pointing only the pointing shall be carried out after work has been completed.

Existing walls shall be prepared for pointing by raking out all loose friable material to a minimum depth of 15mm to form a square recess. The joints shall then be wetted and new mortar shall be forced into joints and finished as directed.

E. HOLES, CUTTING AND CHASING

- (a) All putlog holes shall be not less than one course deep and carefully filled with a block cut to fit size of opening with beds and joints filled with mortar well tamped in after scaffolding is removed, and if in faced walls to match facing.
- (b) Where walling is cut, holed or chased for conduits, pipes and the like all such cuttings etc., shall be filled in solid with cement mortar (1:4) prior to the application of finishes.

FINISHINGS SPECIFICATIONS

FINISHINGS

GENERAL

A. OTHER SPECIFICATIONS

All other specifications of this contract where applicable are deemed to apply equally to the finishing specifications.

B SAMPLES

The contractor shall prepare at his own cost sample areas of the paving, plastering and rendering 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.

C FINISHED THICKNESSES

The thicknesses of floor finishes quoted in this section of the specification shall be the minimum requirements.

Suspended floors shall have a constant structural thickness and have level top surfaces. The finished floor surface will equally have constant level and any adjustment needed to achieve this effect with the varying floor finish materials is to be made in the screeds beneath the same.

Slabs bearing on the ground may be cast to varying levels, and be of constant thickness with varying formation levels, or have varying thicknesses at the option of the contractor. This stipulation in no way relieves the contractor of the requirements of the specifications for the structural work.

D MATERIALS GENERALLY

All materials shall be of high quality, obtained from manufacturer's to be approved by the Architect. Cement, sand and water shall be as described under concrete work and Blockwork.

E BONDING

Bonding compounds, etc., for use in applying plaster and similar finishes direct to surfaces without the use of backings or screeds are only to be used if approved by the architect and are to be used strictly in accordance with the manufacturer's printed instructions.

F. CHASES, OPENINGS AND HOLES

All chases, holes and the like which were not formed in the concrete or walling shall be cut, and all service pipes shall be fixed and all holes and chases filled with mortar before paving and plaster work is commenced. In no circumstances will the

contractor be permitted to cut chases, holes and the like in finishes paving or plasterwork.

INSITU FINISHINGS

A GENERALLY

The term plastering refers to the operation internally and rendering to the same operation externally but for ease of reference the term plastering has generally been used in this specification to describe both operations.

FINISHINGS SPECIFICATIONS

B MIXES

The methods of measuring and mixing plaster shall be as laid down under concrete work and the proportions and minimum thickness of finished plaster shall be in accordance with the following:-

| Item of work | Mix | Minimum Thickness and finish |
|-------------------------------|-------------------------------|---|
| Internal Plaster ceilings. | 1 part cement | 16mm finish to walls and 1/4 part lime wood float finish unless otherwise 4 parts sand specified. |
| External Render | 1 part cement 4 parts sand | 12mm finish in two coats |
| Tyroleam finish | Ditto | 6mm finished thickness in two coats on 10mm plastered backing |

To obtain greater plasticity a small quantity of lime may be added to the mixes for external plastering at the Architect's discretion but in any case this is not to exceed 1/4 part lime to 1 part cement.

With regard to the lime mortars gauged with cement, of the cement to small quantities of the lime/sand mix shall preferably take place in a mechanical mixer and mixing shall continue for such time as will ensure uniform distribution of materials and uniform colour and consistency. It is important to note that the quality of water used shall be carefully controlled. Plaster may be mixed either in a mechanical mixing machine or by hand.

Hand mixed plaster shall first be mixed in the dry state being turned over at least three times. The required amount of water should then be added and the mix again turned over three times or until such time as the mass is uniform in colour and homogeneous.

The plaster shall be completely used within thirty minutes of mixing and hardened plaster shall not be remixed but removed from the site.

C PREPARATION OF SURFACES FOR PLASTER ETC.

Irregularities in the surfaces to be plastered or rendered shall be filled with mortar, without lime, twenty-four hours before plastering is commenced. Joints in blockwork etc., are to be well raked out before plastering to form a good key. Smooth concrete surfaces to be plastered shall be treated with an approved proprietary bonding agent or hacked to provide an adequate key for the plaster.

All surfaces to be plastered or rendered shall be clean and free from dust, loose mortar and all traces of salts. All surfaces shall be thoroughly sprayed with water and all free water allowed to disappear before plaster is applied.

As far as practical plastering shall not be commenced until all mechanical and electrical services, conduits, pipes and fixtures have been installed.

Before plastering is commenced all junctions between differing materials shall be reinforced. This shall apply where walls join columns and beams, particularly where flush and similar situations where cracks are likely to develop and as directed by the Architect. The reinforcement shall consist of a strip of galvanised wire mesh. Expansion or equal approved 15cm wide which shall be plugged, nailed or stapled as required at intervals not exceeding 45mm at both edges. The surfaces to which such mesh shall be applied shall be painted with one coat bituminous paint prior to fixing the mesh.

FINISHINGS SPECIFICATIONS

A APPLICATION OF PLASTER AND RENDER

After preparation of the surfaces a key coat of cement slurry shall be applied to the wetted surface to be plastered. When this coat is dry the plaster coat shall be applied, by means of a trowel between screeds laid, ruled and plumbed as necessary. This coat which shall be to the required thickness shall be allowed to be so hard and then cured as described. Surfaces are to be finished with a wood or steel float to a smooth flat surface free from all marks.

Tyrolean finish shall be applied with an approved machine to give a finish of even texture and thickness. The sprayed finish shall be applied in two separate coats allowing time for drying between coats.

Application in one continuous operation to build up a thick layer will not be permitted. The total finished thickness of the two sprayed coats shall be not less than 6mm.. the sprayed finish shall not be applied until all repairs and making good to the undercoat are completed. any plaster which adheres to pipes, doors, windows and the like shall be carefully removed before it has set. Curing shall take place after the application of the second coat. The pressed finish as directed by the Architect. Where coloured tyrolean is required this shall be obtained by the addition to the mix of any approved colour pigment.

All plastering and rendering shall be executed in a neat workman like manner. All faces except circular work shall be true and flat and angles shall be straight and level or plumb. Plastering shall be neatly made good around pipes or fittings. Angles shall be rounded to 6 mm radius.

All tools, implements, vessels and surfaces shall be at all times kept scrupulously clean and strict precautions shall be taken to prevent the plaster or other materials from being contaminated by pieces of partially set material which would tend to retard or accelerate the setting time.

B CURING OF PLASTER

Each coat of plaster is to be maintained in a moist condition for at least three days after it has developed enough strength not to be damaged by water.

They shall be securely plugged, nailed or stapled as required at intervals not exceeding 450mm at both edges.

C ANGLE BEADS

Where required by the Architect, salient external angles of plastered walls shall be protected with galvanised mild steel angle beads complying with BS 1246 Fig.7 profile C3.

They shall be securely plugged, nailed or stapled as required at intervals not exceeding 450mm at both edges.

A PLASTER STOPS

Where shown on details, plasterwork shall be stopped against "expamet" galvanized steel plaster stop reference 565 which shall be securely nailed to wall in the positions indicated on the drawings.

B CEMENT AND SAND SCREEDS

Screed shall be mixed and formed as described.

C GRANOLITHIC PAVING

The granolithic paving shall be laid by a specialist floor layer and constructed as follows:-

FINISHINGS SPECIFICATIONS

Granolithic paving (Cont'd)

Curing compounds if specified or approved by the Architect shall be used in strict accordance with the manufacturer's instructions.

Surface hardening solutions of sodium silicate if purchased as liquid shall be of the grade sold for this purpose. Fourteen days after curing the surface shall be sprayed with three coats of sodium silicate solution and spread evenly with a mop or soft

brush. Unabsorbed silicate left on the surface after the last application is to be washed off.

Solution is to 1:4 by volume for first coat, 1:3 for second, 1:2 for third, applied at 24 hour intervals.

The base concrete structural floor shall be finished with a tamped surface. Shortly before the granolithic topping is to be laid the surface of the base concrete is to be thoroughly prepared to provide a good bond. The base concrete shall be hacked by hand or mechanically so that its laitance is completely removed to expose clean coarse aggregate. All traces of dust formed as a result of hacking etc., shall be removed. The base concrete shall be thoroughly wetted prior to laying. Any excess water shall be removed prior to the grouting.

The prepared surface of the base concrete shall be covered with a grout consisting of one part cement and one part sand mixed to the consistency of thick cream and it shall be scrubbed into the surface with a stiff broom.

The granolithic topping shall be mixed in the following proportions by weight:-

1 part cement, 1 part fine aggregate and 2 parts coarse aggregate.

The water content of the granolithic topping shall be kept as low as possible consistent with obtaining full compaction of the topping with the plant available in order to avoid segregation of excessive laitance and in no circumstances must water/cement ratio exceed 0.42 by weight.

The granolithic topping shall be mixed for a period of not less than 1 1/2 minutes after all the materials have been placed in the mixer drum. No concrete shall be removed from the drum so that some water will enter the drum before the cement and aggregates. Each batch shall be discharged completely before the next batch is introduced. No extra water or other material shall be added to the mix after it has left the mixer.

If electrical conduit, trunking or any other items are required to be buried within the granolithic topping and the thickness is reduced at any point the contractor is to ensure that steps are taken to eliminate the possibility of cracking in the granolithic topping by means of galvanised wire mesh reinforcement in the flooring or other approved method. The extent of buried conduits, etc., should be ascertained prior to tendering and allowance for complying with this requirement will be deemed to be included in the rates for granolithic flooring.

The granolithic topping shall be laid in areas not exceeding 14M². The length of any bay should not exceed 1½ times the width of that bay. Joints shall be made in the granolithic topping over all joints in the base concrete and over all supporting beams for suspended floors.

Unless otherwise indicated on the drawings all contraction and construction joints in the granolithic topping shall be simple but joints without filler.

The forms shall be fixed rigidly on a firm foundation and supported throughout their length so that they will not be disturbed by the spreading and compacting of the concrete. The forms shall be true to line within + or -1mm and to level within + or - 2mm. The forms shall be set well in advance of laying the topping and shall be checked for level immediately before concreting starts.

The granolithic topping shall be placed as soon as possible after being mixed in two courses each 31mm thick. In no circumstances should the depth of granolithic spread in one operation be greater than that which can be fully compacted by the means available. No more than 1 hour should elapse between placing the courses. The mix proportions and water content of the granolithic shall be identical in each course.

FINISHINGS SPECIFICATIONS

Granolithic paving (cont'd)

The lower course must be compacted before the upper course and each course of topping shall be fully compacted with neither segregation nor excessive laitance. Particular care shall be taken to ensure full compaction of the concrete should be placed to an adequate surcharge to ensure full compaction.

After the topping concrete has been placed, levelled and fully compacted it shall be trowelled at least three times at intervals during the ensuing 6 - 10 hours so as to produce a uniform and hard surface with high resistance to abrasion. Under no circumstances should cement be sprinkled on the surface and trowelled in to absorb surplus water.

As soon as the surface has been finished it shall be protected against rapid drying out by erecting barriers against wind or draughts and against strong sunlight. As soon as the concrete has hardened sufficiently to prevent damage to its surface the floor shall be cured continuously for a minimum of 7 days by one of the following means:-

1. By means of wet canvas or straw mats or 50mm thickness of damp sand laid on the surface and kept continuously damp in position for the full curing period.
2. By means of building paper, plastic or other waterproofing sheeting which shall be kept in close contact with the surface of the concrete. The covering overlap the sides and ends of the slab and shall be lapped 75mm at all joints. The covering shall be securely held in position for the full curing period.
3. By spraying the surface with an approved proprietary curing medium not less than one gallon of which shall be applied to every 20 m² of surface.

At the end of the curing period the contractor shall take all precautions required by the Architect to ensure that the floor will dry out slowly. Under no circumstance will artificial heating be permitted in the building for a period of at least six weeks after the topping has been laid and thereafter the temperature shall not be increased rapidly. Side forms shall not be removed from freshly placed granolithic until it is at least 12 months old and then only with the Architect's approval. Care shall be taken to avoid damaging the granolithic. If any damage occurs the contractor will be responsible for making good to the Architect's satisfaction.

FINISHINGS SPECIFICATIONS

A INSITU TERRAZZO WORK

The terrazzo paving and screeds under are to be laid and polished complete by an approved specialist firm.

Where the screed is to be bonded to the concrete structural sub-floor, the latter shall be finished with a tamped surface and left clean and free from dust and grease.

Before laying the screed the surface shall be covered with a grout of one part sand and one part cement brushed in with stiff broom. The screed is to be laid before the grout has set.

All screeds under in-situ and pre-cast terrazzo paving are to be laid by the approved specialist firm. The screeds shall consist of one part ordinary Portland cement to three parts sharp washed sand. This mix may be varied by agreement on the responsibility of the approved specialist firm.

Granolithic paving (cont'd)

The screed is to be reinforced with 22 gauge galvanized steel wire netting with mesh not exceeding 1" laid direct on the sub-floor of bays exceeding 1 square metre.

The screed backing in-situ skirting is to be such as to adhere firmly to the various materials of the walls.

The thickness of in-situ terrazzo finishes are minimal and they may be increased if the specialist considers it necessary with corresponding reductions to the screed thicknesses providing the overall thickness of the finished flooring is maintained and without adjustment to the price quoted. The following thicknesses are assumed in measuring the terrazzo:-

| | | | |
|--------|---------|--------|-------|
| Finish | Bedding | Screed | Total |
|--------|---------|--------|-------|

| | | | |
|------------------|----|---|----|
| In-situ paving | 25 | - | 40 |
| In-situ margins | 25 | - | 40 |
| In-situ skirting | 8 | - | 12 |

If electrical conduit, trunking or other items are required to be buried within the depth of the screed and flooring and the total thickness is reduced at any point the flooring specialist is to ensure that steps are taken to eliminate the possibility of cracking in the screed and consequent damage to floor finish by means of galvanised wire mesh reinforcement in the screed and flooring or other approved method. The extent of buried conduit, etc., should be ascertained prior to tendering and allowance for complying with this requirement will be deemed to be included in the rates for terrazzo paving and screeds under.

The in-situ terrazzo paving is to consist of two parts of white marble chippings to one part of white Portland cement to B.S.1014. The marble chippings to be fine (graded 3mm to 6mm in equal proportions) rounded granular clean and free from dust and impurities.

In-situ terrazzo paving should be laid on the screed as soon as practicable and not more than three days after the laying of the screed. After laying the surfaces are to be kept moist until ready for polishing.

The in-situ terrazzo paving should be laid in panels separated by dividing strips in the positions shown on the drawings. Dividing strips are to be white plastic the full depth of the paving and screed and bedded into the screed with the tip edges truly levelled with the finish polished floor level. The thickness of the dividing strips is to be 5mm.

