



**PROPOSED DEVELOPMENT OF ICT DIGITAL HUB AND ASSOCIATED FACILITIES IN KIKUYU, KIAMBU COUNTY.**

**TENDER NO: KoTDA/DIGITAL-HUB-KIKUYU/045/2025-2026**

**TENDER DOCUMENT  
COMPRISING OF THE INSTRUCTIONS TO TENDER, SPECIFICATIONS & BILLS OF QUANTITIES.**

---

**EMPLOYER**

MINISTRY OF INFORMATION AND COMMUNICATION TECHNOLOGY AND DIGITAL ECONOMY THROUGH  
KONZA TECHNOPSIS DEVELOPMENT AUTHORITY 7TH FLOOR, KONZA COMPLEX,  
NAIROBI-MOMBASA ROAD-KONZA  
P.O. Box 1 - 90150 KONZA TECHNOPSIS  
KENYA.

KONZA TECHNOPSIS DEVELOPMENT AUTHORITY  
PROPOSED ENHANCED DEVELOPMENT OF DIGITAL HUB FOR KIKUYU, KIAMBU COUNTY

STANDARD TENDER DOCUMENT FOR  
PROCUREMENT OF WORKS (BUILDING AND ASSOCIATED CIVIL ENGINEERING WORKS)

**CLOSING DATE: 12TH JUNE 2026**

# TABLE OF CONTENTS

<b>PREFACE</b> .....	iv
<b>APPENDIX TOTHE PREFACE</b> .....	v
<b>GUIDELINES FOR PREPARATION OF TENDER DOCUMENTS</b> .....	v
2. <b>PART 1 - TENDERING PROCEDURES</b> .....	v
3. <b>PART 2 - PROCUREMENT ENTITY'S REQUIREMENTS</b> .....	vi
4. <b>PART 3 - CONDITIONS OF CONTRACT ANDCONTRACTFORMS</b> .....	vi
<b>INVITATION TOTENDER</b> .....	viii
<b>PART 1:TENDERING PROCEDURES</b> .....	1
<b>SECTION I - INSTRUCTIONSTOTENDERERS</b> .....	1
<b>A. GENERALPROVISIONS</b> .....	1
1.0 Scope of tender .....	1
2.0 Fraud and corruption .....	1
3.0 Eligible tenderers .....	1
4.0 Eligible goods, equipment, and services.....	3
5.0 Tenderer's responsibilities .....	3
<b>B. CONTENTS OFTENDER DOCUMENTS</b> .....	4
6.0 Sections of Tender Document .....	4
7.0 Clarification of Tender Document, Site Visit, Pré-tender Meeting .....	4
8.0 Amendment of Tender Documents .....	5
10.0 Language of Tender .....	5
11.0 Documents Comprising the Tender .....	5
12.0 Form of Tender and Schedules .....	6
13.0 Alternative Tenders .....	6
14.0 Tender Prices and Discounts .....	6
15.0 Currencies of Tender and Payment .....	6
16.0 Documents Comprising the Technical Proposal .....	7
17.0 Documents Establishing the Eligibility and Qualifications of the Tenderer .....	7
18.0 Period of Validity of Tenders .....	8
19.0 Tender Security .....	8
20.0 Format and Signing of Tender .....	9
<b>D. SUBMISSION AND OPENINGOFTENDERS</b> .....	11
21.0 Sealing and Marking of Tenders .....	11
22.0 Deadline for Submission of Tenders.....	11
23.0 Late Tenders .....	11
24.0 Withdrawal, Substitution, and Modification of Tenders .....	11
25.0 Tender Opening .....	12
<b>E. EVALUATION AND COMPARISONOFTENDERS</b> .....	12
26.0 Confidentiality.....	12
27.0 Clarification of Tenders .....	13
29.0 Determination of Responsiveness .....	13
30.0 Non-material Non-conformities .....	13
31.0 Arithmetical Errors .....	14
33.0 Margin of Preference and Reservations .....	14
34.0 Nominated Subcontractors .....	14

35.0	Evaluation of Tenders .....	15
36.0	Comparison of tenders .....	15
37.0	Abnormally low tenders and abnormally high tenders .....	15
Abnormally Low Tenders .....		15
Abnormally high tenders .....		15
38.0	Unbalanced and/or front-loaded tenders .....	16
39.0	Qualifications of the tenderer.....	16
40.0	Lowest evaluated tender.....	16
41.0	Procuring entity's right to accept any tender, and to reject any or all tenders.....	16
<b>F. AWARD OF CONTRACT .....</b>		<b>17</b>
42.0	Award criteria .....	17
43.0	Notice of intention to enter into a contract.....	17
44.0	Standstill Period .....	17
44.0	Standstill Period .....	17
45.0	Debriefing By The Procuring Entity .....	17
46.0	Letter of Award.....	17
47.0	Signing of Contract.....	17
48.0	Performance Security.....	17
49.0	Publication of Procurement Contract .....	18
50.0	Procurement related Complaint and Administrative Review.....	18
<b>SECTION II - TENDER DATASHEET(TDS) .....</b>		<b>18</b>
<b>SECTION III - EVALUATION AND QUALIFICATION CRITERIA .....</b>		<b>22</b>
50.0	General Provisions .....	22
50.1	Preliminary examination for Determination of Responsiveness .....	22
50.2	Tender Evaluation .....	22
50.3	Multiple Contracts .....	22
50.4	Alternative Tenders .....	23
50.5	Margin of Preference .....	23
50.6	Post qualification and Contract award .....	23
50.7	QUALIFICATION FORM .....	25
<b>SECTION IV –TENDERING FORMS.....</b>		<b>28</b>
1.	FOREIGN TENDERERS 40% RULE.....	28
2.	Form EQU: EQUIPMENT .....	29
3.	FORM PER - 1: .....	30
4.	FORM PER - 2: .....	31
5.	TENDERERS QUALIFICATION WITHOUT PRE-QUALIFICATION .....	33
<b>OTHER FORMS .....</b>		<b>43</b>
1.	FORM OF TENDER.....	43
a)	TENDERER'S ELIGIBILITY- CONFIDENTIAL BUSINESS QUESTIONNAIRE .....	46
b)	CERTIFICATE OF INDEPENDENT TENDER DETERMINATION .....	50
c)	SELF-DECLARATION FORM - SELF DECLARATION OF THE TENDERER.....	51
d)	APPENDIX 1 - FRAUD AND CORRUPTION .....	54
2.	FORM OF TENDER SECURITY – DEMAND BANK GUARANTEE .....	56

3.	FORM OF TENDER SECURITY (INSURANCE GUARANTEE) .....	57
4.	FORM OF TENDER-SECURING DECLARATION .....	58
5.	APPENDIX TO TENDER.....	59

ii

<b>SECTION V – BILLS OF QUANTITIES.....</b>	<b>60</b>
1. PREAMBLES .....	63
2. Bill No. 1 – Preliminary Items.....	67
3. Bill No. 2: Work Items .....	38
4. Bill No. 3: Schedule of Daywork Rates - Labour .....	69
5. Bill No. 3: Schedule of Daywork Rates - Materials.....	70
6. Bill No. 3: Schedule of Daywork Rates - Contractor's Equipment .....	71
7. Bill No. 3: Daywork Summary .....	71
8. Bill No. 4: Provisional Sums.....	72
9. GRAND SUMMARY .....	72
<b>SECTION VI - SPECIFICATIONS .....</b>	<b>73</b>
<b>SECTION VII - DRAWINGS .....</b>	<b>73</b>
<b>SECTION VIII - GENERAL CONDITIONS OF CONTRACT (GCC).....</b>	<b>74</b>
1. General Provisions.....	74
2. The Procuring Entity .....	80
3. The Engineer.....	81
4. The Contractor.....	83
5. Nominated Subcontractors .....	91
6. Staff and Labor.....	92
7. Plant, Materials and Workmanship.....	95
8. Commencement, Delays and Suspension .....	97
9. Tests on Completion .....	100
10. Procuring Entity's Taking Over.....	100
11. Defects Liability .....	102
12. Measurement and Evaluation .....	104
13. Variations and Adjustments .....	105
14. Contract Price and Payment .....	109
15. Termination by Procuring Entity .....	115
16. Suspension and Termination by Contractor .....	117
17. Risk and Responsibility.....	119
18. Insurance .....	121
19. Force Majeure .....	124
20. Settlement of Claims and Disputes .....	126
<b>Section IX - Special Conditions of Contract.....</b>	<b>130</b>
<b>SECTION X – CONTRACT FORMS .....</b>	<b>132</b>
FORM No. 1 - NOTIFICATION OF INTENTION TO AWARD .....	133
FORM No. 2 –REQUEST FOR REVIEW.....	135
FORM No. 3 – LETTER OF AWARD.....	135
FORM No. 4 – CONTRACT AGREEMENT .....	136

FORM No. 5 - PERFORMANCE SECURITY [Option 1 - Unconditional Demand Bank Guarantee].....	137
FORM No. 6- PERFORMANCE SECURITY [Option 2 – Performance Bond] 138	
FORM No. 7 – ADVANCE PAYMENT SECURITY.....	140
FORM No. 8 – RETENTION MONEY SECURITY .....	141
FORM No. 9 – BENEFICIAL OWNERSHIP DISCLOSURE FORM.....	142

## INVITATION TO TENDER



1. Konza Technopolis Development Authority (KoTDA) is the implementing agency under the Ministry of Information Communication and Digital Economy (MOIC&DE) for the Proposed Jitume ICT Digital Hubs. MOIC&DE through Konza Development Technopolis Development Authority (KoTDA); and in line with Government's Bottom-up Economic Transformation Agenda (BETA), initiated the implementation of the Jitume Digital Enablement Programme.
2. MOIC&DE through KoTDA invites interested and eligible bidders for the proposed development of ICT digital Hub and associated facilities in Kikuyu, Kiambu County.

DESCRIPTION	TENDER NO.	REGISTRATION CATEGORY	BID SECURITY KSHS	Tender Submission Deadline
Proposed Development of ICT Digital Hub and Associated Facilities in Kikuyu, Kiambu County.	KoTDA/DIGITALHUB-KIKUYU/045/2025-2026	NCA 2 & Above	200,000	Friday 12th June 2026 at 1400hrs local time.

3. Interested eligible contractors who appear in the current Building Contractor's Register with the National Construction Authority as tabulated above may obtain a set of tender documents (including Bills of Quantities) from the KoTDA website [www.konza.go.ke](http://www.konza.go.ke) from Tuesday 2<sup>nd</sup> June 2026 to Friday 12th June 2026. Upon receipt of the tender document bidders will be required to email their acknowledgement of receipt to [procurement@konza.go.ke](mailto:procurement@konza.go.ke) for recording, further clarifications and addenda if any, bidders will be required to attend a MANDATORY pre-bid conference on **Monday 8<sup>th</sup> June 2026 from 10am to 12Noon** at the Konza Technopolis and are required to provide the contact of the person(s) nominated for security clearance. In addition, all addenda will also be posted on the website as they become available.
4. The bidders must submit the mandatory requirement, supported by relevant documents so as to be considered for further evaluation:

## Mandatory Requirements

S/No	PRELIMINARY EVALUATION CRITERIA / MANDATORY REQUIREMENTS FOR MAIN CONTRACTOR
MR 1	Valid and Certified copy of registration certificate and practicing license from National Construction Authority (NCA) for Categories 2 and above for Building Works.
MR 2	Provide Copies of Certified current valid Tax Compliance Certificate, Business Permit, PIN and VAT Registration Certificates.
MR 3	Provide evidence of financial, personnel and equipment capability necessary for carrying out the works
MR 4	Provide Bid Security of Kes. 200,000 in the form of A Bank Guarantee or Bid Bond from an Insurance company approved by Public Procurement Regulatory Authority (PPRA) and valid for 180 days from date of opening of tender
MR 5	Provide Litigation History (both court and arbitration cases)
MR 6	Complete Confidential Business Questionnaire & Declaration form
MR 7	Documentary evidence of liquid assets and/or availability of credit facilities of a value of at least Kshs. 100,000,000 million (Attach copies of certified bank statements for the last six months OR letter of credit line from a financial institution registered by Central Bank of Kenya. The documents provided may be verified for authenticity.
MR 8	Dully filled and signed form of tender (s) prepared in accordance with ITT 12
MR 9	Must submit <b>one original and a soft copy</b> of the Tender Document
MR 10	Properly bound (perfect cover, hard cover or case bound), paginated, serialized tender document (each page of the tender submission must have a number, and the numbers must be in chronological order).
MR 11	Provide proof of power of attorney (of tender signatory if not director of the company/ partner, signed and stamped by Commissioner of Oaths)
MR 12	Submission of valid and Certified CR12 form showing the list of directors /shareholding (issued within the last 6 months) or National Identity Card(s) for Sole Proprietorship/ Partnership
MR 13	Must fill and submit the Certificate of Independent Tender Determination in the format provided
MR 14	Bidder has submitted a form of tender within the specified budget ceiling/ Engineers estimates of KES 77,635,920.84 (Seventy-Seven Million, Six Hundred Thirty-Five Thousand, Nine Hundred Twenty and Eighty-Four Cents Only).
MR 15	Valid agreements with specialist sub-contractors for ICT, electrical, mechanical and other services with relevant qualifications under NCA 5 and above.
MR 16	Duly signed and stamped pre-bid conference Certificate
MR 17	Bidders currently on Contract with the Konza Technopolis Development Authority for any other Construction are not eligible to apply.
MR 18	Price Schedule/Bill of quantities must be duly filled, signed and stamped. Any amendments or any form alterations will not be allowed.
MR 19	Provide a Letter of Availability of a Credit line of at least KShs.60 million (KShs. 60,000,000.00) for this tender from a financial Institution.
MR 20	Copy of National Construction Authority (NCA) Registration Certificate of category 1-2 in Building Works.
MR 21	Copy of Current Annual Practicing License from the NCA of at least category 1-2 in Building Works.
MR 22	Commitment to comply with the applicable requirements of the Occupational Safety and Health Act (2007), Environmental Management and Coordination (Amendment) Act (2015) and the applicable subsidiary Legislation, by signing a letter of undertaking.
MR 23	Evidence of handling at least three (3No.) similar types of projects in the last eight (8) years by attaching relevant evidence e.g. copies of contracts, copies of recommendation letters on client letter head, copies of LPOs and copies of completion certificates

5. All questions/clarifications regarding the project or offer of submission, should be sent by email to [procurement@konza.go.ke](mailto:procurement@konza.go.ke) and copied to [ceo@konza.go.ke](mailto:ceo@konza.go.ke) by **Monday 8<sup>th</sup> June 2026 at 0900hrs local Kenyan time**. No other email addresses shall be used and KoTDA shall not be liable if bidders choose to send their information and/or enquiries to other email addresses.

6. Tenderers shall submit **One Original** and **One Soft Copy** in a Flash disk of all tender documents in plain sealed envelopes, with the Tender Number Clearly marked on the right-hand side corner and bearing no indication of the tenderer's name and addressed to:

**The Chief Executive Officer**  
**Konza Technopolis Development Authority**  
**P.O. Box 1 - 90150, KONZA TECHNOPOLIS, KENYA.**  
E-Mail; [procurement@konza.go.ke](mailto:procurement@konza.go.ke) and [ceo@konza.go.ke](mailto:ceo@konza.go.ke)  
Tel; +254-20-4343013/4

and placed in the KoTDA Tender Box on the **7<sup>th</sup> Floor of Konza Complex, Konza Technopolis, located along Nairobi-Mombasa Road near Malili Township** to reach the above address not later than **12<sup>th</sup> June 2026 at 1400hrs** local time.

7. Late bids will be rejected, submitted bids will be opened publicly at the same venue shortly thereafter in the presence of the tenderers or their representatives who choose to attend.
8. Prices quoted must remain valid for One Hundred and eighty (180) days from the date of Tender opening.
9. Any form of canvassing will lead to automatic disqualification.

Yours faithfully,

**JOHN PAUL OKWIRI, OGW**  
**Chief Executive Officer**  
**Konza Technopolis Development Authority (KoTDA)**

---

**PART1: TENDERING PROCEDURES**

---

## SECTION I - INSTRUCTIONS TO TENDERERS A GENERAL

### PROVISIONS

#### 10 *Scope of tender*

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

12 Throughout this tendering document:

- a) The term "inwriting" means communicated in written form (e.g. by mail, e-mail, fax, including if specified in the TDS, distributed or received through the electronic-procurement system used by the Procuring Entity) with proof of receipt;
- b) if the context so requires, "singular" means "plural" and vice versa;
- c) "Day" means calendar day, unless otherwise specified as "Business Day". A Business Day is any day that is an official working day of the Procuring Entity. It excludes official public holidays.