Polishing of in-situ terrazzo paving is to be carried out by a mechanical polisher with graded abrasives and any necessary water. Making good of any defects during polishing is to be done with cement grout matching in colour that used in the terrazzo paving.

The finish of in-situ terrazzo paving is to be smooth and imperforable and is to be approved by the Architect.

FINISHINGS SPECIFICATIONS

The terrazzo paving is to be washed clean on completion and covered with a thick bed of sawdust or other approved protective layer. This should be maintained and renewed as necessary and cleared away on completion.

Lay in-situ skirting to match paving or of approved colour and finish coved at junction with paving of floor finish to 20mm radius. Execute all required angles and stopped or fair returned ends.

Vertical dividing strips to match those used in paving are required at not more than three feet intervals. A diving strip is required between paving and skirting at the commencement of the coving.

Facing of diving strip nearest to wall to be 200mm from face of skirting.

In-situ Terrazzo Work (cont'd)

A horizontal dividing strip is required at top skirting finished flush with wall finish over.

Where in-situ terrazzo skirting are required under door frames, etc., a pencil round junction is to be made threshold paving in lieu of coving as shown on drawings.

In-situ margins shall have dividing strips to match those used in paving. They shall be positioned at junctions with paving and skirting and transversely at not more than three feet intervals to continue vertical strip in skirting.

All internal angles and coves are to be rubbed by hand with carborundum block to be polished finish matching the finish of the paving to the Architect's approval.

A SURFACE HARDENERS

Floor hardeners shall comprise an approved type guaranteed by the makers to produce a hard dense concrete with high abrasive resistance, impervious to the penetration of heavy oils, acid or alkali solutions and to be used strictly in accordance with the maker's instructions.

The first dressing of sodium silicate for granolithic flooring shall be one part of sodium silicate to six parts of water by volume. Subsequent dressing shall be composed of one part of sodium silicate to four parts of water by volume, for all surfaces. The two liquids shall be well mixed together, sprayed over the flooring and spread evenly with a mop or soft brush, any excess being wiped off and the flooring allowed to dry at least 24 hours after dressing. After final drying, floors shall be washed with clean water.

B RATES OF IN-SITU WORK

The rates for in-situ work shall include for raking out joints of block work, bonding coat or spraying cement slurry on new concrete surfaces to form key, for work in narrow widths, small and isolated areas, roundabouts, fair and chamfered edges, for making good up to boundaries of other work for making good working around pipes, brackets etc., and for all other incidental labours.

FINISHINGS SPECIFICATIONS

Rates shall also include for masking before the application of spray finishes work executed overhead, temporary rules, supports, screeds and templates.

TILES, SLAB AND BLOCK FINISHINGS

B VINYL ASBESTOS TILES

Vinyl asbestos floor tiles shall comply with B.S 3260 of an approved manufacturer to patterns as directed by the Architect. Adhesives are to be recommended by the manufacturer in writing and approved by the Architect.

The tiles are to be laid and bedded direct in adhesive on to a cement and sand bed to make up the total paving thickness.

The cement and sand screed is to be finished with a steel trowel to a perfectly smooth surface before the application of the mastic and tiling.

On completion, vinyl asbestos tiles are to be sealed and polished with wax all in accordance with the manufacturer's printed instructions.

FINISHINGS SPECIFICATIONS

C CLAY TILE PAVING

Clay tile paving are to be in 150mm x 150mm tiles obtained from an approved manufacturer, and are to be laid on prepared screeds. The tiles are to be bedded in cement and sand (1:4) with straight joints in each direction. Upon completion grout in cement and wash and clean down. Tiles are to be cut with an electric tile cutting saw.

D GLAZED WALL TILES

Glazed wall tiles shall be in accordance with B.S1281 and shall be 150mm x 150mm x 6mm tiles from the standard colour range with cushion edges. Wall tiling shall be carried out in accordance with C. P.212.

E PRECAST CONCRETE PAVING SLAB

To be all in accordance with B.S.368. The slabs are to be of the sizes given herein and bedded, jointed and pointed in cement lime mortar. (1:2:9).

F RATES

The rates for tile, slab and block finishing shall include for rounded edge tiles and angles, cutting and fitting up to boundaries and around pipes, brackets, etc., and waste; for work in narrow widths, small and isolated areas and for all other incidental labours.

PAINTING AND DECORATING

MATERIALS

A MANUFACTURERS

Except where stated all materials shall be obtained from approved manufacturers. The contractor shall state the name and address of the manufacturer whose materials he proposes to use. Once approval has been given the contractor shall not obtain materials from other sources without the prior written agreement of the Architect.

B GENERAL

Each succeeding coat of priming, undercoating and finishing (pigment) or clear coating shall be sufficiently different in color as to be readily distinguishable. All primers and paints in one system upon a particular surface shall be obtained from the same manufacturer. The mixing of paints, etc, of different brands before or during application will not be permitted.

C EMULSION PAINTS

Emulsion paints shall be matt to satin finish vinyl emulsion paint. The first (mist) coat shall be thinned in accordance with the manufacturer's instructions.

D GLOSS PAINT

Gloss paint shall be hard gloss finish oil paint.

E LEAD BASED PAINT

The use of lead based paints will not be permitted.

F CLEAR FINISHES

Clear finishes internally shall be clear polyurethane varnish (one pack).

G PRIMERS AND UNDERCOATS

Unless otherwise specified, primers and undercoats shall be the type recommended by the manufacture of the finishing coats specified for a particular surface. Primer for external bare metalwork surfaces shall comply with B.S 2523.

H KNOTTING

Shellac knotting shall comply with B.S 1336

A WHITE SPIRIT

The white spirit shall comply with B.S. 245.

PAINTING DECORATION SPECIFICATIONS

B TIMBER STAIN

Timber stain shall be oil based pigmented stain. The application of these materials shall be strictly in accordance with the manufacturers written instructions. Tint and degree of application shall be to the approval of the Architect.

C STOPPING

The stopping shall be as follows:-

- (a) Plasterwork shall be plaster based filler.
- (b) Concrete and brick work shall be similar material to the background and finished in a similar texture.
- (c) Internal woodwork, plywood and block board shall be putty complying with B.S.544.
- (d) External woodwork shall be white lead paste complying with B.S 2029.

- (e) Internal clear wood finishes: the stopping shall be that recommended by the clear lacquer manufacturer.

D FILLERS

The fillers for internal joinery shall be the type recommended by the paint manufacturer for use with his type of paint or lacquer.

Stopper and fillers shall be tinted to match the under coat, and shall be compatible with both undercoats and primers.

All materials shall be used strictly in accordance with manufacturer's instructions.

E TEXTURED COATING

Textured coating is to be of proprietary manufacture approved by the architect and of an approved color. Technical information concerning the coating is to be submitted to the Architect before ordering, but the minimum qualities of the coating are to as follows:-

- (a) Suitable for application internally and externally, plastered, rendered, concrete, block stone, brick, asbestos and timber surfaces.
- (b) Minimum durability of 10 years even in exposed conditions
- (c) Maintenance free
- (d) Built- in mould resistant fungicide.

WORKMANSHIP

A GENERAL

Workmanship generally shall be carried out in accordance with B.S.C.P 231, unless otherwise specified. Before painting is commenced floors shall be swept and washed over; surfaces to be painted shall be cleaned before

PAINTING AND DECORATING SPECIFICATIONS

General (Cont'd)

applying paint as specified, and all precautions taken to keep down dust whilst work is in progress. No paint shall be applied to surfaces structurally or superficially damp and all surfaces must be ascertained to be free from condensation, efflorescence, etc., before the application of each coat. No painting shall be carried out externally during humid, rainy, damp, foggy or freezing conditions or conditions where surfaces have attained excessively high temperatures or during dust storms. No new primed or undercoated woodwork and metal work shall be left in an exposed or unsuitable situation for an undue period before completing the process.

No dilution of paint materials shall be allowed except strictly as detailed by the manufacturer's own direction, either on the containers, or their literature, and with special permission of the Architect. For external work dilution of paints will not be allowed whatsoever. For internal work, where permitted by the Architect, undercoats may be thinned by the addition of not more than 5% thinners. Gloss finish shall not be thinned at all.

Metal fittings such as ironmongery etc., not required to be painted shall first be fitted and then removed before the preparatory processes are commenced. When all painting is completed the fittings shall be cleaned as necessary and refixed in position.

B BRUSHWORK

Unless otherwise specified, all primers and paints shall be brush applied. Written permission must be obtained from the Architect's if an alternative method of application is to be used.

C STOPPING AND FILLING

Unless otherwise specified by the manufacturer all primers and undercoats shall be stopped flush and rubbed down to a smooth surface with an abrasive paper and all dust removed before each succeeding coat is applied. Care shall be taken to prevent burnishing of the surface.

D STIRRING

Unless otherwise specified by the paint manufacturer all paint materials shall be thoroughly mixed and/or stirred before and during use, and suitably strained as and when necessary.

E INSPECTION

No priming coats shall be applied until the surfaces have been inspected and the preparatory work has been approved by the Architect. No undercoats of finishing coats shall be applied until the previous coat has been similarly inspected and approved.

A. PAINT APPLICATION

Each coat of paint shall be so applied as to produce a film of uniform thickness.

All paint shall be applied in accordance with the manufacturer's instructions. Special attention shall be given to ensure that all surfaces including edges, corners, crevices, welds and rivets receive a film thickness equivalent to that of adjacent painted surfaces.

B DRYING

All coats shall be thoroughly dried before succeeding coats are applied. Allow a minimum of 24 hours between applications on any one surface, unless otherwise specified by the manufacturer.

PAINTING AND DECORATING SPECIFICATIONS

C UNPRIMED WOODWORKS

Unprimed woodwork scheduled to be painted shall be rubbed down with abrasive paper and dusted off. Care shall be taken to prevent 'burnishing' of the surface. All knots and resinous areas shall be coated with two coats of knotting. Pitch on large, open unseasoned knots and all other beads or streaks of pitch shall be scrapped off, or if still soft, shall be removed with white spirit before applying the knotting.

Apply one coat of priming to all surface, two coats to all end grain, to be subsequently painted. Backs of all wood frames in contact with concrete, brickwork, block work, and metalwork or similar materials shall be primed

before fixing. After priming all joints, holes, cracks shall be stopped and filled, rubbed down and dusted off.

D PRIMED WOODWORK

Woodwork delivered primed shall be lightly rubbed down with abrasive paper, and dusted off. Touch up bare areas with similar priming including open grained ends. After touch priming all joints holes, cracks and open grained ends shall be stopped and filled, rubbed down and dusted off.

E PLYWOOD AND BLOCKBOARD

Edges of exterior plywood and block board shall be sealed with two coats of aluminium primer and the backs treated with a lead primer.

F CLEAR FINISHED WOODWORK

All woodwork scheduled to receive a clear finish shall be well sanded with the grain removing all dirt etc., to give as smooth a surface as possible. Resinous timber shall be swabbed down with white spirit and dried thoroughly.

Split or end grain shall be filled with suitable filler recommended by the clear lacquer manufacturer in accordance with their instructions, and of the appropriate shade.

G BARE METALWORK

Bare metalwork shall be thoroughly cleaned off all dirt, grease, rust and scale by means of chipping, scrapping and wire brushing; particular attentions should be given to the cleaning of welded, brazed and soldered joints. Wash down with white spirit and wipe dry with clean rags. Apply a coat of metal primer immediately the cleaned surfaces have been approved by the Architect.

A GALVANIZED METALWORK

Galvanized metalwork scheduled for painting shall be thoroughly cleaned of dirt, grease dusted and washed down with white spirit and wiped dry with clean rags. Any minor areas of rust shall be removed by wire brushing and spot primed with a zinc rich primer. Apply at least one coat of calcium plumbate primer at all surfaces subsequently to be painted.

B PRIMED METALWORK

If the priming coat of pre-primed metalwork has suffered damage in transit, or during erection on site, the affected areas shall be cleaned off by wire brushing abrading and dusting off, the bared patches touched up with a primer of a similar type to that already applied.

C COPPER

Copper scheduled for painting shall be lightly abraded with emery cloth, washed with white spirit and wiped dry with clean rags. Apply a coat of each primer immediately the cleaned surfaces have been approved.

PAINTING AND DECORATING SPECIFICATIONS

D BRICKWORK, CONCRETE ETC.

All brickwork, block work, concrete, rendered and plaster surfaces scheduled to be painted shall be brushed down, all holes and cracks filled, all projections such as plaster or mortar splashes etc., removed to leave a suitable dust free surface. All traces of mould oil shall be removed from concrete surfaces by scrubbing with water, detergent and rinsing with clean water. All these surfaces shall be thoroughly dry before any primer or paints are applied. Apply a coat of alkali resisting primer where surfaces are to be finished with oil paints or alkyd type emulsion.

Asbestos cement surfaces scheduled for painting shall be brushed down to remove powdery deposits, and a coat of alkali resisting primer applied where such surfaces are to be finished with oil paints or alkyd resin type emulsion.

E COLOURS

The color will, be selected by the Architect from the paint manufacturer's standard color range.

F TOXIC WASH

Concrete, block work, plaster and timber surfaces which are to be painted shall be washed down prior to painting with a toxic wash applied by brush or spray. A second wash shall be applied two days after the first wash. The surfaces shall be then allowed to dry out completely before application of paint.

G PROTECTION

Proper care must be taken to protect surfaces while still wet by use of screens and 'wet paint' signs where necessary.

A DAMAGE

Care must be taken when preparing surfaces, or painting etc., not to stain or damage other work. Dust sheets and covers to the satisfaction of the Architects shall be used to protect adjacent work. Any such stains or damage shall be removed and made good at the Contractor's expense.

B CLEANLINESS

All brushes, tools, pails, kettles and equipment shall be clean and free from foreign matter. They shall be thoroughly cleaned after use and before being used for different colors, types of classes of material. Painting shall not be carried out in the vicinity of other operations that may cause dust. Waste liquids, oil soaked rag etc., shall be removed from the building each day. Waste liquids shall not be thrown down in any sanitary fittings or drains.

C PERFORMANCE

If, while the work is in progress, the paint appears to be faulty, such as consistency of color, drying time, or quality of finish, the work shall be stopped at once and the manufacturer consulted.

The manufacturers of the materials shall be given every facility for inspecting the work during progress in order to ascertain that the materials are being used in accordance to their directions, and to take samples of their products from the site if they so desire for tests.

The finishing coats of the various paints or surface finishing shall be free from sags, brush marks, runs, wrinkling, dust, bare or 'starved patches, variations in color and texture, and other blemishes.