#### 20 *Fraud and corruption*

21 The Procuring Entity requires compliance with the provisions of the Public Procurement and Asset Disposal Act, 2015, Section 62 "Declaration not to engage in corruption". The tender submitted by a person shall include a declaration that the person shall not engage in any corrupt or fraudulent practice and a declaration that the person or his or her sub-contractors are not debarred from participating in public procurement proceedings.

22 The Procuring Entity requires compliance with the provisions of the Competition Act 2010, regarding collusive practices in contracting. Any tenderer found to have engaged in collusive conduct shall be disqualified and criminal and/or civil sanctions may be imposed. To this effect, Tenders shall be required to complete and sign the "Certificate of Independent Tender Determination" annexed to the Form of Tender.

23 Tenderers shall permit and shall cause their agents (whether declared or not), subcontractors, sub-consultants, service providers, suppliers, and their personnel, to permit the Procuring Entity to inspect all accounts, records and other documents relating to any initial selection process, pre-qualification process, tender submission, proposal submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Procuring Entity.

24 Unfair Competitive Advantage - Fairness and transparency in the tender process require that the firms or their Affiliates competing for a specific assignment do not derive a competitive advantage from having provided consulting services related to this tender. To that end, the Procuring Entity shall indicate in the **Data Sheet** and make available to all the firms together with this tender document all information that would in that respect give such firm any unfair competitive advantage over competing firms.

#### 30 *Eligible tenderers*

31 A Tenderer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITT 3.8, or an individual or any combination of such entities in the form of a joint venture (JV) under an existing agreement with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the tendering process and, in the event the JV is awarded the Contract, during contract execution. Members of a joint venture may not also make an individual tender, be a subcontractor in a separate tender or be part of another joint venture for the purposes of the same Tender. The maximum number of JV members shall be specified in the **TDS**.

32 Public Officers of the Procuring Entity, their Spouses, Child, Parent, Brothers or Sister. Child, Parent, Brother or Sister of a Spouse, their business associates or agents and firms/organizations in which they have a substantial or controlling interest shall not be eligible to tender or be awarded a contract. Public Officers are also not allowed to participate in any procurement proceedings.

33 A Tenderer shall not have a conflict of interest. Any tenderer found to have a conflict of interest shall be disqualified. A tenderer may be considered to have a conflict of interest for the purpose of this tendering process,

if the tenderer:

- a) Directly or indirectly controls, is controlled by or is under common control with an other tenderer;
- b) Receives or has received any director indirect subsidy from another tenderer;
- c) Has the same legal representative as an other tenderer;
- d) Has a relationship with an other tenderer, directly or through common third parties, that puts it in a position to influence the tender of an other tenderer, or influence the decisions of the Procuring Entity regarding this tendering process;
- e) Any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the goods or works that are the subject of the tender;
- f) Any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as a consultant for Contract implementation;
- g) Would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the contract specified in this Tender Document;
- h) Has a close business or personal relationship with senior management or professional staff of the Procuring Entity who has the ability to influence the bidding process and:
  - i) Are directly or indirectly involved in the preparation of the Tender document or specifications of the Contract, and/or the Tender evaluation process of such contract; or
  - ii) May be involved in the implementation or supervision of such Contract unless the conflicts stemming from such relationship has been resolved in a manner acceptable to the Procuring Entity throughout the tendering process and execution of the Contract.

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

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

**36** A Tenderer may have the nationality of any country, subject to the restrictions pursuant to ITT3.9. A Tenderer shall be deemed to have the nationality of a country if the Tenderer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.

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

**38** A Tenderer that is a state-owned enterprise or a public institution in Kenya may be eligible to tender and be awarded Contract(s) only if it is determined by the Procuring Entity to meet the following conditions, i.e. if it is:

- i) A legal public entity of Government and/or public administration,
- ii) financially autonomous and not receiving any significant subsidies or budget support from any public entity or Government, and;
- (iii) operating under commercial law and vested with legal rights and liabilities similar to any commercial enterprise to enable it to compete with firms in the private sector on an equal basis.

**39** Firms and individuals shall be ineligible if their countries of origin are:

- (a) As a matter of law or official regulations, Kenya prohibits commercial relations with that country;
- (b) By an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, Kenya prohibits any import of goods or contracting of works or

services from that country, or any payments to any country, person, or entity in that country.

A tenderer shall provide such documentary evidence of eligibility satisfactory to the Procuring Entity, as the Procuring Entity shall reasonably request.

- 310** Foreign tenderers are required to source at least forty (40%) percent of their contract inputs (in supplies, local sub-contracts and labor) from citizen suppliers and contractors. To this end, a foreign tenderer shall provide in its tender documentary evidence that this requirement is met. Foreign tenderers not meeting this criterion will be automatically disqualified. Information required to enable the Procuring Entity determine if this condition is met shall be provided for this purpose in “SECTION II - EVALUATION AND QUALIFICATION CRITERIA, Item 9”.
- 311** Pursuant to the eligibility requirements of ITT 3.10, a tender is considered a foreign tenderer, If it is registered in Kenya and has less than 51 percent ownership by nationals of Kenya and if it does not subcontract to foreign firms or individuals more than 10 percent of the contract price, excluding provisional sums. JVs are considered as foreign tenderers if the individual member firms registered in Kenya have less 51 percent ownership by nationals of Kenya. The JV shall not subcontract to foreign firms more than 10 percent of the contract price, excluding provisional sums.
- 312** The National Construction Authority Act of Kenya requires that all local and foreign contractors be registered with the National Construction Authority and be issued with a Registration Certificate before they can undertake any construction works in Kenya. Registration shall not be a condition for tender, but it shall be a condition of contract award and signature. A selected tenderer shall be given opportunity to register before such award and signature of contract. Application for registration with National Construction Authority may be accessed from the website [www.nca.go.ke](http://www.nca.go.ke).
- 313** The Competition Act of Kenya requires that firms wishing to tender as Joint Venture undertakings which may prevent, distort or lessen competition in provision of services are prohibited unless they are exempt in accordance with the provisions of Section 25 of the Competition Act, 2010. JVs will be required to seek for exemption from the Competition Authority. Exemption shall not be a condition for tender, but it shall be a condition of contract award and signature. A JV tenderer shall be given opportunity to seek such exemption as a condition of award and signature of contract. Application for exemption from the Competition Authority of Kenya may be accessed from the website [www.cak.go.ke](http://www.cak.go.ke).
- 4.14 A Kenyan tenderer shall be eligible to tender if it provides evidence of having fulfilled his/her tax obligations by producing valid tax compliance certificate or tax exemption certificate issued by the Kenya Revenue Authority.
- 40** *Eligible goods, equipment, and services*
- 41** Goods, equipment and services to be supplied under the Contract may have their origin in any country that is not ineligible under ITT 3.9. At the Procuring Entity's request, Tenderers may be required to provide evidence of the origin of Goods, equipment and services.
- 42** Any goods, works and production processes with characteristics that have been declared by the relevant national environmental protection agency or by other competent authority as harmful to human beings and to the environment shall not be eligible for procurement.
- 50** *Tenderer's responsibilities*
- 51** The tenderer shall bear all costs associated with the preparation and submission of his/her tender, and the Procuring Entity will in no case be responsible or liable for those costs.
- 52** The tenderer, at the tenderer's own responsibility and risk, is encouraged to visit and examine and inspect 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 the tenderer's own expense.
- 53** The Tenderer and any of its personnel or agents will be granted permission by the Procuring Entity to enter upon its premises and lands for the purpose of such visit. The Tenderer shall indemnify the Procuring Entity against liability arising from death or personal injury, loss of or damage to property, and any other losses and expenses incurred as a result of the examination and inspection.

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

**B. CONTENTS OF TENDER DOCUMENTS**

**60** *Sections of Tender Document*

61 The tender document consists of Parts 1, 2, and 3, which includes all the sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITT 10.

**PART 1: Tendering Procedures** Section I –  
Instructions to Tenderers Section II – Tender  
Data Sheet (TDS) Section III- Evaluation and  
Qualification Criteria Section IV – Tendering  
Forms

**PART 2: Works'**  
**Requirements** Section V - Bills  
of Quantities Section  
VI - Specifications Section  
VII - Drawings

*PART 3: Conditions of Contract and Contract Forms* Section VIII -  
*General Conditions (GCC)*  
Section IX - Special Conditions of Contract Section  
X- Contract Forms

62 The Invitation to Tender Notice issued by the Procuring Entity is not part of the Contract documents. Unless obtained directly from the Procuring Entity, the Procuring Entity is not responsible for the completeness of the Tender document, responses to requests for clarification, the minutes of a pre-arranged site visit and those of the pre-Tender meeting (if any), or Addenda to the Tender document in accordance with ITT 10. In case of any contradiction, documents obtained directly from the Procuring Entity shall prevail.