PAINTING AND DECORATING SPECIFICATIONS

Performance (Cont'd)

When the work has been completed, the finished surfaces shall not be inferior in quality, color and finish to the samples approved by the Architect, and imperfections in manufacture shall not be apparent through these finished surfaces.

In the event that the Architect is not satisfied that the quality of finish does not comply with the required standards and/or the sample panel the contractor will be required to repaint at his own expense, such work to the satisfaction of the Architect. If in the opinion of the Architect it is necessary to remove completely the unsatisfactory paintwork this shall also be done under the direction of the Architect at the expense of the contractor.

D Packaging, Delivery and Storage

All paints and surface coatings shall be delivered in sound sealed containers, labeled clearly by the manufacturers, the label or decorated container must state the following:-

- (a) The type of product
- (b) The brand name and color
- (c) The use for which it is intended
- (d) The manufacturer's batch number
- (e) The B.S number if applicable
- (f) All labels shall be printed – containers bearing type written labels will not be acceptable

Materials shall be stored under cover in accordance with the manufacturer's instructions, and with local fire and safety regulations. The store itself must be maintained at temperature of not less than 50 degrees f (10 degrees C) and must not be subjected to extreme changes of temperature.

A VINYL EMULSION PAINT

Surfaces to be painted shall receive one mist coat followed by two full coats of vinyl emulsion paint. Application may be by means of rollers or brushes.

B GLOSS FINISH PAINT

Surfaces to be painted shall be primed then painted with two undercoats followed by one coat gloss finish paint.

C CLEAR POLYURETHANE VARNISH

Surface to be clear varnished shall be treated with two coats polyurethane varnish

D TEXTURED COATING

The manufacturer's instructions concerning application of the coating are to be strictly followed under the direction of the Architect.

All surfaces to receive textured coatings are to be clean and dry with surfaces scrapped and brushed before application of the coating.

Application of the coating is to be with textured roller or fibre brush as directed by the Architect with a minimum spreading capacity of 1 kilogramme per square metre. Under no circumstances is the coating to be thinned.

SECTION 4

BILLS OF QUANTITIES

SECTION V: TECHNICAL SPECIFICATIONS

The details of the works are provided in the Bill of Quantities.

SECTION V- BILL OF QUANTITIES

| ITEM | DESCRIPTION | | | RATE | AMOUNT |
|------|--|--|--|------|--------|
| | <u>ELEMENT NO.06</u> <u>WINDOWS</u> | | | | |
| | <u>Supply and fix the following purpose made steel casement windows (use heavy duty steel) burglar proofed with 25x25x2mm RHS sections to approved pattern including fixing lugs;; brass window stays and fasteners; primed with primer; permanent vent incorporated on approved hood and complete with mesh and mosquito gauze</u> | | | | |
| A | Window size 1400x 1200mm comprising of 2No. side hung panels and 1No. upper top hung panel and the remaining comprising of fixed panels | | | | |
| B | Window size 500x 500mm | | | | |
| C | Window size 600x600mm | | | | |
| D | Window size 800x600mm | | | | |
| | | | | | |
| | Window cill | | | | |
| E | 75thick vibrated reinforced concrete (1:1:2) window cill overall width 225mm once throated and weathered including hoisting; fixing in position and making good | | | | |
| E | Curtain rails | | | | |
| | Curtain rail complete with matching hooks, end stops, brackets and rollers. | | | | |
| | <u>GLASS</u> | | | | |
| A | 4mm thick clear sheet glass fixed to steel window with putty in panes exceeding 0.10 square metres but not exceeding 0.5 square metres | | | | |
| B | 4mm thick obscured sheet ditto | | | | |
| | Stays and fasteners | | | | |

CONSTRUCTION OF SAMBURU OFFICE BLOCK

| | BILL OF QUANTITIES | | | | |
|------|--|------|-----|-----------|-----------|
| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
| | <u>ELEMENT NO.01</u> | | | | |
| | Preliminary provisional sum; provide for engineers setting out ,supervision and site meetings | sum | 1 | 1,000 000 | 1,000,000 |
| | <u>SUBSTRUCTURES (ALL PROVISIONAL)</u> | | | | |
| | <i><u>NB:</u> This element comprises of all work upto and including ground floor slabs</i> | | | | |
| A | Clear site of bushes, shrubs and burnt the rising materials | SM | 250 | | |
| B | Excavate oversite average 200mm deep to remove vegetable soil load, dispose at the sit | SM | 220 | | |
| C | Excavate foundation footing depth not exceeding 1200mm from the ground level | CM | 80 | | |
| D | Ditto for column bases depth ditto | CM | 8 | | |
| | | | | | |
| | | | | | |
| E | Extra over excavation for excavating in rock occurring at depth not exceeding 2000mm below ground level including disposal | CM | 5 | | |
| | | | | | |
| F | Return, fill in and ram selected excavated material in layers of 150mm ground foundations | CM | 50 | | |
| | | | | | |
| G | Load and spread surplus excavated material in on site | CM | 25 | | |
| H | Approved hardcore filling well compacted and consolidated in 150mm thick layers in 150mm thick layers including making up levels | CM | 60 | | |
| I | 50mm thick approved murrain blinding to surface of hardcore | SM | 220 | | |

| | | | | | |
|--|--|----|-----|--|--|
| | "Rentokil" or other equal and approved treatment to murrum surface | SM | 220 | | |
| | CARRIED TO COLLECTION | | | | |

| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------|--|------|-----|------|--------|
| | <u>CONCRETE WORK</u> | | | | |
| | <u>Vibrated reinforced concrete (1:1.5:3) (20inch aggregate) as described in:</u> | | | | |
| A | Column bases | CM | 7 | | |
| B | Foundation footing | CM | 11 | | |
| C | Columns | CM | 3 | | |
| D | Steps | CM | 2 | | |
| E | 150mm thick ground floor slab | SM | 220 | | |
| | | | | | |
| | <u>Plain concrete (1:2:4) as described in:</u> | | | | |
| F | 50mm thick blinding layer in column base | CM | 3 | | |
| G | Ditto in foundation footing | CM | 3 | | |
| | | | | | |
| | <u>High tensile square twisted reinforcement bar to B.S 4461 including cutting bending, hooks, spacer blocks and binding wire</u> | | | | |
| H | 12mm dtto | KG | 480 | | |
| I | 10mm ditto | KG | 188 | | |
| J | 8mm diameter mild steel reinforcement bar | KG | 85 | | |
| | <u>BRC Mesh</u> | | | | |
| K | BRC fabric mesh reinforcement kef. No .A 142 weighing 2.22Kg per square meters in concrete bed laid in one layer (measured net allow for overlaps) | SM | 220 | | |
| | | | | | |
| | <u>Sawn formwork as described to:</u> | | | | |
| A | Vertical edges of columns | SM | 30 | | |
| B | Steps | SM | 6 | | |
| | | | | | |

| | | | | | |
|---|---|----|----|--|--|
| C | Verticle edge of concrete floor slab 75-150mm high | LM | 65 | | |
| | CARRIED TO COLLECTION | | | | |

| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------|---|------|-----|------|--------|
| | <u>WALLING</u> | | | | |
| | | | | | |
| D | 200mm thick quarry dressed natural stone wall laid with and including (1:3)cement sand mortar with and including hoop iron in every second course | SM | 180 | | |
| E | 1000 gauge polythene damp proof membrane laid in one layer below basement slab | SM | 220 | | |
| F | 200mm wide hessian based bituminous felt damp proof course bedded with cement sand (1:3) mortar | LM | 75 | | |
| G | 15mm thick cement and sand (1;6)rendering to plinth area | SM | 35 | | |
| H | Prepare and apply three coats of black bitumen to plinth area | SM | 35 | | |
| I | 600x600x50mm grey P.C paving slabs on 50mm bed of sand | SM | 60 | | |
| | carried to collection below | | | | |
| | <u>COLLECTION</u> | | | | |
| | Brought forward from page 1 | | | | |
| | brought forward from page 2 | | | | |
| | brought down from above | | | | |
| | CARRIED TO SUMMARY | | | | |

| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------|-----------------------|------|-----|------|--------|
| | ELEMENT NO. 02 | | | | |

| | | | | | |
|---|--|----|-----|--|--|
| | REINFORCED CONCRETE FRAME | | | | |
| A | Vibrated reinforced concrete (1:1.5:3) as described in beams | CM | 4 | | |
| B | Ditto but Columns | CM | 5 | | |
| | Sawn formwork to | | | | |
| C | Sides and soffits of beams | SM | 55 | | |
| D | Vertical sides of columns | SM | 65 | | |
| | | | | | |
| | Reinforcement (all provisional) High tensile square twisted reinforcement bar B.S 4461 as described including cutting to length; bending; twisted and fixing; including all necessary tying wire and space blocks | | | | |
| E | 12mm diameter bar | KG | 591 | | |
| F | 8mm diameter bar | KG | 262 | | |
| | CARRIED TO SUMMARY | | | | |

| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------|---|------|-----|------|--------|
| | <u>ELEMENT NO. 03</u> <u>SUPERSTRUCTURE WALLING</u> | | | | |
| A | 200mm thick fine dressed natural stone walling laid with and including (1:3) cement sand mortar with hoop iron in every second course | SM | 100 | | |
| B | 150mm thick ditto | SM | 40 | | |
| C | Provide 100x50mm aluminium frames (anodized aluminium) both vertical and horizontal complete with all fixing devices to receive MDF board or glazing, including any reverting where necessary | LM | 300 | | |
| D | Provide and fix 12mm super wood veneered M.D.F | SM | 85 | | |
| E | 5mm thick toughened clear glass | SM | 39 | | |
| | TOTAL FOR ELEMENT NO. 03 – WALLING CARRIED TO SUMMARY | | | | |

| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------|-----------------------|------|-----|------|--------|
| | ELEMENT NO. 04 | | | | |

| | | | | | |
|-------------|---|-------------|------------|--|--|
| | <u>ROOFING AND RAIN WATER DISPOSAL</u> <u>(All Timbers to be seasoned Cypress)</u> | | | | |
| A | 150 x 50mm rafter | LM | 521 | | |
| B | 100x 50mm strut or tie | LM | 352 | | |
| C | 150x50 tie beam | LM | 225 | | |
| D | 150x50 king post | LM | 47 | | |
| E | 150x50mm ridge & valley board | LM | 96 | | |
| F | 100x50mm wall plate bolted to reinforced concrete ring beam at 1100mm centres (bolts measured separately) | LM | 65 | | |
| | <u>Wrot cypress</u> | | | | |
| G | 25x250mm fascia or barge board | LM | 78 | | |
| | <u>Roof cover</u> | | | | |
| H | Supply and fix Resincot, IT4 gauge 24 as per Architect's Drawings | LM | 255 | | |
| | CARRIED TO COLLECTION | | | | |
| ITEM | DESCRIPTION | UNIT | QTY | | |
| I | 375 X 150 X 75mm ridge tile capping | LM | 20 | | |
| J | Ditto hip cap | LM | 23 | | |
| K | Ditto valley trough 450min | LM | 11 | | |
| L | Prepare and apply one undercoat and two finishing coats of gloss oil paint on wooden surface girth 200-300mm | LM | 78 | | |
| | <u>The following in preprinted gauge 26 steel rain water goods</u> | | | | |
| M | 150x250mm box gutter with soldered joints in the running length; fixed onto fascia board with and including 25x3inm steel brackets at 900mm centres | LM | 78 | | |
| N | Extra over gutter (150 x250mm long corner bend) | NO | 4 | | |
| O | Extra over gutter for 100x100mm outlet | NO | 4 | | |
| P | 100 x 100mm gauge 26 pre-painted steel galvanized down pipe fixed with and including holder bats at 800mm down centres | LM | 12 | | |
| Q | Extra over down pipe sawn neck | NO | 4 | | |
| R | Ditto for shoe | NO | 4 | | |

| | | | | | |
|--|--|--|--|--|--|
| | Carried to collection below | | | | |
| | COLLECTION | | | | |
| | Brought forward from page 5 | | | | |
| | Brought down from above | | | | |
| | TOTAL FOR ELEMENT NO. 04 - ROOFING, AND RAINWATER DISPOSAL CARRIED TO SUMMARY | | | | |

| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
|------|---|------|-----|------|--------|
| | <u>ELEMENT NO.05</u> <u>DOORS</u> | | | | |
| A | Glazed steel door overall size 1600x2400mm in two equal leafs comprising of 50x40x3mm rectangular hollow section door frame (9.00LM) each leaf fabricated from 40x25x3mm RHS (16.00LM) gauge 16 steel panel (4SM): upper part size 1600x400mm comprising of 4 steel permanent vent all including purpose made hinges; finishing lugs, bolt and primed | NO | 1 | | |
| B | Glazed steel door overall size 1200x2400mm in two equal leafs comprising of 50x40x3mm rectangular hollow section door frame (9.00LM) each leaf fabricated from 40x25x3mm RHS (16.00LM) gauge 16 steel panel (4SM): upper part size 1200x400mm comprising of 4 steel permanent vent all including purpose made hinges; finishing lugs, bolt and primed | NO | 2 | | |
| C | Glazed steel door overall size 900x2400mm in two equal leafs comprising of 50x40x3mm rectangular hollow section door frame (9.00LM) each leaf fabricated from 40x25x3mm RHS (16.00LM) gauge 16 steel panel (4SM): upper part size 900x400mm comprising of 4 steel permanent vent all including | NO | 1 | | |

| | | | | | |
|-------------|--|-------------|------------|-------------|---------------|
| | purpose made hinges; finishing lugs, bolt and primed | | | | |
| B | Provide and fix 50mm aluminium door and frame in expand posture fill 12mm MDF boards and 5mm glass on upper panel complete in size 900x2100mm including lock, door closers and handles | NO | 5 | | |
| C | Ditto but 1200x2100mm | NO | 1 | | |
| | <u>The following in solid core flush doors</u> | | | | |
| D | 45mm thick standard solid core flush door overall size 900x2400mm laced on both sides with 6mm thick mahogany veneer and hardwood lipped all exposed edges | NO | 10 | | |
| E | 150x50mm rebated timber door frame with two labour fixed to wall | LM | 60 | | |
| | | | | | |
| F | 45x20mm moulded architrave | LM | 60 | | |
| G | 20mm quadrant | LM | 60 | | |
| H | 20x15mm glass beading | LM | 15 | | |
| | | | | | |
| | TOTAL FOR ELEMENT NO. 05 - DOORS CARRIED TO SUMMARY | | | | |
| | | | | | |
| ITEM | DESCRIPTION | UNIT | QTY | RATE | AMOUNT |
| | <u>The following ironmongery as per 'UNION' or other equal and approved manufacturer</u> | | | | |
| A | 2-lever union mortice door lock complete with anodized aluminum handles and furniture | NO | 10 | | |
| B | 3-lever Steel door lock | NO | 2 | | |
| C | 40mm diameter rubber door stopper rawl bolted to floor | NO | 10 | | |
| C | Standard brass window fasteners to approval | | | | |