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

**70** *Clarification of Tender Document, Site Visit, Pre-tender Meeting*

71 A Tenderer requiring any clarification of the Tender Document shall contact the Procuring Entity in writing at the Procuring Entity's address specified in the **TDS** or raise its enquiries during the pre-Tender meeting if provided for in accordance with ITT 7.2. The Procuring Entity will respond in writing to any request for clarification, provided that such request is received no later than the period specified in the **TDS** prior to the deadline for submission of tenders. The Procuring Entity shall forward copies of its response to all tenderers who have acquired the Tender documents in accordance with ITT 7.4, including a description of the inquiry but without identifying its source. If so specified in the **TDS**, the Procuring Entity shall also promptly publish its response at the web page identified in the **TDS**. Should the clarification result in changes to the essential elements of the Tender Documents, the Procuring Entity shall amend the Tender Documents following the procedure under ITT 8 and ITT 22.2.

72 The Tenderer, at the Tenderer's own responsibility and risk, is encouraged to visit and examine and inspect the site(s) of the required contracts and obtain all information that may be necessary for preparing a tender. The costs of visiting the Site shall be at the Tenderer's own expense. The Procuring Entity shall specify in the **TDS** if a pre-arranged Site visit and or a pre-tender meeting will be held, when and where. The Tenderer's designated representative is invited to attend a pre-arranged site visit and a pre-tender

meeting, as the case may be. The purpose of the site visit and the pre-tender meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

- 73 The Tenderer is requested to submit any questions in writing, to reach the Procuring Entity not later than the period specified in the **TDS** before the meeting.
- 74 Minutes of a pre-arranged site visit and those of the pre-tender meeting, if applicable, including the text of the questions asked by Tenderers and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Tenderers who have acquired the Tender Documents. Minutes shall not identify the source of the questions asked.
- 75 The Procuring Entity shall also promptly publish anonymized (*no names*) Minutes of the pre-arranged site visit and those of the pre-tender meeting at the web page identified in the **TDS**. Any modification to the Tender Documents that may become necessary as a result of the pre-arranged site visit and those of the pre-tender meeting shall be made by the Procuring Entity exclusively through the issue of an Addendum pursuant to ITT 8 and not through the minutes of the pre-Tender meeting. Non-attendance at the pre-arranged site visit and the pre-tender meeting will not be a cause for disqualification of a Tenderer.
- 80 *Amendment of Tender Documents*
- 81 At any time prior to the deadline for submission of Tenders, the Procuring Entity may amend the Tender Documents by issuing addenda.
- 82 Any addendum issued shall be part of the Tender Documents and shall be communicated in writing to all who have obtained the Tender Documents from the Procuring Entity. The Procuring Entity shall also promptly publish the addendum on the Procuring Entity's website in accordance with ITT 7.5.
- 83 To give Tenderers reasonable time in which to take an addendum into account in preparing their Tenders, the Procuring Entity should extend the dead line for the submission of Tenders, pursuant to ITT 22.2.

## **C. PREPARATION OF TENDERS**

### **9. Cost of Tendering**

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

#### **10.0 Language of Tender**

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

#### **11.0 Documents Comprising the Tender**

##### **11.1** The Tender shall comprise the following:

- a) Form of Tender prepared in accordance with ITT 12;
- b) Schedules including priced Bill of Quantities, completed in accordance with ITT 12 and ITT 14;
- c) Tender Security or Tender-Securing Declaration, in accordance with ITT 19.1;
- d) Alternative Tender, if permissible, in accordance with ITT 13;
- e) **Authorization:** written confirmation authorizing the signatory of the Tender to commit the Tenderer, in accordance with ITT 20.3;
- f) **Qualifications:** documentary evidence in accordance with ITT 17 establishing the Tenderer's

qualifications to perform the Contract if its Tender is accepted;

g) *Conformity*: a technical proposal in accordance with ITT 16;

h) Any other document required in the **TDS**.

**11.2** In addition to the requirements under ITT 11.1, Tenders submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Tender shall be signed by all members and submitted with the Tender, together with a copy of the proposed JV Agreement. Change of membership and conditions of the JV prior to contract signature will render the tender liable for disqualification.

#### **12.0** *Form of Tender and Schedules*

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

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

#### **13.** *Alternative Tenders*

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

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

**13.3** Except as provided under ITT 13.4 below, Tenderers wishing to offer technical alternatives to the requirements of the Tender Documents must first price the Procuring Entity's design as described in the Tender Documents and shall further provide all information necessary for a complete evaluation of the alternative by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Tenderer with the Winning Tender conforming to the basic technical requirements shall be considered by the Procuring Entity.

**13.4** When specified in the **TDS**, Tenderers are permitted to submit alternative technical solutions for specified parts of the Works, and such parts will be identified in the **TDS**, as will the method for their evaluating, and described in Section VII, Works' Requirements.

#### **14.0** *Tender Prices and Discounts*

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

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

**14.3** The price to be quoted in the Form of Tender, in accordance with ITT 12.1, shall be the total price of the Tender, including any discounts offered.

**14.4** The Tenderer shall quote any discounts and the methodology for their application in the Form of Tender, in accordance with ITT 12.1.

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

146 Where tenders are being invited for individual lots (contracts) or for any combination of lots (packages), tenderers wishing to offer discounts for the award of more than one Contract shall specify in their Tender the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITT 14.4, provided the Tenders for all lots (contracts) are opened at the same time.

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

#### 150 *Currencies of Tender and Payment*

151 The currency(ies) of the Tender and the currency(ies) of payments shall be the same.

152 Tenderers shall quote entirely in Kenya Shillings. The unit rates and the prices shall be quoted by the Tenderer in the Bill of Quantities, entirely in Kenya shillings.

a) A Tenderer expecting to incur expenditures in other currencies for inputs to the Works supplied from outside Kenya (referred to as "the foreign currency requirements") shall (if so allowed in the **TDS**) indicate in the Appendix to Tender the percentage(s) of the Tender Price (excluding Provisional Sums), needed by the Tenderer for the payment of such foreign currency requirements, limited to no more than two foreign currencies.

b) The rates of exchange to be used by the Tenderer in arriving at the local currency equivalent and the percentage(s) mentioned in (a) above shall be specified by the Tenderer in the Appendix to Tender and shall be based on the exchange rate provided by the Central Bank of Kenya on the date 30 days prior to the actual date of tender opening. Such exchange rate shall apply for all foreign payments under the Contract.

153 Tenderers may be required by the Procuring Entity to justify, to the Procuring Entity's satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Tender are reasonable, in which case a detailed break down of the foreign currency requirements shall be provided by Tenderers.

#### 16.0 *Documents Comprising the Technical Proposal*

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

#### 17.0 *Documents Establishing the Eligibility and Qualifications of the Tenderer*

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

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

173 If a margin of preference applies as specified in accordance with ITT 33.1, national tenderers, individually or in joint ventures, applying for eligibility for national preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITT 33.1.

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

tenderers, and thereby help to prevent any corrupt influence in relation to the procurement process or contract management.

- 17.5** The purpose of the information described in ITT 17.4 above overrides any claims to confidentiality which a tenderer may have. There can be no circumstances in which it would be justified for a tenderer to keep information relating to its ownership and control confidential where it is tendering to undertake public sector work and receive public sector funds. Thus, confidentiality will not be accepted by the Procuring Entity as a justification for a Tenderer's failure to disclose, or failure to provide required information on its ownership and control.
- 17.6** The Tenderer shall provide further documentary proof, information or authorizations that the Procuring Entity may request in relation to ownership and control which in information on any changes to the information which was provided by the tenderer under ITT 6.4. The obligations to require this information shall continue for the duration of the procurement process and contract performance and after completion of the contract, if any change to the information previously provided may reveal a conflict of interest in relation to the award or management of the contract.
- 17.7** All information provided by the tenderer pursuant to these requirements must be complete, current and accurate as at the date of provision to the Procuring Entity. In submitting the information required pursuant to these requirements, the Tenderer shall warrant that the information submitted is complete, current and accurate as at the date of submission to the Procuring Entity.
- 17.8** If a tenderer fails to submit the information required by these requirements, its tender will be rejected. Similarly, if the Procuring Entity is unable, after taking reasonable steps, to verify to a reasonable degree the information submitted by a tenderer pursuant to these requirements, then the tender will be rejected.
- 17.9** If information submitted by a tenderer pursuant to these requirements, or obtained by the Procuring Entity (whether through its own enquiries, through notification by the public or otherwise), shows any conflict of interest which could materially and improperly benefit the tenderer in relation to the procurement or contract management process, then:
- i) If the procurement process is still ongoing, the tenderer will be disqualified from the procurement process,
  - ii) if the contract has been awarded to that tenderer, the contract award will be set aside pending the outcome of (iii),
  - iii) the tenderer will be referred to the relevant law enforcement authorities for investigation of whether the tenderer or any other person have committed any criminal offence.
- 17.10** If a tenderer submits information pursuant to these requirements that is incomplete, inaccurate or out-of-date, or attempts to obstruct the verification process, then the consequences ITT 17.8 will ensue unless the tenderer can show to the reasonable satisfaction of the Procuring Entity that any such act was not material, or was due to genuine error which was not attributable to the intentional act, negligence or recklessness of the tenderer.

#### **18.0** *Period of Validity of Tenders*

- 18.1.** Tenders shall remain valid for the Tender Validity period specified in the **TDS**. The Tender Validity period starts from the date fixed for the Tender submission deadline (as prescribed by the Procuring Entity in accordance with ITT 22). A tender valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.
- 18.2** In exceptional circumstances, prior to the expiration of the Tender validity period, the Procuring Entity may request Tenderers to extend the period of validity of their Tenders. The request and the responses shall be made in writing. If a Tender Security is requested in accordance with ITT 19, it shall also be extended for thirty (30) days beyond the deadline of the extended validity period. A Tenderer may refuse the request without forfeiting its Tender security. A Tenderer granting the request shall not be required or permitted to modify its Tender.

#### **19.0** *Tender Security*

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

Forms.

- 192 If a Tender Security is specified pursuant to ITT 19.1, the Tender Security shall be a demand guarantee in any of the following forms at the Tenderer's option:
- I) cash;
  - ii) a bank guarantee;
  - iii) a guarantee by an insurance company registered and licensed by the Insurance Regulatory Authority listed by the Authority;
  - (iv) a guarantee issued by a financial institution approved and licensed by the Central Bank of Kenya, from a reputable source, and an eligible country.
- 193 If an unconditional bank guarantee is issued by a bank located outside Kenya, the issuing bank shall have a correspondent bank located in Kenya to make it enforceable. The Tender Security shall be valid for thirty (30) days beyond the original validity period of the Tender, or beyond any period of extension if requested under ITT 18.2.
- 194 If a Tender Security or Tender-Securing Declaration is specified pursuant to ITT 19.1, any Tender not accompanied by a substantially responsive Tender Security or Tender-Securing Declaration shall be rejected by the Procuring Entity as non-responsive.
- 195 If a Tender Security is specified pursuant to ITT 19.1, the Tender Security of unsuccessful Tenderers shall be returned as promptly as possible upon the successful Tenderer's signing the Contract and furnishing the Performance Security and any other documents required in the TDS. The Procuring Entity shall also promptly return the tender security to the tenderers where the procurement proceedings are terminated, all tenders were determined non-responsive or a bidder declines to extend tender validity period.
- 196 The Tender Security of the successful Tenderer shall be returned as promptly as possible once the successful Tenderer has signed the Contract and furnished the required Performance Security, and any other documents required in the TDS.
- 197 The Tender Security may be forfeited or the Tender-Securing Declaration executed:
- a) if a Tenderer withdraws its Tender during the period of Tender validity specified by the Tenderer on the Form of Tender, or any extension there to provided by the Tenderer; or
  - b) if the successful Tenderer fails to: -
    - i) sign the Contract in accordance with ITT47; or
    - ii) furnish a Performance Security and if required in the TDS, and any other documents required in the TDS.
- 198 Where tender securing declaration is executed, the Procuring Entity shall recommend to the PPRA to debar the Tenderer from participating in public procurement as provided in the law.
- 199 The Tender Security or the Tender-Securing Declaration of a JV shall be in the name of the JV that submits the Tender. If the JV has not been legally constituted into a legally enforceable JV at the time of tendering, the Tender Security or the Tender-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITT 4.1 and ITT 11.2.
- 19.10 A tenderer shall not issue a tender security to guarantee itself.
- 200 *Format and Signing of Tender*
- 201 The Tenderer shall prepare one original of the documents comprising the Tender as described in ITT 11 and clearly mark it "ORIGINAL." Alternative Tenders, if permitted in accordance with ITT 13, shall be clearly marked "ALTERNATIVE." In addition, the Tenderer shall submit copies of the Tender, in the number specified in the **TDS** and clearly mark them "COPY." In the event of any discrepancy between the origin a land the copies, the original shall prevail.
- 202 Tenderers shall mark as "CONFIDENTIAL" all information in their Tenders which is confidential to their

business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

- 203** The original and all copies of the Tender shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Tenderer. This authorization shall consist of a written confirmation as specified in the **TDS** and shall be attached to the Tender. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Tender where entries or amendments have been made shall be signed or initialed by the person signing the Tender.
- 204** In case the Tenderer is a JV, the Tender shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 205** Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Tender.

#### **D. SUBMISSION AND OPENING OF TENDERS**

##### **210** *Sealing and Marking of Tenders*

- 211** The Tenderer shall deliver the Tender in a single sealed envelope, or in a single sealed package, or in a single sealed container bearing the name and Reference number of the Tender, addressed to the Procuring Entity and a warning not to open before the time and date for Tender opening date. Within the single envelope, package or container, the Tenderer shall place the following separate, sealed envelopes:
- a) in an envelope or package or container marked "ORIGINAL", all documents comprising the Tender, as described in ITT 11; and
  - b) in an envelope or package or container marked "COPIES", all required copies of the Tender; and
  - c) if alternative Tenders are permitted in accordance with ITT 13, and if relevant:
    - i) in an envelope or package or container marked "ORIGINAL –ALTERNATIVE TENDER", the alternative Tender; and
    - ii) in the envelope or package or container marked "COPIES- ALTERNATIVE TENDER", all required copies of the alternative Tender.

The inner envelopes or packages or containers shall:

- a) bear the name and address of the Procuring Entity,
  - b) bear the name and address of the Tenderer; and
  - c) bear the name and Reference number of the Tender.
- 212** If an envelope or package or container is not sealed and marked as required, the *Procuring Entity* will assume no responsibility for the misplacement or premature opening of the Tender. Tenders misplaced or opened prematurely will not be accepted.
- 220** *Deadline for Submission of Tenders*
- 221** Tenders must be received by the Procuring Entity at the address specified in the **TDS** and no later than the date and time also specified in the **TDS**. When so specified in the **TDS**, tenderers shall have the option of submitting their Tenders electronically. Tenderers submitting Tenders electronically shall follow the electronic Tender submission procedures specified in the **TDS**.
- 222** The Procuring Entity may, at its discretion, extend the deadline for the submission of Tenders by amending the Tender Documents in accordance with ITT 8, in which case all rights and obligations of the Procuring Entity and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

##### **23.0** *Late Tenders*

The Procuring Entity shall not consider any Tender that arrives after the deadline for submission of tenders, in accordance with ITT 22. Any Tender received by the Procuring Entity after the deadline for submission of Tenders shall be declared late, rejected, and returned unopened to the Tenderer.

## 24.0 *Withdrawal, Substitution, and Modification of Tenders*

241 A Tenderer may withdraw, substitute, or modify its Tender after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITT 20.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Tender must accompany the respective written notice. All notices must be:

- a) prepared and submitted in accordance with ITT 20 and ITT 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION;" and
- b) received by the Procuring Entity prior to the deadline prescribed for submission of Tenders, in accordance with ITT 22.

242 Tenders requested to be withdrawn in accordance with ITT 24.1 shall be returned unopened to the Tenderers.

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

## 25 *Tender Opening*

251 Except in the cases specified in ITT 23 and ITT 24.2, the Procuring Entity shall publicly open and read out all Tenders received by the deadline, at the date, time and place specified **in the TDS**, in the presence of Tenderers' designated representatives who chooses to attend. Any specific electronic Tender opening procedures required if electronic Tendering is permitted in accordance with ITT 22.1, shall be as specified in the **TDS**.

252 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelopes with the corresponding Tender shall not be opened but returned to the Tenderer. No Tender withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Tender opening.

253 Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Tender being substituted, and the substituted Tender shall not be opened, but returned to the Tenderer. No Tender substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Tender opening.