| | | | | | |
|---|---|----|----|--|--|
| D | 4mm thick clear sheet glass fixed to doors with putty/ beads in panes exceeding 0.10 square metres but not exceeding 0.50 square metres | SM | 4 | | |
| E | Prepare and apply one under coat and two finishing coats of prime grade gloss paint as 'CROWN' or equivalent manufacturer to general surface of doors | SM | 20 | | |
| | COLLECTION | | | | |
| | Brought forward from page 7 | | | | |
| | Brought down from above | | | | |
| | CARRIED TO SUMMARY | | | | |

| | | | | | |
|---|---|--|--|--|--|
| D | Standard brass window stays to approval | | | | |
| | | | | | |
| | | | | | |
| | CARRIED TO SUMMARY | | | | |

| ITEM | DESCRIPTION | | | RATE | AMOUNT |
|------|---|--|--|------|--------|
| | <u>ELEMENT NO. 07 FINISHES</u> <u>Acoustic Ceiling finishes</u> "Hunter Douglas" suspended aluminum ceiling ceilings comprising V-carriers, panels suspension hangers, flush jointing and trap doors. | | | | |
| A | Supply & fix 6mm thick pyrotherm acoustic ceiling | | | | |
| B | T&G cypress ceiling fixed on 50x25mm timber bearers to eaves | | | | |
| | <u>Wall finish Plaster;</u> | | | | |

| | | | | | |
|----------------------------------|---|--|--|--|--|
| C | 18mm thick plaster 1:3mix to natural stone walling steel trowelled smooth with cement paste | | | | |
| D | 18mm thick plaster 1:3mix to natural stone walling finished to receive tiles | | | | |
| E | 200x250mm coloured ceramic tiles bedded to walls with and including tile grout. | | | | |
| | <u>Keying</u> | | | | |
| F | External wall keying with mortar 1:4 finished with neat neccessed joints | | | | |
| | <u>Rendering</u> | | | | |
| G | 18mm thick render 1:3mix to natural stone walling. | | | | |
| | | | | | |
| A | Hack out concrete beams and columns prepare and apply 18mm thick render 1:3mix | | | | |
| | <u>Labour in wet render</u> | | | | |
| B | Form groove in wet render to approval | | | | |
| C | Prepare and apply 3 coats of bituminous paint to rendered plinths | | | | |
| | <u>Pin board</u> | | | | |
| D | 10mm thick soft board pin board in 2 number complete with beading all round with 50x25mm moulded podo including 3 coats of polyurethane lacquer | | | | |
| | <u>Jambs</u> | | | | |
| E | Make good 150mm thick window and door jambs with mortar 1:3mix including making corners | | | | |
| | | | | | |
| Total to collection sheet | | | | | |

| ITEM | <u>DESCRIPTION</u> | | | RATE | AMOUNT |
|------|-----------------------------------|--|--|------|--------|
| | <u>Floor finish Screed</u> | | | | |

| | | | | | |
|---|---|--|--|--|--|
| F | 32mm thick screed 1:3 mix steel trowelled hard and smooth to receive ceramic tiles. | | | | |
| G | 6mm thick coloured plain tiles size 330 x 330mm with and including tile grout | | | | |
| | <u>Skirting</u> | | | | |
| H | 100mm high ceramic tile skirting | | | | |
| | TOTAL CARRIED TO COLLECTION BELOW | | | | |
| | <u>COLLECTION</u> | | | | |
| | Brought forward from page 10 | | | | |
| | Brought forward from above | | | | |
| | TOTAL TO SUMMARY SHEET | | | | |

| ITEM | DESCRIPTION | | | RATE | AMOUNT |
|------|--|--|--|------|--------|
| | <u>ELEMENT NO. 08</u> | | | | |
| | PAINTING AND DECORATING | | | | |
| | Prepare and apply 2 undercoats and 1 finishing coat plastic emulsion paint to:- | | | | |
| A | Plastered walls internally & externally | | | | |
| | Prepare and apply 2 undercoats and 1 finishing coat gloss enamel paint to:- | | | | |
| B | Metal surfaces internally (measured over glass) | | | | |
| | | | | | |
| C | Metal surfaces externally (measured over glass) | | | | |
| | | | | | |
| | Prime knot and stop, prepare and apply 3 | | | | |

| | | | | | |
|---|--|--|--|--|--|
| | Coats gloss enamel paint to timber. | | | | |
| D | :Timber surfaces internally | | | | |
| | | | | | |
| E | : edges 0-100mm girth internally | | | | |
| | | | | | |
| F | : edges 0-200mm girth internally | | | | |
| | | | | | |
| G | : edges 0-300mm girth internally | | | | |
| | | | | | |
| H | Prime only backs of door frames | | | | |
| | <i>Prepare and apply one undercoat and two finishing coats first grade varnish to wood surfaces</i> | | | | |
| J | Polyurethane clear vanish-matt to T&G timber surfaces | | | | |
| | | | | | |
| Total to summary for painting and decorating | | | | | |

| ITEM | DESCRIPTION | QTY | UNIT | RATE | Amount |
|------|---|-----|------|------|--------|
| | <u>ELEMENT NO. 9 FITTINGS</u> <u>Kitchen Cabinet</u> | | | | |
| A | 100mm thick natural stone dwarf walling mortar 1:3 mix | | | | |
| B | 18mm thick plaster 1:3 to natural stone walling | | | | |

| | | | | | |
|-------------------------|--|--|--|--|--|
| | steel trowelled smooth with cement/lime 1:1 paste. | | | | |
| | | | | | |
| C | Sawn form work to soffits of suspended slab | | | | |
| | | | | | |
| D | Sawn form work to edged 75-150mm | | | | |
| | | | | | |
| E | Y8 steel reinforcement | | | | |
| F | 100mm thick concrete 1:1.5:3 in suspended slab | | | | |
| G | 32mm thick screed 1:3 mix finished to receive ceramic tiles | | | | |
| H | 75x50mm wrot podocarpus | | | | |
| I | 50x25mm runners | | | | |
| | | | | | |
| J | 20mm thick MDF block board door podo lipped all round | | | | |
| | | | | | |
| K | Hinges | | | | |
| L | 100mm thick concrete 1:2:4 benching including 18mm thick screed finished smooth with cement paste. | | | | |
| | | | | | |
| M | 600mm standard granite bedded onto worktop | | | | |
| | | | | | |
| | <u>Shelves</u> | | | | |
| N | 225x25mm 20mm thick MDF shelf with on labour screwed to steel angles (m/s) | | | | |
| P | Standard pressed steel shelf brackets to approval | | | | |
| Total to summary | | | | | |

| ITEM | DESCRIPTION | | | RATE | AMOUNT |
|------|--|--|--|------|--------|
| | Supply, install, test and commission the following | | | | |
| | <u>ELEMENT NO. 10 LIGHTING POINTS</u> | | | | |
| | | | | | |
| A | Lighting point wired in 3x1.5mm SC-PVC-Cu cables drawn in PVC conduits complete with all necessary accessories excluding switches and fittings for:- | | | | |
| | a) One way switching | | | | |
| | | | | | |
| | b) Two way switching | | | | |
| | | | | | |
| B | 10A moulded ivory switch plates as MK range/clipse or approved equivalent | | | | |
| | a) One gang one way | | | | |
| | b) One gang two way | | | | |
| | c) Two gang one way | | | | |
| | d) Two gang two way | | | | |
| | | | | | |
| C | Light fittings complete with all the necessary fixing materials and the rated lamps:- | | | | |
| | a) 4 x 18W, 600mm recessed louvre fittings | | | | |
| | b) 2 x 18 watts IP 65 fluorescent bulkhead fitting with vandal proof screws | | | | |
| | | | | | |
| | SOCKET OUTLETS AND POWER POINTS | | | | |

| | | | | | |
|-------------|--|--|--|--|---------------|
| D | Socket outlet point comprising wiring in 3 x 2.5mm ² PVC-SC-CU cables in concealed PVC conduits and metal trucking (ring mains) | | | | |
| E | 13A moulded socket outlet plate as MK RANGE OR APPROVED equivalents | | | | |
| F | (i) Twin switched | | | | |
| | | | | | |
| | <u>POWER DISTRIBUTION AND CONTROLS</u> | | | | |
| G | CONSUMER UNITS AS HAVELLS a) 8 Ways 100 Amps Isolator SP Consumer Unit. | | | | |
| | | | | | |
| | MINIATURE CIRCUIT BREAKERS – MCBS SINGLE PHASE AS HAVELLS | | | | |
| | | | | | |
| H | a) 10 Amps MCBS SP | | | | |
| | | | | | |
| I | b) 32 " " " | | | | |
| | | | | | |
| | Total carried forward to collection | | | | |
| ITEM | DESCRIPTION | | | | AMOUNT |
| | <u>WIRING</u> | | | | |
| A | 3 X 10mm ² single core PVC copper cable drawn in 32mm H/G concealed PVC for distribution of power from the meter board to every consumer unit | | | | |
| B | Single tariff meter box complete with 80Amps KMBG | | | | |
| C | Earthing system comprising 16mm diameter 1500mm long copper rod complete with clamp, 16mm ² single core copper earth lead and an access Allow a provisional sum of Kenya Shillings Thirty Five Thousand (Kshs 35,000/=) for KPLC service line | | | | |

| | | | | | |
|---|---|--|--|--|--|
| D | Allow a provisional sum of Kenya Shillings Thirty Five Thousand (Kshs 35,000/=) for KPLC service line | | | | |
| | | | | | |
| | TOTAL CARRIED TO COLLECTION BELOW | | | | |
| | | | | | |
| | <u>COLLECTION</u> | | | | |
| | Brought forward from page 14 | | | | |
| | | | | | |
| | Brought forward from above | | | | |
| | | | | | |
| | Total carried forward to summary | | | | |

| ITEM | DESCRIPTION | | | | KSHS |
|------|---|--|--|--|------|
| | ELEMENT NO.11 SANITARY FITTINGS_ | | | | |
| | Supply and fix the following sanitary appliances complete with all the accessories including connection to services wastes jointing to supply over flows and all plugging and screwing to walls floors all to be as Twyford's oriental or approved equivalent | | | | |
| | <u>water closet</u> | | | | |
| A | Low level wash down WC suite as Twyford's 'CLASSIC' comprising of the following WC bowl bottom outlet Ref.no CC 1138WH LOW LEVEL 7.5LTS cistern and fittings side inlet and overflow REF.no 284 WH Heavy duty black seat and cover | | | | |
| B | the suite to be supplied complete with valves, cistern fittings including siphon 0.5" side inlet, ball valves 0.25" side overflow plastic flush bend ,inlet connection and reversible chrome plated cistern lever and cistern support. | | | | |
| | Washing hand basin | | | | |

| | | | | | |
|---|--|--|--|--|--|
| C | Wash hand basin size 540x405mm, of the well fixing type, with one trap hole and chain stay hole. To be complete with all baskets, chrome plated 15mm approved pillar trap, plastic 32mm diameter bottle trap with 75mm seal, chain waste and a set of fixing brackets. the wash hand basin to be as Twyford Amazon or approved equivalents | | | | |
| | | | | | |
| A | <u>Toilet roller holder</u> | | | | |
| | Standard stainless steel toilet roll holder to approval | | | | |
| | <u>Mirrors</u> | | | | |
| | 6mm thick polished plat glass, silver backed mirror with beveled edges, size 610x457 plugged and screwed to wall with 4 no. chrome plate dome capped screws and 5mm thick foam back rest | | | | |
| | <u>Urinal</u> | | | | |
| | A set of 2 white glazed ceramic urinal bowls complete with 1 no. white glazed screens, 5 litres ceramic automatic cistern, chrome plated flush pipe and plastic waste | | | | |
| | <u>LIQUID SOAP DISPENSER.</u> | | | | |
| | Liquid soap dispenser white in color, capacity 1.136 litres complete with plastic rawl plugs, fixing screws, locks and key complete with intial fill of soap gel. The soap dispenser to be as 'Zalpon's mark 7' size 125x100x290mm high or approved equivalent. | | | | |
| | Total carried forward to summary | | | | |

| ITEM | DESCRIPTION | | | | KSHS |
|------|---|--|--|--|------|
| | ELEMENT NO.12 - INTERNAL PLUMBING AND DRAINAGE (ALL PROVISIONAL) | | | | |

| | | | | | |
|---|--|--|--|--|--|
| | Supply, deliver and install polypropylene random (pp-r) PN-20 oxy-stable pipe work to DIN 8077. pipe jointing shall be by poly fusion or of electric couplings. Tenderer must allow for jointings clippings coupling, metal/plastic threaded adoptors where required for the connection of sanitary fixtures, valves, sockets, sliding and fixed joints, support raceways, isolating sheaths, elastic materials, expansion arms and bends, crossover etc where pipe work is not chased proper anchoring using approved fixtures shall be done No. pipe work shall be left exposed to the sun | | | | |
| | <u>Pipework</u> | | | | |
| A | 15mm diameter PPR pipe | | | | |
| B | 20mm diameter ditto | | | | |
| | | | | | |
| | <u>Extra over pipe fittings</u> | | | | |
| C | 20mm diameter bends | | | | |
| D | 25mm diameter ditto | | | | |
| E | 20x15x15mm diameter tee | | | | |
| F | 25X20X15mm ditto | | | | |
| G | 20mm diameter gate valves | | | | |
| H | 25mm ditto | | | | |
| I | 50mm diameter plastic floor trap including bedding in floor | | | | |
| J | 100mm plastic gully trap complete with building all round the concrete, bedding the trap and 50mm thick precast concrete cover. | | | | |
| K | Water storage Tank | | | | |

| | | | | | |
|-------------|---|--|--|--|--|
| | Supply, deliver and install vertical close end plastic moulded tank of capacity 920 litres (200 gallons) and diameter 1300x860mm high. The tank to be assembled complete with cover and having screwed connections for inlet, outlet, overflow, 32mm high pressure ball valves, drains pipes and any other necessary item for its proper functioning. the tank shall be mounted on a timber platform and shall be ROTO Model or approved equivalent. | | | | |
| L | 50mm thick plastic wastepipe bedded in wall including cutting chases and making good. | | | | |
| M | 50mm diameter plastic waste pipe laid in trenches including excavating and backfilling back the soil | | | | |
| O | 600X600X100mm manhole complete with benching and standard casting iron cover | | | | |
| | Total carried to collection | | | | |
| ITEM | DESCRIPTION | | | | |
| P | Allow for flush out and sterilization of the cold water system as required to the satisfaction of the Engineer. | | | | |
| | | | | | |
| Q | Allow for setting to work, Testing and commissioning of the whole plumbing works to the satisfaction of the Engineer | | | | |
| | <u>Internal drainage (provisional)</u> | | | | |
| R | Supply, deliver and fix the following in UPVC soil and wastage system to BS 4514 and 5225 with fittings fixed in accordance to the manufacturers printing instructions and BS 5572 and manufactured by "KEY TERRAIN" as described. All UPVC branches, tees, reducing etc are to be formed in accordance to the manufacturer's printed instruction. The installation to have the various sizes of connectors, adaptors, sockets, reducers hold bats, clips etc as required far satisfactory functions. | | | | |

| | | | | | |
|---|---|--|--|--|--|
| | | | | | |
| | <u>Drainage pipework and fitting</u> | | | | |
| S | 100mm diameter golden brown UPVC pipe pipe laid in trenches including excavating and filling back the soil. | | | | |
| | | | | | |
| T | Ditto 100mm diameter grey pipes | | | | |
| | | | | | |
| U | Ditto 50mm diameter waste pipes | | | | |
| | | | | | |
| V | Ditto 100mm diameter bends | | | | |
| | | | | | |
| W | Ditto 50mm diameter bends | | | | |
| | TOTAL TO COLLECTION BELOW | | | | |
| | | | | | |
| | COLLECTION | | | | |
| | Brought forward from page 17 | | | | |
| | Brought forward from above | | | | |
| | Total carried forward to summary | | | | |

| ITEM | DESCRIPTION | | | RATE | SHS |
|------|--|--|--|------|-----|
| | <u>ELEMENT NO. 13 - SEPTIC TANK (22,000 LTRS)</u> | | | | |
| A | Clear site of all bushes shrubs etc and cart away and burn | | | | |
| B | Pit excavation level not exceeding 1.5 from existing level | | | | |
| C | Pit excavation level depth 1.5 - 2.5m in murrum | | | | |
| D | 150mm thick bottom slab thickness in concrete 1:2:4 | | | | |