254 Next, envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Tender. No Tender modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Tender opening.

255 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Tenderer and whether there is a modification; the total Tender Price, per lot (contract) if applicable, including any discounts and alternative Tenders; the presence or absence of a Tender Security or Tender-Securing Declaration, if required; and any other details as the Procuring Entity may consider appropriate.

256 Only Tenders, alternative Tenders and discounts that are opened and read out at Tender opening shall be considered further for evaluation. The Form of Tender and pages of the Bill of Quantities (to be decided on by the tender opening committee) are to be initialed by the members of the tender opening committee attending the opening.

257 At the Tender Opening, the Procuring Entity's shall neither discuss the merits of any Tender nor reject any Tender (except for late Tenders, in accordance with ITT 23.1).

258 The Procuring Entity shall prepare minutes of the Tender Opening that shall include, as a minimum: -

- a) the name of the Tenderer and whether there is a withdrawal, substitution, or modification;
- b) the Tender Price, per lot (contract) if applicable, including any discounts;
- c) any alternative Tenders;

- d) the presence or absence of a Tender Security, if new as required;
- e) number of pages of each tender document submitted.

259 The Tenderers' representatives who are present shall be requested to sign the minutes. The omission of a Tenderer's signature on the minutes shall not invalidate the contents and effect of the minutes. A copy of the tender opening register shall be distributed to all Tenderers.

## E EVALUATION AND COMPARISON OF TENDERS

### 26 Confidentiality

26.1 Information relating to the evaluation of Tenders and recommendation of contract award shall not be disclosed to Tenderers or any other persons not officially concerned with the Tender process until information on Intention to Award the Contract is transmitted to all Tenderers in accordance with ITT 43.

26.2 Any effort by a Tenderer to influence the Procuring Entity in the evaluation of the Tenders or Contract award decisions may result in the rejection of its tender.

26.3 Notwithstanding ITT 26.2, from the time of tender opening to the time of contract award, if a tenderer wishes to contact the Procuring Entity on any matter related to the tendering process, it shall do so in writing.

### 27.0 Clarification of Tenders

27.1 To assist in the examination, evaluation, and comparison of the tenders, and qualification of the tenderers, the Procuring Entity may, at its discretion, ask any tenderer for a clarification of its tender, given a reasonable time for a response. Any clarification submitted by a tenderer that is not in response to a request by the Procuring Entity shall not be considered. The Procuring Entity's request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the tender shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the tenders, in accordance with ITT 31.

27.2 If a tenderer does not provide clarifications of its tender by the date and time set in the Procuring Entity's request for clarification, its Tender may be rejected.

### 28.0 Deviations, Reservations, and Omissions

28.1 During the evaluation of tenders, the following definitions apply: -

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

### 29.0 Determination of Responsiveness

29.1 The Procuring Entity's determination of a Tender's responsiveness is to be based on the contents of the tender itself, as defined in ITT 11.

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

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

29.3 The Procuring Entity shall examine the technical aspects of the tender submitted in accordance with ITT

16, to confirm that all requirements of Section VII, Works' Requirements have been met without any material deviation, reservation or omission.

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

**30.0** *Non-material Non-conformities*

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

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

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

**31.0** *Arithmetical Errors*

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

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

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

**31.3** Tenderers shall be notified of any error detected in their bid during the notification of award.

**32.0** *Conversion to Single Currency*

For evaluation and comparison purposes, the currency(ies) of the Tender shall be converted in to a single currency as specified in the **TDS**.

**33.0** *Margin of Preference and Reservations*

**33.1** A margin of preference may be allowed only when the contract is open to international competitive tendering where foreign contractors are expected to participate in the tendering process and where the contract exceeds the value/threshold specified in the Regulations.

**33.2** A margin of preference shall not be allowed unless it is specified so in the **TDS**.

**33.3** Contracts procured on basis of international competitive tendering shall not be subject to reservations exclusive to specific groups as provided in ITT 33.4.

**33.4** Where it is intended to reserve a contract to a specific group of businesses (these groups are Small and Medium Enterprises, Women Enterprises, Youth Enterprises and Enterprises of persons living with disability, as the case may be), and who are appropriately registered as such by the authority to be specified in the **TDS**, a procuring entity shall ensure that the invitation to tender specifically indicates that only businesses or firms belonging to the specified group are eligible to tender. No tender shall be reserved to more than one group. If not so stated in the Invitation to Tender and in the Tender documents, the invitation to tender will be open to all interested tenderers.

### 34.0 *Nominated Subcontractors*

- 34.1** Unless otherwise stated in the **TDS**, the Procuring Entity does not intend to execute any specific elements of the Works by subcontractors selected/nominated by the Procuring Entity. In case the Procuring Entity nominates a subcontractor, the subcontract agreement shall be signed by the Subcontractor and the Procuring Entity. The main contract shall specify the working arrangements between the main contractor and the nominated subcontractor.
- 34.2** Tenderers may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **TDS**. Subcontractors proposed by the Tenderer shall be fully qualified for their parts of the Works.
- 34.3** Domestic subcontractor's qualifications shall not be used by the Tenderer to qualify for the Works unless their specialized parts of the Works were previously designated so by the Procuring Entity in the **TDS** as can be met by subcontractors referred to hereafter as 'Specialized Subcontractors', in which case, the qualifications of the Specialized Subcontractors proposed by the Tenderer may be added to the qualifications of the Tenderer.

### 35. *Evaluation of Tenders*

- 35.1 The Procuring Entity shall use the criteria and methodologies listed in this ITT and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Procuring Entity shall determine the Lowest Evaluated Tender in accordance with ITT 40.
- 35.2 To evaluate a Tender, the Procuring Entity shall consider the following:
- a) Price adjustment in accordance with ITT 31.1 (iii); excluding provisional sums and contingencies, if any, but including Daywork items, where priced competitively;
  - b) price adjustment due to discounts offered in accordance with ITT 14.4;
  - c) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with ITT 32;
  - d) price adjustment due to quantifiable non material non-conformities in accordance with ITT 30.3; and
  - e) any additional evaluation factors specified in the **TDS** and Section III, Evaluation and Qualification Criteria.
- 35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be considered in Tender evaluation.
- 35.4 Where the tender involves multiple lots or contracts, the tenderer will be allowed to tender for one or more lots (contracts). Each lot or contract will be evaluated in accordance with ITT 35.2. The methodology to determine the lowest evaluated tenderer or tenderers base done lot (contract) or based on a combination of lots (contracts), will be specified in Section III, Evaluation and Qualification Criteria. In the case of multiple lots or contracts, tenderer will be required to prepare the Eligibility and Qualification Criteria Form for each Lot.

### 36.0 *Comparison of tenders*

The Procuring Entity shall compare the evaluated costs of all substantially responsive Tenders established in accordance with ITT 35.2 to determine the Tender that has the lowest evaluated cost.

### 37.0 *Abnormally low tenders and abnormally high tenders Abnormally*

#### *Low Tenders*

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

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

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

*Abnormally high tenders*

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

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

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

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

*Unbalanced and/ or front-loaded tenders*

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

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

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

*Qualifications of the tenderer*

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

**392** The determination shall be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to ITT 17. The determination shall not take into

consideration the qualifications of other firms such as the Tenderer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Sub-contractors if permitted in the Tender document), or any other firm(s) different from the Tenderer.

**39.3** An affirmative determination shall be a prerequisite for award of the Contract to the Tenderer. A negative determination shall result in disqualification of the Tender, in which event the Procuring Entity shall proceed to the Tenderer who offers a substantially responsive Tender with the next lowest evaluated price to make a similar determination of that Tenderer's qualifications to perform satisfactorily.

**40.0** *Lowest evaluated tender*

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

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

**41.0** *Procuring entity's right to accept any tender, and to reject any or all tenders.*

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

**F.** AWARD OF CONTRACT

**42.0** *Award criteria*

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

**43.0** *Notice of Intention to Enter into a Contract/Notification of Award*

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

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

**44.0** *Stand still Period*

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

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

**45.0** *Debriefing by The Procuring Entity*

**45.1** On receipt of the Procuring Entity's Notification of Intention to Enter into a Contract referred to in ITT 43, an unsuccessful tenderer may make a written request to the Procuring Entity for a debriefing on specific issues or concerns regarding their tender. The Procuring Entity shall provide the debriefing within five days of receipt of the request.

**45.2** Debriefings of unsuccessful Tenderers may be done in writing or verbally. The Tenderer shall bear its

own costs of attending such a debriefing meeting.