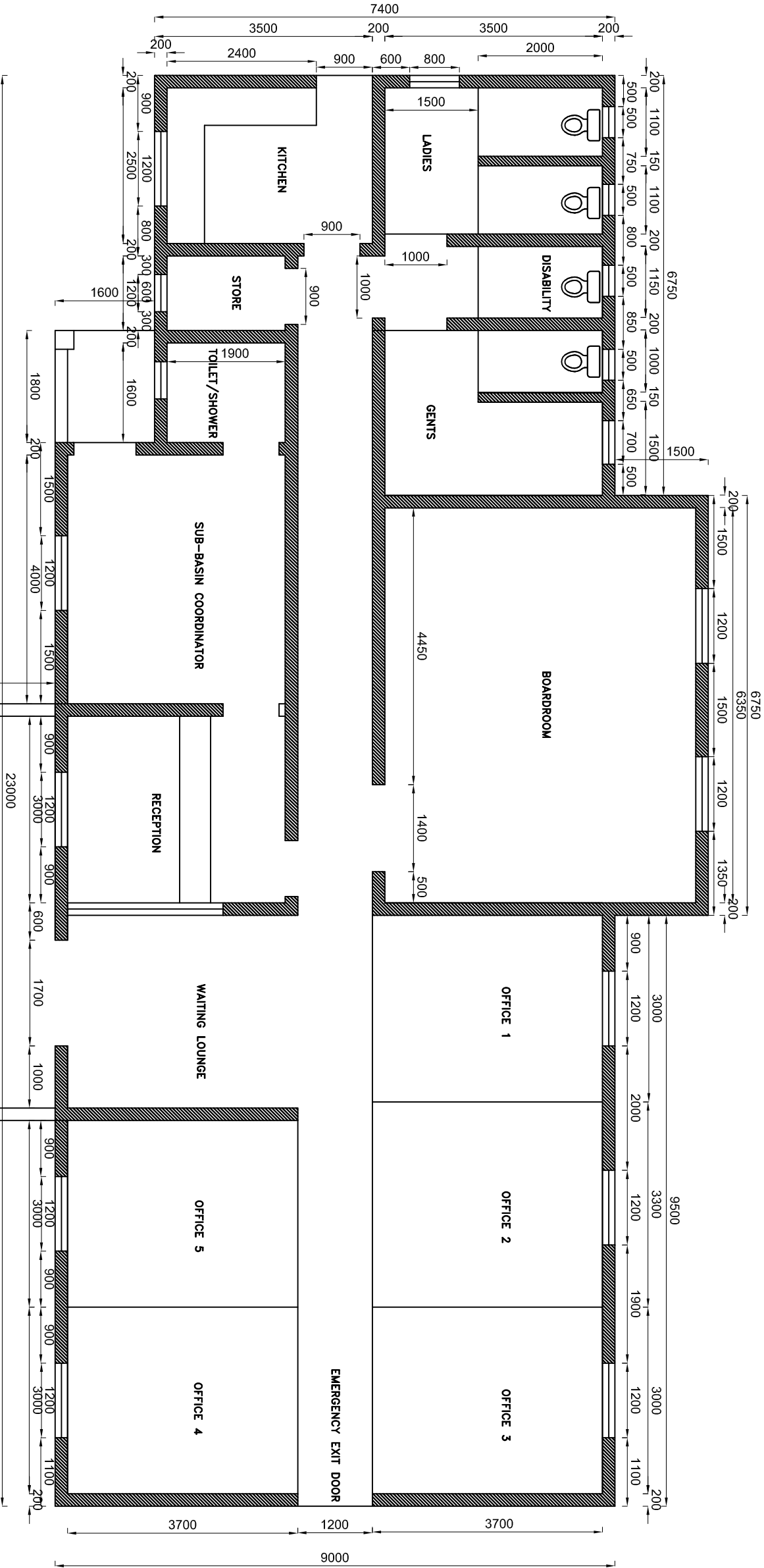
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|---|---|--|--|--|--|
| E | 200mm quarry stone walling in mortar 1:3 mix including hoop iron every two courses | | | | |
| F | Sawn from works to soffits of suspended slabs | | | | |
| G | Sawn form work to edges of top slab (75-150mm) | | | | |
| H | Precast concrete scum baffle size 2400mm*800mm*100mm thick complete with BRC ref 142 reinforcement | | | | |
| I | Vibrated reinforced concrete 1:1.5:3 mix in suspended slab | | | | |
| J | 18mm thick plaster 1:3 mix steel troweled smooth with water proof cement | | | | |
| K | 32mm thick plaster 1:3 mix in bottom with water proof cement | | | | |
| L | 32mm thick screed 1:3 mix in suspended slab | | | | |
| M | Purpose made precast concrete manhole cover size 600*450mm comprising weld mesh welded into 25mm steel angle framing, 25mm steel angle frame embedded onto masonry complete with greasing | | | | |
| N | 10mm diameter high tensile reinforcement bars | | | | |
| | Total to collection | | | | |
| | <u>Inlet and outlet manholes the following in 2 numbers man holes size 800*600*800mm deep</u> | | | | |
| O | Pit excavation, depth not exceeding 1.5m from existing levels | | | | |
| P | Cart away excavated materials | | | | |
| Q | Benching concrete 1:2:4 mix | | | | |
| R | 150mm thick stone walling in mortar 1:3 mix | | | | |
| S | 18mm thick plaster 1:3 mix | | | | |
| T | Purpose made precast concrete concrete manhole cover size 600*450mm comprising weld mesh welded onto 25mm steel angle framing 25mm steel angle frame bedded onto masonry complete with greasing | | | | |
| U | Built in end of big pipe to manhole | | | | |
| V | Mould wet benching concrete to pipe profile | | | | |

| | | | | | |
|-------------|---|--|--|--|--|
| W | Form work edges of top slab(0-100m) | | | | |
| X | Excavate 600mm*1400mm deep trenches grade bottoms and return fill and ram | | | | |
| | TOTAL TO SUMMARY | | | | |
| ITEM | DESCRIPTION | | | | |
| | <u>ELEMENT NO. 14 – SOAK PIT</u> | | | | |
| | <u>The following in 1 number soak pit</u> | | | | |
| | | | | | |
| A | Excavate 0-1.5m | | | | |
| | | | | | |
| B | Excavate 1.5-2.0m in rock | | | | |
| | | | | | |
| C | Excavate 2.0-2.5m in rock | | | | |
| | | | | | |
| D | Excavate 2.5-3.0m in rock | | | | |
| | | | | | |
| E | Spread the excavated materials on site | | | | |
| | | | | | |
| F | Return fill in and ram | | | | |
| | | | | | |
| G | Approved hardcore fill | | | | |
| | | | | | |
| H | 150mm thick natural stones walling in mortar 1:3 mix | | | | |
| | | | | | |
| I | Mass concrete 1:2:4 in strip foundations | | | | |
| | | | | | |
| J | BRC mesh ref 142 | | | | |

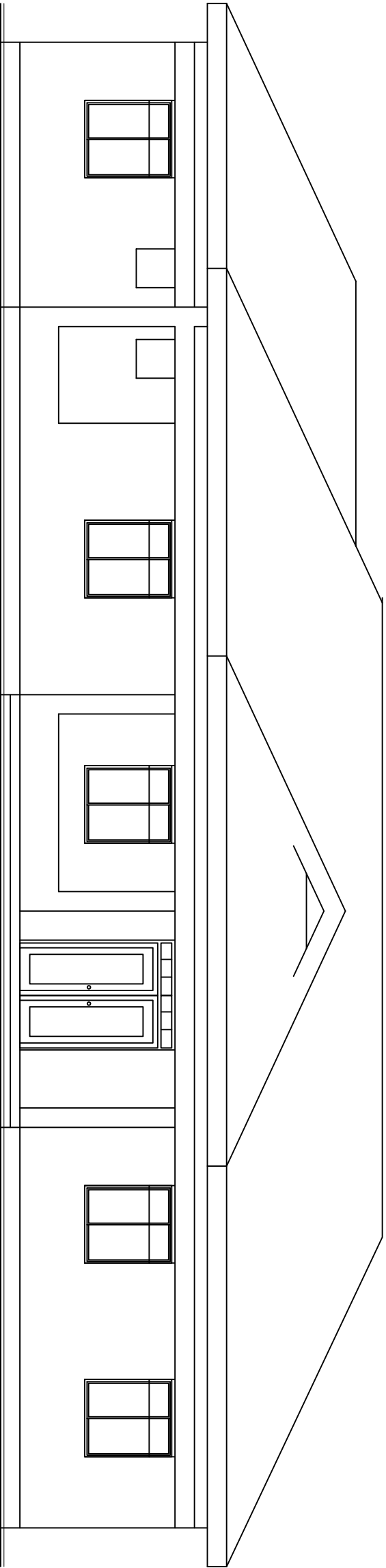
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|---|--|--|--|--|--|
| | | | | | |
| K | Vibrated reinforced concrete 1:1.5:3 in 150mm thick suspended slab | | | | |
| | | | | | |
| L | Sawn formwork to suspended slab including props | | | | |
| | | | | | |
| M | Purpose made precast concrete manhole cover size 600*450mm comprising weld mesh weld onto 25mm steel angle framing 25mm steel angle frame bedded onto masonry complete with greasing | | | | |
| | | | | | |
| | TOTAL TO SUMMARY | | | | |
| | | | | | |

| | | |
|----------------|------------------------------------|--|
| | | |
| ELEMENT | SUMMARY PAGE FOR WORKS | |
| 1 | Substructures | |
| | | |
| 2 | Reinforced Concrete Frame | |
| | | |
| 3 | Superstructure Walling | |
| | | |
| 4 | Roofing & rain water disposal from | |
| | | |
| 5 | Doors from | |
| | | |
| 6 | Windows | |
| | | |
| 7 | Finishes | |
| | | |
| 8 | Painting and decorating | |
| | | |
| 9 | Fittings | |
| | | |
| 10 | Lighting | |
| | | |
| 11 | Sanitary Fittings | |
| | | |
| 12 | Internal plumbing and drainage | |
| | | |
| 13 | Septic tank | |
| | | |
| 14 | Soak pit | |
| | | |
| | TOTAL | |
| | Add 5% contingency on total | |
| | GRAND TOTAL | |

- NOTES**
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
 2. DRAWING TO SCALE IN A1 PAPER SIZE
 3. READ IN CONJUNCTION WITH RELEVANT DRAWINGS



FLOOR PLAN



FRONT ELEVATION

PROJECT:
**PROPOSED OFFICE BLOCK
DEVELOPMENT FOR
KERIO VALLEY
DEVELOPMENT
AUTHORITY ON PLOT NO.
....**

PLOT NO: 2663 REG. SECTION:

AREA:

DESIGNED BY: MO DRAWN BY: MO
CHECKED BY: PW APPROVED BY:

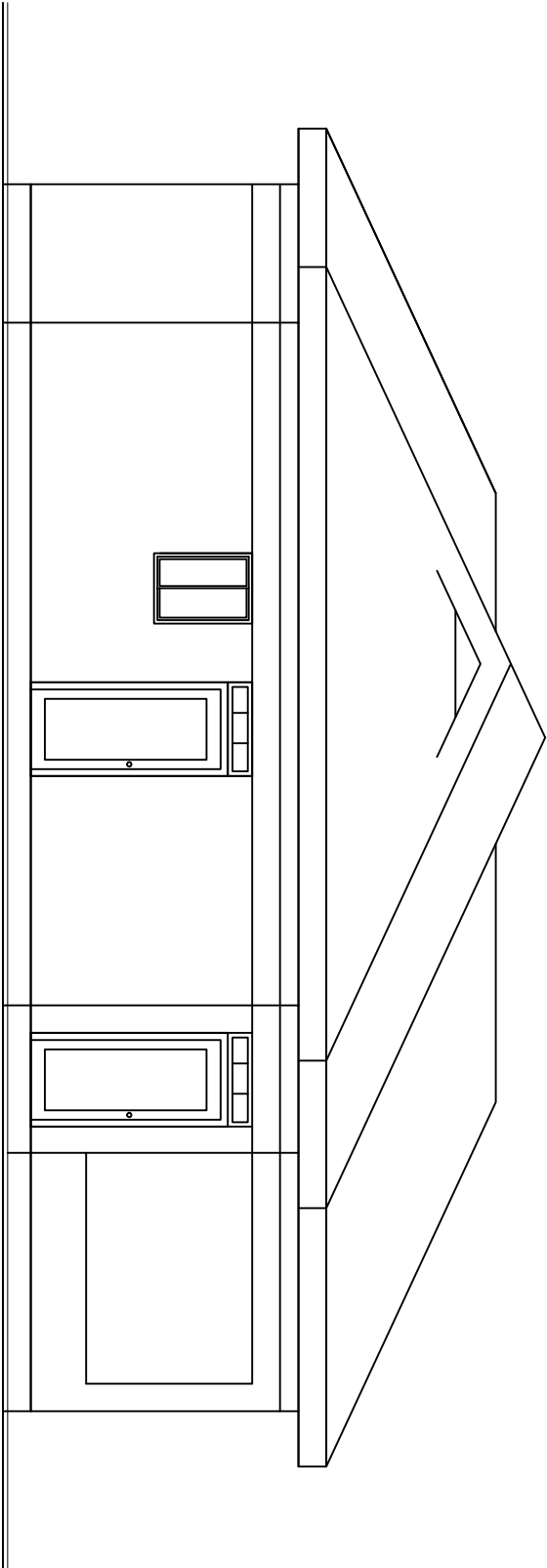
TITLE:

FLOOR PLAN AND FRONT
ELEVATION

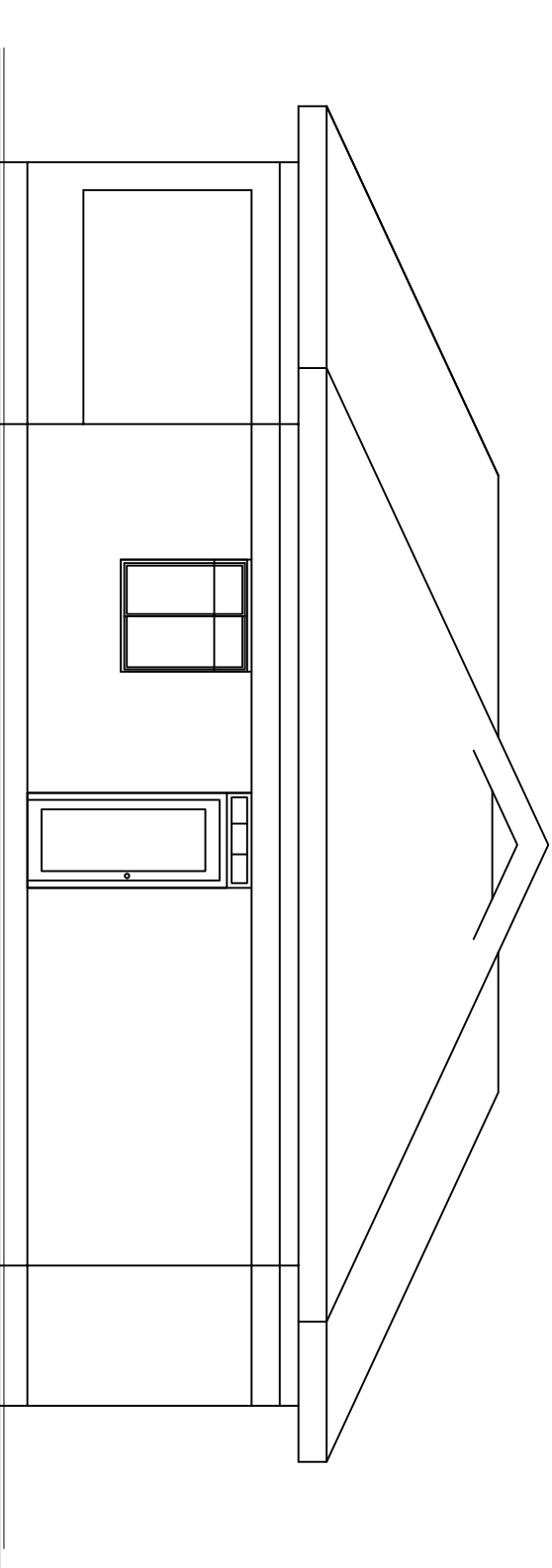
| | | | |
|-------------|------|--------------|--|
| Scale | 1:40 | Date: | |
| Job No. | | CAD FILE No. | |
| Drawing No. | | | |

NOTES

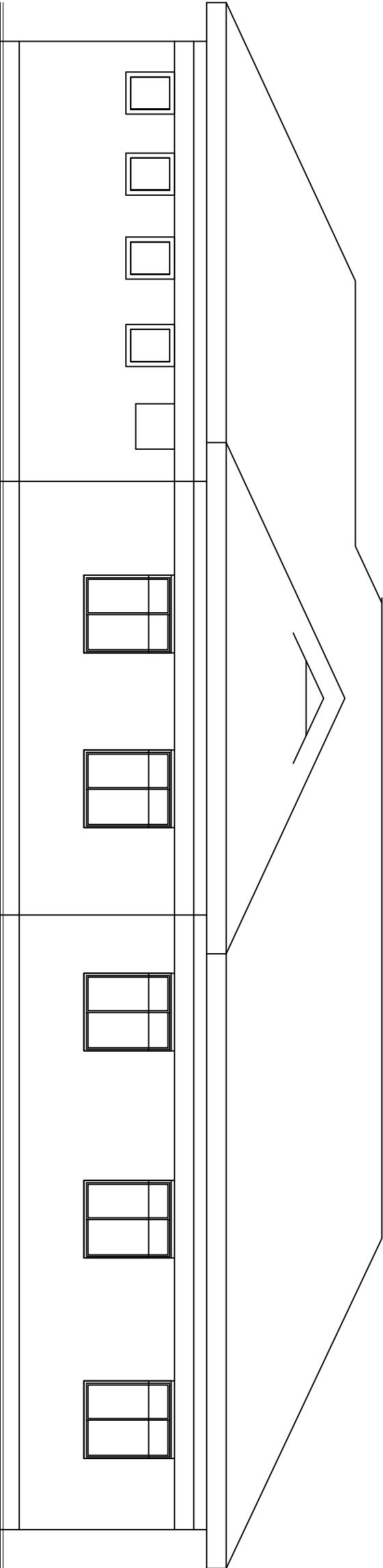
- 1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
- 2. DRAWING TO SCALE IN A1 PAPER SIZE
- 3. READ IN CONJUNCTION WITH RELEVANT DRAWINGS



SIDE ELEVATION 1



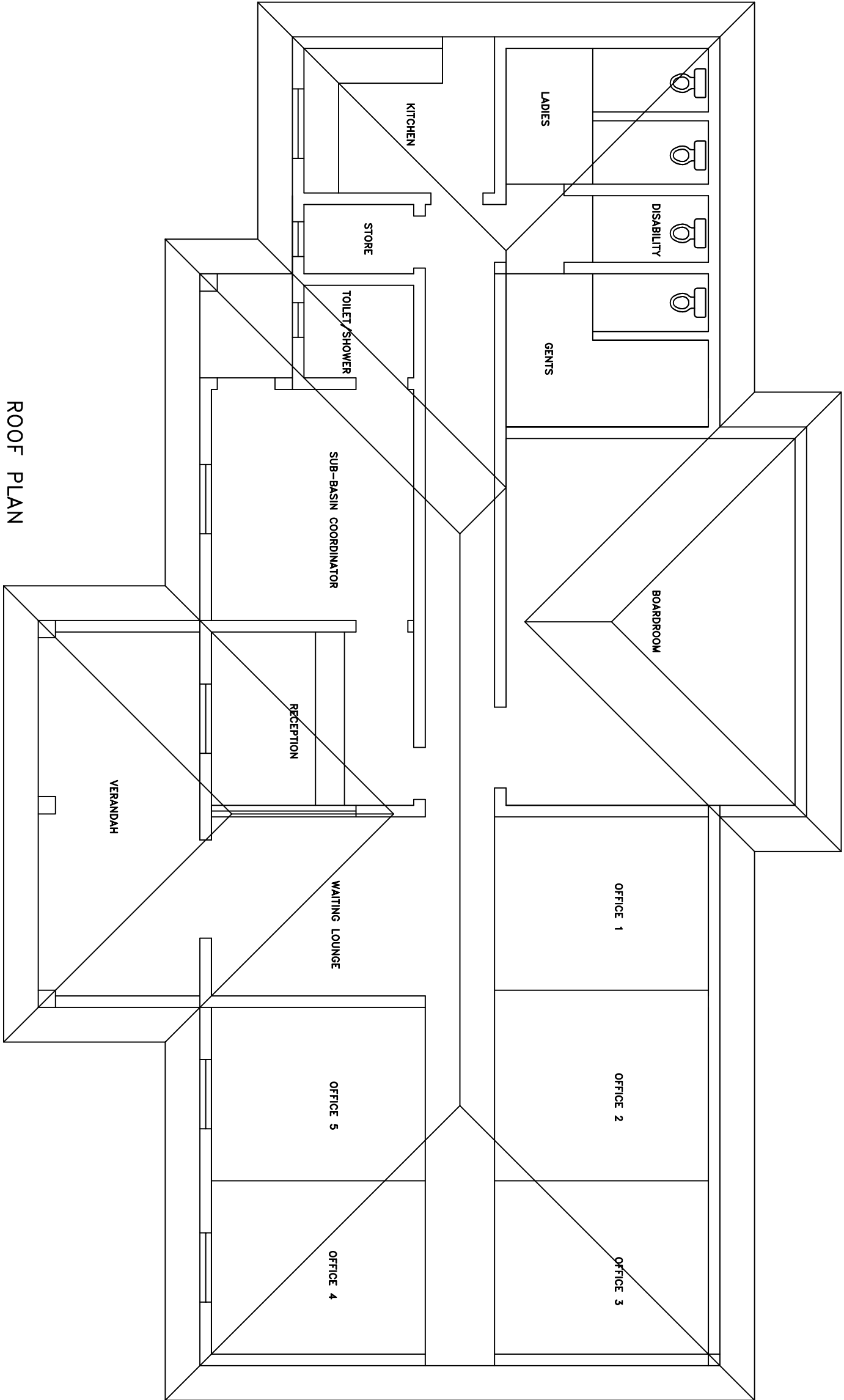
SIDE ELEVATION 2



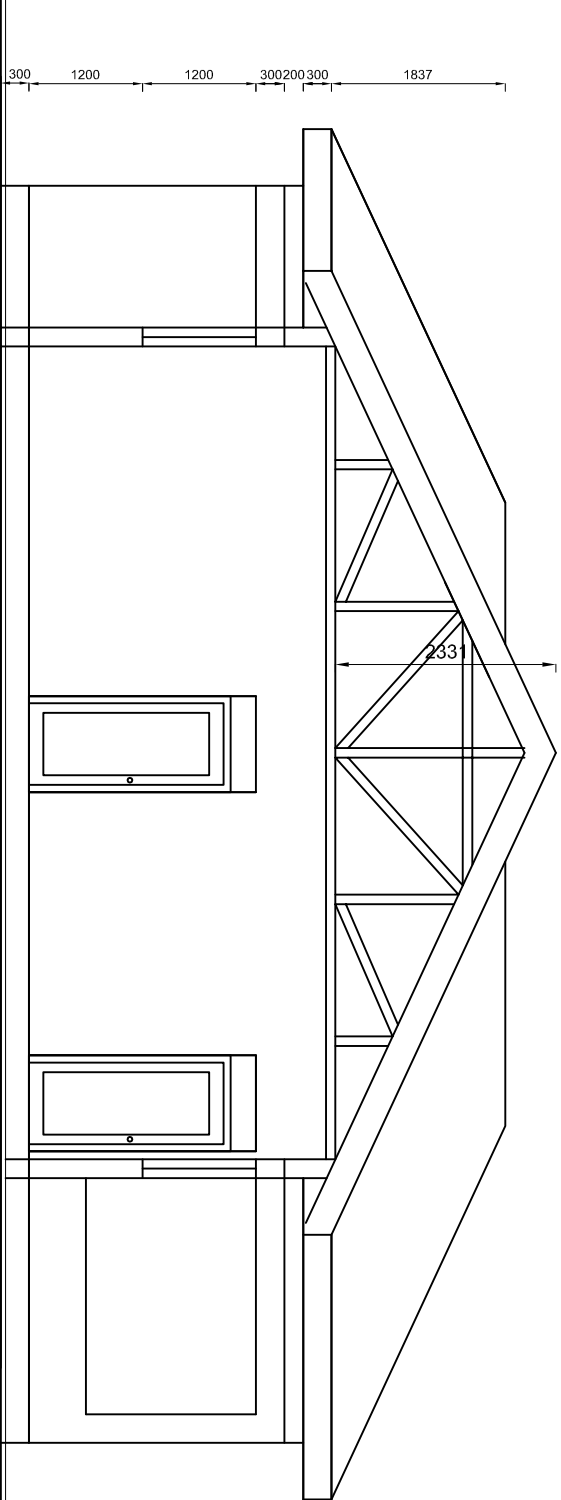
REAR ELEVATION

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| PROJECT: | | | |
| PROPOSED OFFICE BLOCK DEVELOPMENT FOR KERIO VALLEY DEVELOPMENT AUTHORITY ON PLOT NO. | | | |
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| PLOT NO: | | REG. SECTION: | |
| AREA: | | | |
| DESIGNED BY: | | DRAWN BY: | |
| CHECKED BY: | | APPROVED BY: | |
| TITLE: | | | |
| OFFICE BLOCK SIDE AND REAR ELEVATIONS | | | |
| Scale | 1:40 | Date: | |
| Job No. | | C/D FILE No. | |
| Drawing No. | | | |

- NOTES**
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED
 2. DRAWING TO SCALE IN A1 PAPER SIZE
 3. READ IN CONJUNCTION WITH RELEVANT DRAWINGS