#### 46.0 Letter of Award

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

#### 47.0 Signing of Contract

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

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

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

#### 48.0 Performance Security

48.1 Within twenty-one (21) days of the receipt of the Letter of Award from the Procuring Entity, the successful Tenderer shall furnish the Performance Security and, any other documents required in the **TDS**, in accordance with the General Conditions of Contract, subject to ITT 38.2 (b), using the Performance Security and other Forms included in Section X, Contract Forms, or another form acceptable to the Procuring Entity. A foreign institution providing a bank guarantee shall have a correspondent financial institution located in Kenya, unless the Procuring Entity has agreed in writing that a correspondent bank is not required.

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

48.3 Performance security shall not be required for contracts estimated to cost less than the amount specified in the Regulations.

#### 49.0 Publication of Procurement Contract

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

- a) name and address of the Procuring Entity;
- b) name and reference number of the contract being awarded, a summary of its scope and the selection method used;
- c) the name of the successful Tenderer, the final total contract price, the contract duration;
- d) dates of signature, commencement and completion of contract;
- e) names of all Tenderers that submitted Tenders, and their Tender prices as readout at Tender opening.

#### 50.0 *Procurement related Complaints and Administrative Review*

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

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

## Section II - Tender Data Sheet (TDS)

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

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
<b>A. General</b>	
ITT 1.1	The name of the contract is Proposed Development of ICT Digital Hub and Associated Facilities in Kikuyu, Kiambu County. The reference number of the Contract is KoTDA/DIGITAL-HUB-KIKUYU/045/2025-2026
ITT 2.4	The Information made available on competing firms is as follows: <i>N/A</i>
ITT 2.4	The firms that provided consulting services for the contract being tendered for are: <i>N/A</i>
ITT 3.1	Maximum number of members in the Joint Venture (JV) shall be: <i>N/A</i> .
<b>B. Contents of Tender Document</b>	
ITT 7.1	(i) The Tenderer will submit any request for clarifications in writing at the Address email below to reach the Procuring Entity not later than <b>Monday 8<sup>th</sup> June 2026 09AM</b> . (ii) The Procuring Entity shall publish its response at the website and/or clarify all responses during the mandatory Pre-Bid Conference to be held on <b>8<sup>th</sup> June 2026 form 10AM to 12PM</b> at the Konza Technopolis. The address is;  The Chief Executive Officer Konza Technopolis Development Authority P.O. Box 1 – 90150 Konza Technopolis Kenya E-mail: <a href="mailto:procurement@konza.go.ke">procurement@konza.go.ke</a> and copy to <a href="mailto:ceo@konza.go.ke">ceo@konza.go.ke</a> Tel +254-20-4343013/4
ITT 7.2	A MANDATORY pre-arranged pre-bid Conference shall take place at the following date, time and place: Date; Monday <b>8<sup>th</sup> June 2026</b> Time: strictly from 10am to 12pm. Any late arrivals beyond 12pm will not be accepted. Place: Konza Technopolis, Konza Complex, 7 <sup>th</sup> Floor.
ITT 7.3	The Tenderer will submit any questions in writing, to reach the Procuring Entity not later than 2hrs before the pre-bid Conference.
ITT 9.1	For Clarification of Tender purposes and for obtaining further information the Procuring Entity's address is. The Chief Executive Officer Konza Technopolis Development Authority P.O. Box 1 - 90150, KONZA TECHNOPSIS, KENYA. E-Mail; <a href="mailto:procurement@konza.go.ke">procurement@konza.go.ke</a> and <a href="mailto:ceo@konza.go.ke">ceo@konza.go.ke</a> Tel; +254-20-4343013/4
<b>C. Preparation of Tenders</b>	
ITT 11.1 (h)	The Tenderer shall submit the following additional documents in its Tender: <i>N/A</i>
ITT 13.1	Alternative Tenders shall not be considered.
ITT 13.2	Alternative times for completion SHALL NOT BE permitted

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: N/A
ITT 14.5	The prices quoted by the Tenderer shall be: Prices quoted shall be net inclusive of all taxes and delivery costs, must be expressed in Kenya shillings and shall remain valid for a period of 180 days from the closing date of the tender. The estimated budget and/or Engineers Estimates for the project is <b>KES 77,635,920.84 (Seventy-Seven Million, Six Hundred Thirty-Five Thousand, Nine Hundred Twenty and Eighty-Four Cents Only)</b> . <b>BIDDERS ARE ENCOURAGED TO PROVIDE REASONABLE TENDER BID PROPOSALS WITHIN OR BELOW THE PROVIDED BUDGET CEILING/ENGINEERS' ESTIMATE.</b>
ITT 15.2 (a)	Foreign currency requirements <b>Not Allowed</b>
ITT 18.1	The Tender validity period shall be 180 Days from the date of tender opening.
ITT 19.1	Tender Security shall be required; the amount and currency of the Tender Security shall be <b>KES 200,000.00 valid for 180 Days.</b>
ITT 20.1	In addition to the original of the Tender, the number of copies is: <b>ONE SOFT COPY IN FLASH DRIVE.</b>
ITT 20.3	The written confirmation of authorization to sign on behalf of the Tenderer shall consist of: <b>POWER OF ATTORNEY COMMISSIONED BY A COMMISSIONER FOR OATHS</b>
<b>D. Submission and Opening of Tenders</b>	
ITT 22.1	(A) For <u>Tender submission purposes only</u> , the Procuring Entity's address is:  The Chief Executive Officer Konza Technopolis Development Authority P.O. Box 1 - 90150, KONZA TECHNOPOLIS, KENYA. E-Mail; <a href="mailto:procurement@konza.go.ke">procurement@konza.go.ke</a> and <a href="mailto:ceo@konza.go.ke">ceo@konza.go.ke</a> , Tel: +254-20-4343013/4  Physical address for hand Delivery to an office or Tender Box (Tenders will be opened immediately Friday 12th June 2026 at 1400hrs at the Board Room, 7th Floor, Konza Technopolis Development Authority Headquarters, Konza complex building Date and time for submission of Tenders: <b>Tender bids shall be submitted not later than:</b> <b>Date: Friday 12th June 2026. Time: 1400HRS.</b> Tenderers <b>SHALL NOT SUBMIT</b> tenders electronically.
ITT 25.1	The Tender opening shall take place at the time and the address for Opening of Tenders as provided below: The Chief Executive Officer Konza Technopolis Development Authority P.O. Box 1 - 90150, KONZA TECHNOPOLIS, KENYA. E-Mail; <a href="mailto:procurement@konza.go.ke">procurement@konza.go.ke</a> and <a href="mailto:ceo@konza.go.ke">ceo@konza.go.ke</a> Tel: +254-20-4343013/4
<b>E. Evaluation, and Comparison of Tenders</b>	
ITT 30.3	The adjustment shall be based on the N/A
ITT 33.2	A margin of preference <b>SHALL NOT</b> apply. [If a margin of preference applies, the application methodology shall be defined in Section III- Evaluation and Qualification Criteria.]
ITT 33.4	The invitation to tender is extended to the following group that qualify for Reservations. open

Reference to ITC Clause	PARTICULARS OF APPENDIX TO INSTRUCTIONS TO TENDERS
ITT 34.1	At this time, the Procuring Entity <b>DOES NOT INTEND</b> to execute certain specific parts of the Works by subcontractors selected in advance.
ITT 34.2	Contractors may propose subcontracting: Maximum percentage of subcontracting permitted is: 10 % of the total contract amount. Tenderers planning to subcontract more than 10% of total volume of work shall specify, in the Form of Tender, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience.
ITT 34.3	<p><i>[The parts of the Works for which the Procuring Entity permits Tenderers to propose Specialized Domestic Subcontractors are designated as follows:</i></p> <p style="text-align: center;"><b>1. ELECTRICAL and ICT WORKS</b> <b>2. MECHANICAL WORKS</b></p> <p>For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications of the proposed Specialized Subcontractors shall be provided by the main Contractor together with the agreement between the Main Contractor and the proposed domestic subcontractors of NCA 5 and above.</p>
ITT 35.2 (e)	Additional requirements apply. These are detailed in the evaluation criteria in Section III, Evaluation and Qualification Criteria.
ITT 48.1	Other documents required in addition to the Performance Security are: <b>INSURANCE CERTIFICATES, NCA REGISTRATION, WORKS PROGRAMME AMONG OTHERS</b>
ITT 50.1	<p>The procedures for making a Procurement-related Complaint are detailed in the “Notice of Intention to Award the Contract” herein and are also available from the PPRA Website <a href="http://www.ppra.go.ke">www.ppra.go.ke</a> or email <a href="mailto:complaints@ppra.go.ke">complaints@ppra.go.ke</a>. If a Tenderer wishes to make a Procurement-related Complaint, the Tenderer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by hand delivery or email to:</p> <p>For the attention: <i>[insert full name of person receiving complaints]</i> Title/position: <i>[insert title/position]</i> Procuring Entity: <i>[insert name of Procuring Entity]</i> Email address: <i>[insert email address]</i></p> <p>In summary, a Procurement-related Complaint may challenge any of the following (among others):</p> <p>(i) the terms of the Tender Documents; and (ii) the Procuring Entity’s decision to award the contract.</p>

## 1. SITE LOCATION

The location of the facility i.e. land will be provided to the successful tenders at the time of contracting.