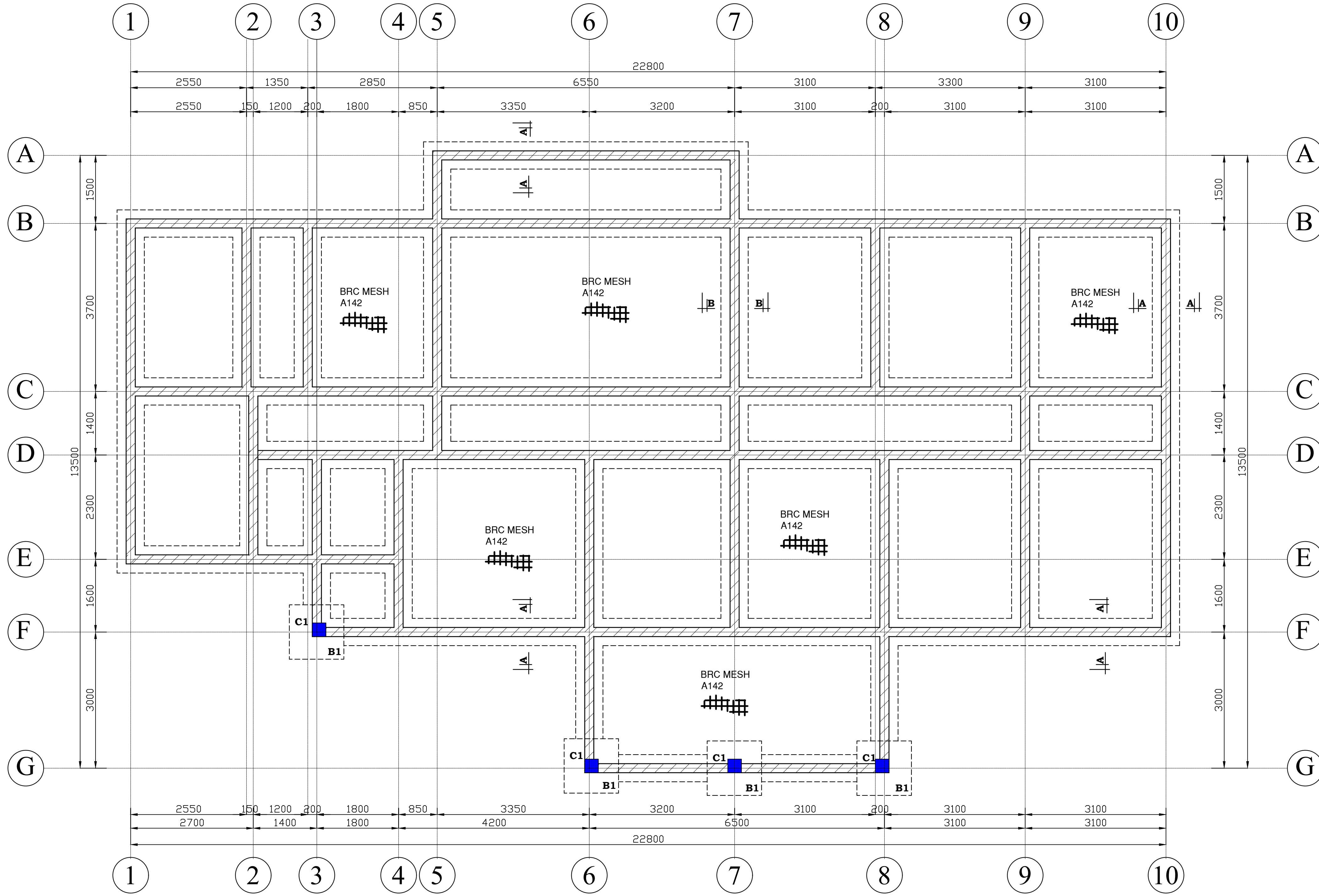


ROOF PLAN

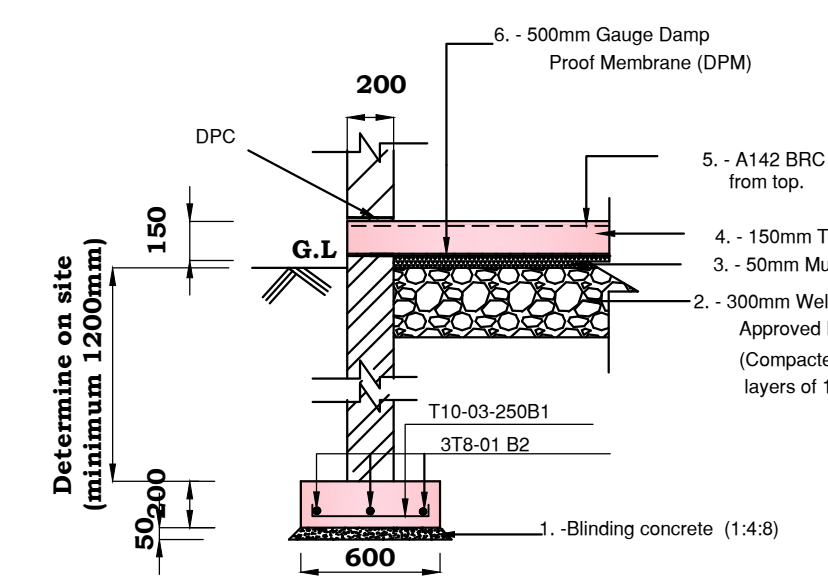
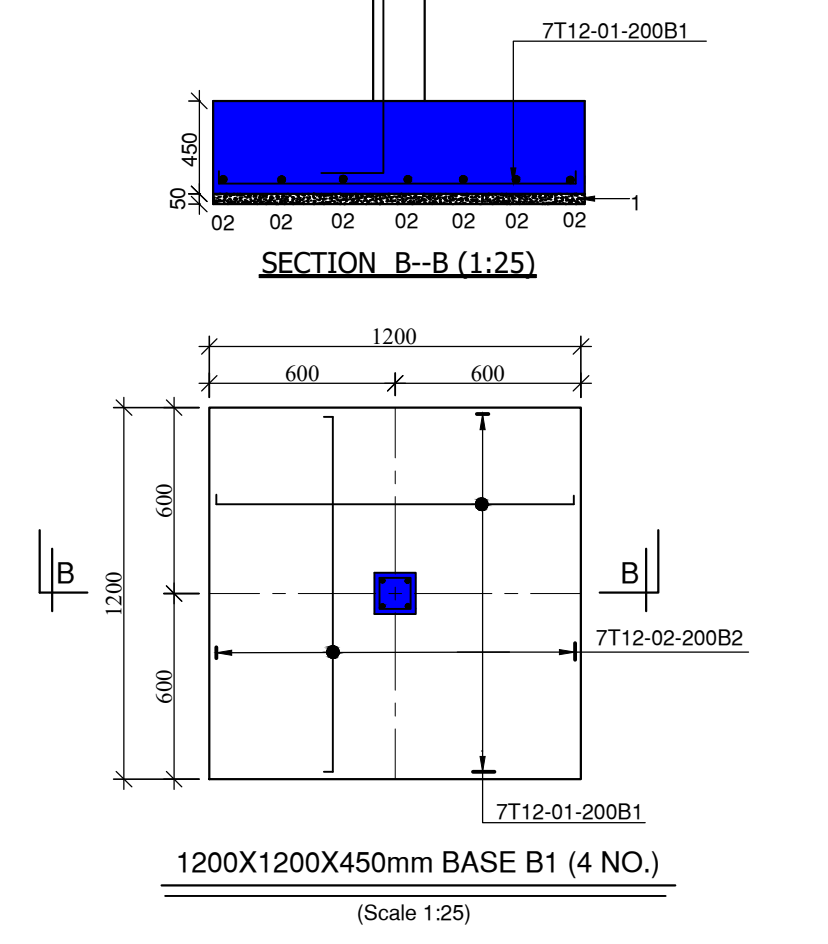
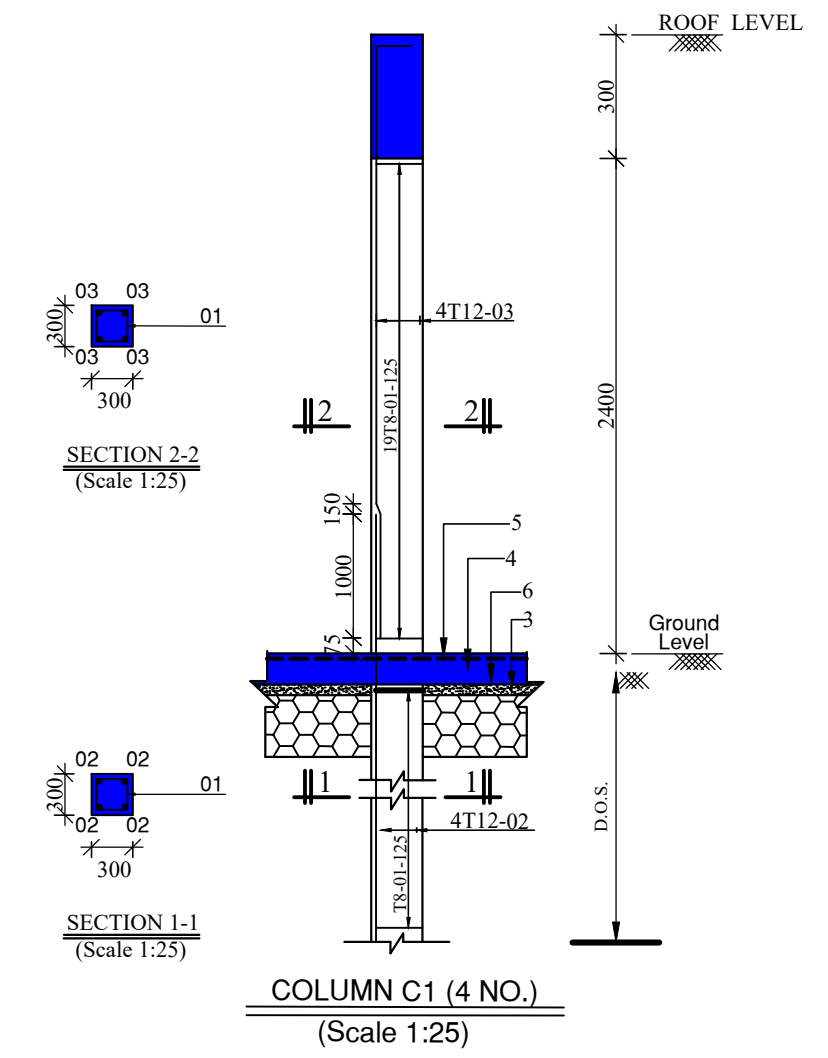


PROJECT:
**PROPOSED OFFICE BLOCK
DEVELOPMENT FOR
KERIO VALLEY
DEVELOPMENT
AUTHORITY ON PLOT NO.
....**

| | | | |
|----------------------------|------|---------------|--|
| PLOT NO.: | | REG. SECTION: | |
| AREA: | | | |
| DESIGNED BY: | | DRAWN BY: | |
| CHECKED BY: | | APPROVED BY: | |
| TITLE: | | | |
| ROOF AND SECTIONAL PLAN | | | |
| Scale | 1:40 | Date: | |
| Job No. | | CAD FILE No. | |
| Drawing No. | | | |

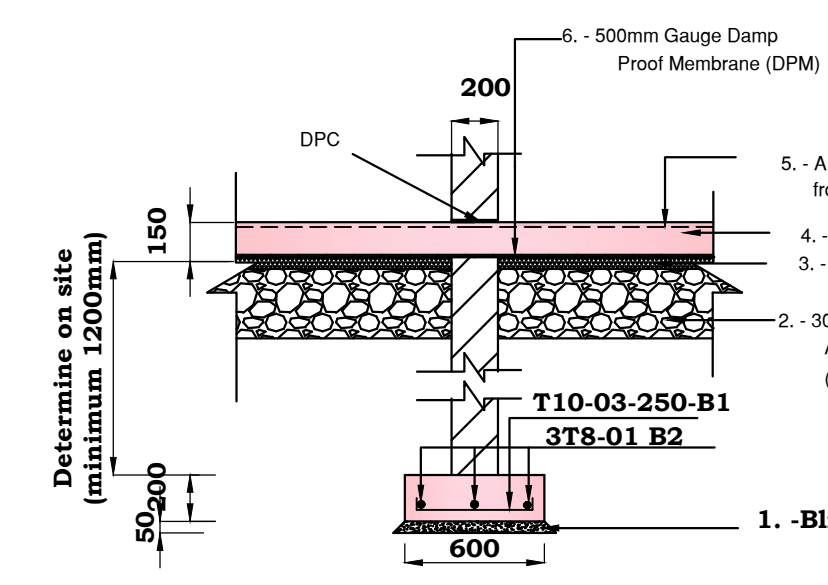


FOUNDATION LAYOUT (SCALE 1:40)



SECTION A-A (1:25)

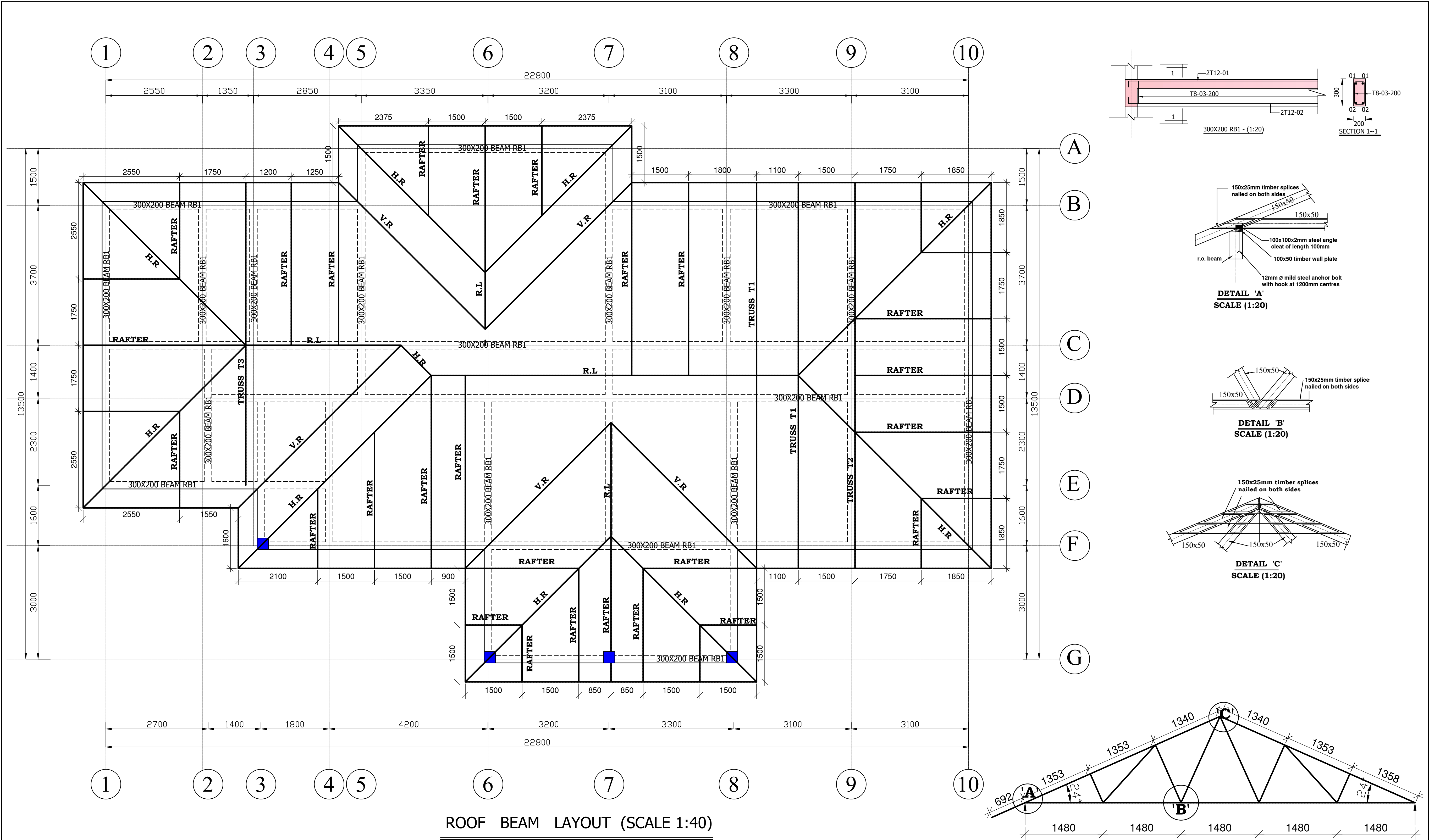
EXTERNAL STRIP



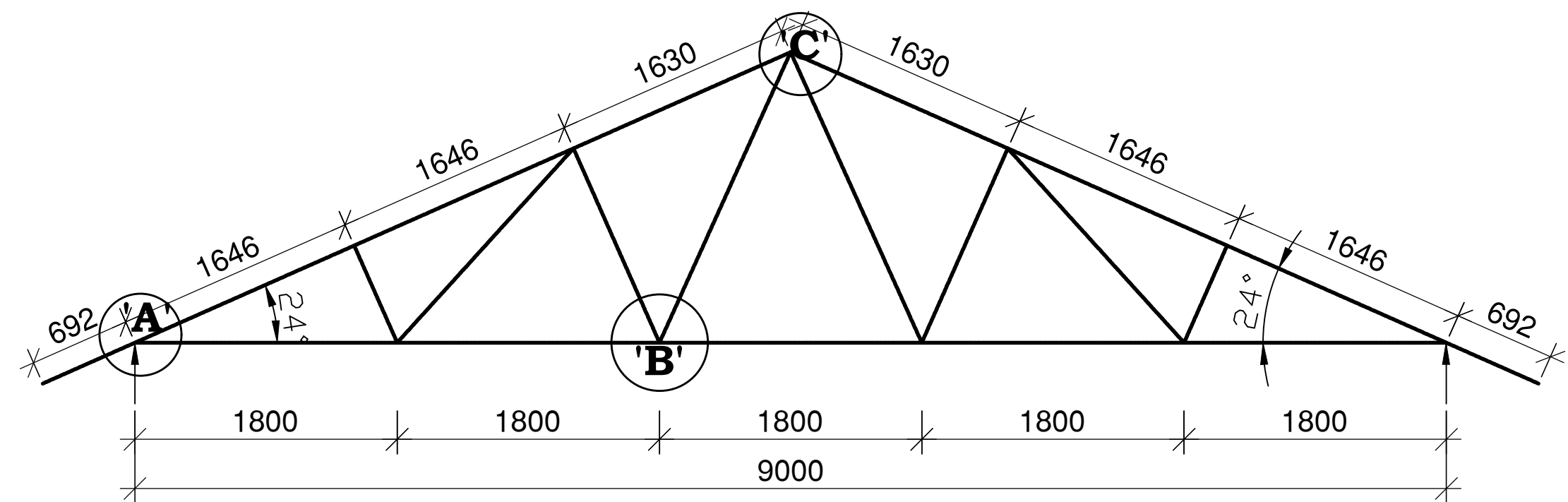
SECTION B-B (1:25)

INTERNAL STRIP

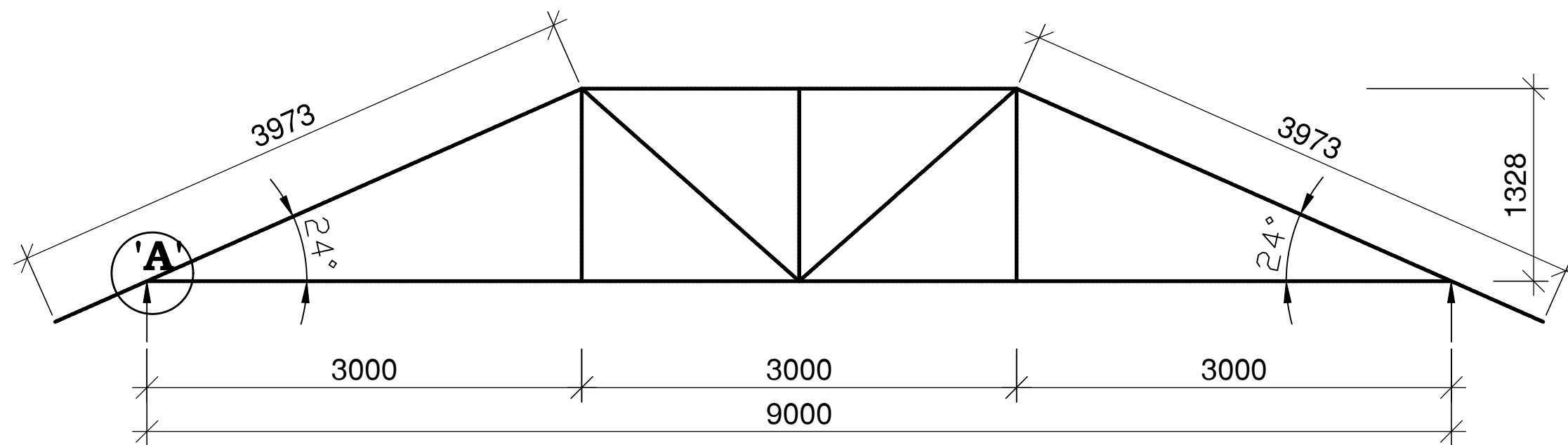
| | | | |
|---|--|--|--|
| <div>NOTES</div> | | | |
| 1. This drawing to be read in conjunction with other relevant Architectural/structural drawings. | | | |
| 2. The Contractor to confirm all dimensions on site before commencing the works. | | | |
| 3. Figured dimensions only to be taken and all dimensions are in millimetres unless stated otherwise. | | | |
| 4. Structural concrete to be class 25/20 mix (1:1.5:3) concrete cover to reinforcement including links; Beams = 25mm | | | |
| 5. Reinforcement steel to be ; T- Deformed threaded high yield bars to BS 4461. | | | |
| 6. Foundation depth to be determined on site but to be a minimum of 1200mm and MUST be to firm bearing strata with a minimum bearing capacity of 100 KN/M 2 | | | |
| 7. All steel reinforcement and excavation works MUST be inspected and approved by the Structural Engineer before concreting is done. | | | |
| 8. Minimum compressive strength for structural masonry to be 7KN/M2 | | | |
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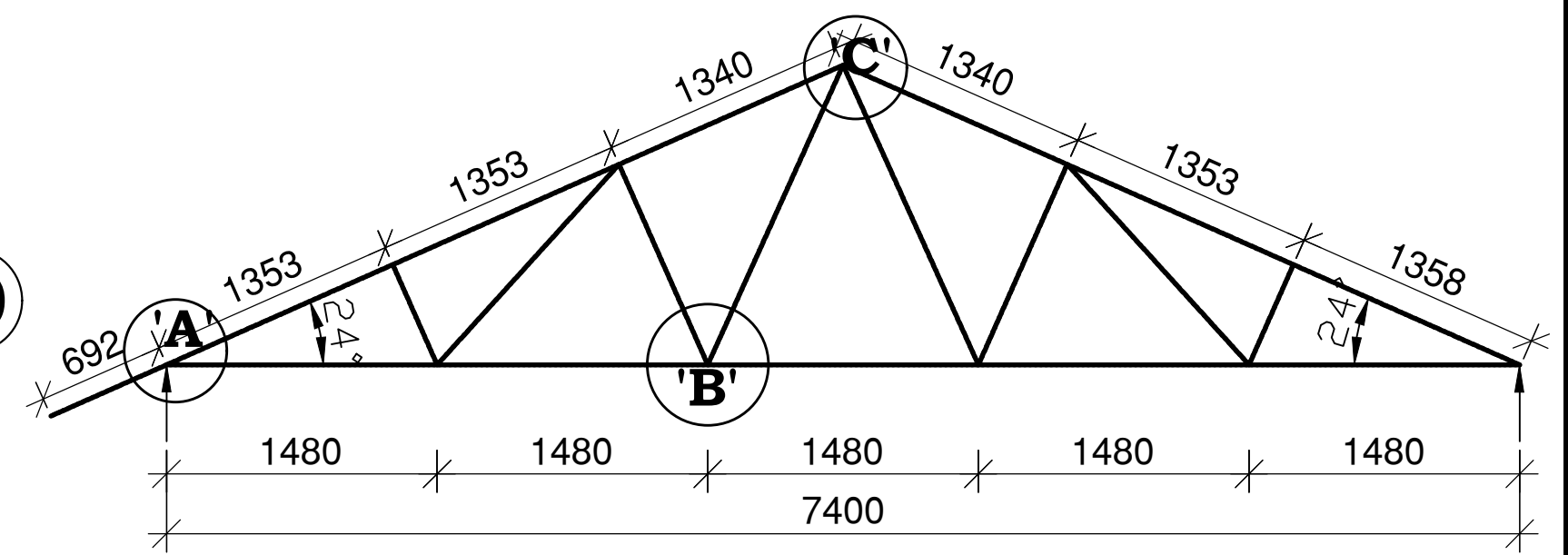
ROOF BEAM LAYOUT (SCALE 1:40)



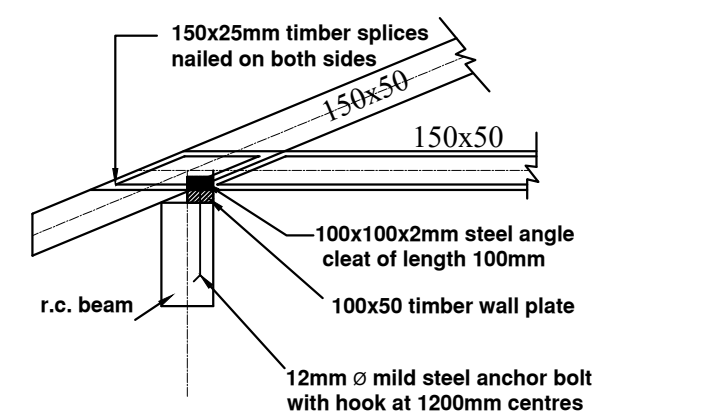
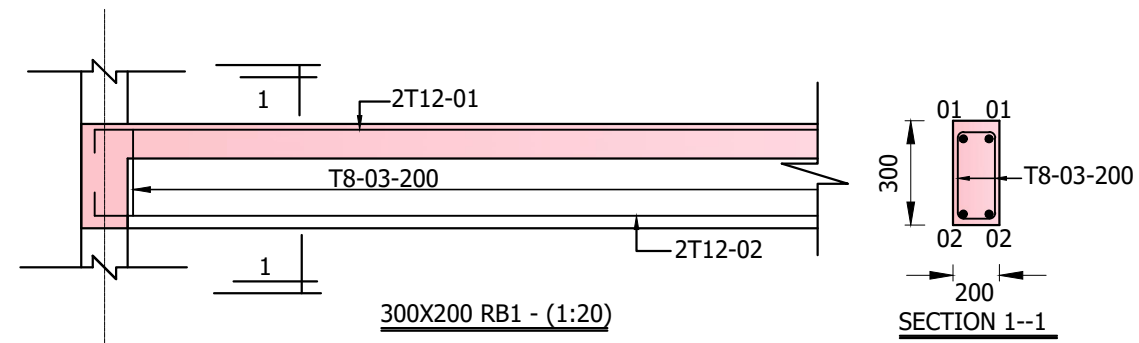
TYPICAL TRUSS T1 (2 No.)
(SCALE 1:25)



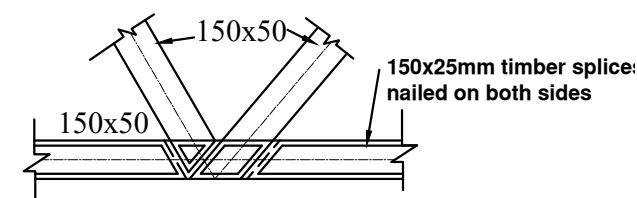
TYPICAL TRUSS T2 (1 No.)
(SCALE 1:25)



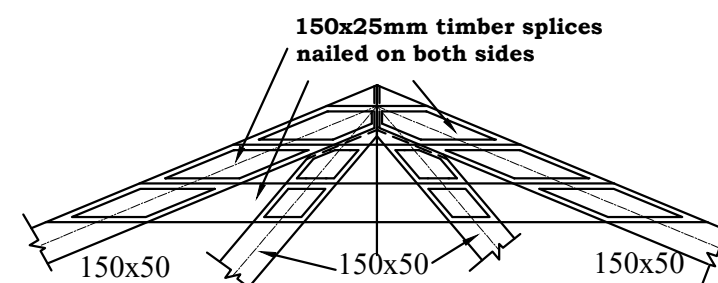
TYPICAL TRUSS T3 (1 No.)
(SCALE 1:25)



DETAIL 'A'
SCALE (1:20)



DETAIL 'B'
SCALE (1:20)



DETAIL 'C'
SCALE (1:20)

NOTES

- This drawing to be read in conjunction with other relevant Architectural/structural drawings.
- The Contractor to confirm all dimensions on site before commencing the works.
- Figured dimensions only to be taken and all dimensions are in millimetres unless stated otherwise.
- Structural concrete to be class 25/20 mix (1:1.5:3) concrete cover to reinforcement including links; Beams = 25mm
- Reinforcement steel to be ; T- Deformed threaded high yield bars to BS 4461.
- Foundation depth to be determined on site but to be a minimum of 1200mm and MUST be to firm bearing strata with a minimum bearing capacity of 100 KN/M²
- All steel reinforcement and excavation works MUST be inspected and approved by the Structural Engineer before concreting is done.
- Minimum compressive strength for structural masonry to be 7KN/M²

| ISSUES | | | | |
|---|---------------------|--|--------------|------------|
| DATE | TO | APPLICATION | | |
| | | | | |
| REVISIONS | | | | |
| | DATE | BY | DESCRIPTIONS | |
| | | | | |
| REFERENCE DRAWINGS | | | | |
| No. | DESCRIPTIONS | | | |
| | | | | |
| CLIENT | | | | JOB No. |
| KVDA SAMBURU REGION | | | | |
| PROJECT TITLE | | | | |
| PROPOSED OFFICE BLOCK FOR KVDA SAMBURU REGION. | | | | |
| DRAWING TITLE | | | | |
| ROOF LAYOUT, ROOF BEAM DETAILS, ROOF TRUSSES DETAILS. | | | | |
| | | DRG No. | | |
| | | FILE No. | | |
| SCALE(S) 1:20 ; 1:25 & 1:40 | | FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING | | |
| APPROVED BY | | | | |
| | NAME | | SIGNATURE | DATE |
| DESIGN/DRAWN | T.O.M | | | 14/09/2020 |
| CHECKED BY | ENG. DANIEL KIMUTAI | | | 14/09/2020 |
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