## SECTION III - EVALUATION AND QUALIFICATION CRITERIA

### 10 GENERAL PROVISIONS

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

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

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

### 13 EVALUATION AND CONTRACT AWARD CRITERIA

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

#### 2.0 PRELIMINARY EXAMINATION FOR DETERMINATION OF RESPONSIVENESS

##### *STAGE 1- Preliminary examination for Determination of Responsiveness*

The Procuring Entity will start by examining all tenders to ensure they meet in all respects the eligibility criteria and other mandatory requirements in the ITT, and that the tender is complete in all aspects in meeting the requirements provided for in the preliminary evaluation criteria outlined below. The Standard Tender Evaluation Report Document for Goods and Works for evaluating Tenders provides very clear guide on how to deal with review of these requirements. Tenders that do not pass the Preliminary Examination will be considered non-responsive and will not be considered further.

##### **STAGE 1- Mandatory Evaluation Criteria**

S/No	PRELIMINARY EVALUATION CRITERIA / MANDATORY REQUIREMENTS FOR MAIN CONTRACTOR
MR 1	Valid and Certified copy of registration certificate and practicing license from National Construction Authority (NCA) for Categories 2 and above for Building Works.
MR 2	Provide Copies of Certified current valid Tax Compliance Certificate, Business Permit, PIN and VAT Registration Certificates.
MR 3	Provide evidence of financial, personnel and equipment capability necessary for carrying out the works
MR 4	Provide Bid Security of Kes. 200,000 in the form of A Bank Guarantee or Bid Bond from an Insurance company approved by Public Procurement Regulatory Authority (PPRA) and valid for 180 days from date of opening of tender
MR 5	Provide Litigation History (both court and arbitration cases)
MR 6	Complete Confidential Business Questionnaire & Declaration form
MR 7	Documentary evidence of liquid assets and/or availability of credit facilities of a value of at least Kshs. 100,000,000 million (Attach copies of certified bank statements for the last six months OR letter of credit line from a financial institution registered by Central Bank of Kenya. The documents provided may be verified for authenticity.
MR 8	Dully filled and signed form of tender (s) prepared in accordance with ITT 12
MR 9	Must submit <b>one original and a soft copy</b> of the Tender Document
MR 10	Properly bound (perfect cover, hard cover or case bound), paginated, serialized tender document (each page of the tender submission must have a number, and the numbers must be in chronological order).
MR 11	Provide proof of power of attorney (of tender signatory if not director of the company/ partner, signed and stamped by Commissioner of Oaths)
MR 12	Submission of valid and Certified CR12 form showing the list of directors /shareholding (issued within the last 6 months) or National Identity Card(s) for Sole Proprietorship/ Partnership

MR 13	Must fill and submit the Certificate of Independent Tender Determination in the format provided
MR 14	Bidder has submitted a form of tender within the specified budget ceiling/ Engineers estimates of KES 77,635,920.84 (Seventy-Seven Million, Six Hundred Thirty-Five Thousand, Nine Hundred Twenty and Eighty-Four Cents Only).
MR 15	Valid agreements with specialist sub-contractors for ICT, electrical, mechanical and other services with relevant qualifications under NCA 5 and above.
MR 16	Duly signed and stamped pre-bid conference Certificate
MR 17	Bidders currently on Contract with the Konza Technopolis Development Authority for any other Construction are not eligible to apply.
MR 18	Price Schedule/Bill of quantities must be duly filled, signed and stamped. Any amendments or any form alterations will not be allowed.
MR 19	Provide a Letter of Availability of a Credit line of at least KShs.60 million (KShs. 60,000,000.00) for this tender from a financial Institution.
MR 20	Copy of National Construction Authority (NCA) Registration Certificate of category 1-2 in Building Works.
MR 21	Copy of Current Annual Practicing License from the NCA of at least category 1-2 in Building Works.
MR 22	Commitment to comply with the applicable requirements of the Occupational Safety and Health Act (2007), Environmental Management and Coordination (Amendment) Act (2015) and the applicable subsidiary Legislation, by signing a letter of undertaking.
MR 23	Evidence of handling at least three (3No.) similar types of projects in the last eight (8) years by attaching relevant evidence e.g. copies of contracts, copies of recommendation letters on client letter head, copies of LPOs and copies of completion certificates

**N/B/**

All the above documents MUST be certified by the commissioner of Oaths.

Bidders who do not satisfy any of the above requirements shall be considered non-responsive and their tenders will not be evaluated further.

Preliminary Evaluation for the proposed specialist works listed under ITT 34.3 to be as contained in this volume as per the section below.

Order of evaluation of works will be as follows:

- a) Preliminary evaluation of Main Works
- b) Technical Evaluation of Main Works
- c) Financial Evaluation

Clarification/confirmation, if necessary, to confirm authenticity/compliance of any condition of the tender by the Employer will be done. The tenderers who do not satisfy any of the above requirements shall be considered non-Responsive and their tenders including those of their subcontractors will not be evaluated further.

## STAGE 2- TECHNICAL EVALUATION

No	CRITERIA	MAX POINTS
1	Neatness of documents as per Tender Format i.e. <ol style="list-style-type: none"> <li>i. Proper binding and paginating of all documents without any breaks</li> <li>ii. Clarity of information</li> <li>iii. Proper labelling of contents</li> <li>iv. Proper reference of contents</li> <li>v. Relevance of attached documents in conformity with the requested information in tender document (5 marks broken down into 1 mark for each parameter)</li> </ol>	5
2	Experience of the Contractor in the similar construction field of at least 5 years. <ol style="list-style-type: none"> <li>i. Five Years and Above – 5 marks</li> <li>ii. Four Years – 4 marks</li> <li>iii. Three Years – 3 marks</li> <li>iv. Two Years – 2 marks</li> <li>v. One Year and below – 1 marks</li> </ol> Evidence of Works of Similar Magnitude (50 Million and above) – 5 marks.	10
3	A statement of work methods (Methodology). Include charts, pictures, drawings and brief description in your illustrations. Proposed methodology Works Program..... 3 Work Methodology..... 5 Mobilization Plan ..... 4 Safety Management Plan..... 4 Methodology on environmental and social safeguard issues... 4 (marks for each concept on safety, method, execution, material testing and day work units)	20
4	Qualified technical staff in the company relevant to the building construction industry who will actively be involved in the proposed project. Provide employment/ appointment letters, contract of the key personnel including length of service and termination dates, CV, Academic and professional certificates and evidence of registration with relevant professional bodies and telephone contacts. <ol style="list-style-type: none"> <li>i. Building or Civil or Engineer or Quantity Surveyor –5 marks</li> <li>ii. Project Manager with Degree and above in Building or Civil or Quantity Surveyor – 3 marks</li> <li>iii. Project Manager with Diploma in Building or Civil or Quantity Surveyor – 2 marks (Bidders can only qualify in i or ii and iii to get maximum 10 marks)</li> </ol>	10
6	Number of years of experience of key staff <ol style="list-style-type: none"> <li>1. Project Manager               <ol style="list-style-type: none"> <li>i) 8 years and above 8 years – 6 marks</li> <li>ii) Below 8 years– 3marks</li> </ol> </li> <li>2. Project Engineer               <ol style="list-style-type: none"> <li>i) 5 years and above 5 years – 5 marks</li> <li>ii) Less than 5 years – 2 marks</li> </ol> </li> <li>3. General Foreman               <ol style="list-style-type: none"> <li>i) 5 years and above 3 years – 4 marks</li> <li>ii) Less than 5 years – 1 marks</li> </ol> </li> <li>4. Safety officer               <ol style="list-style-type: none"> <li>i) 5 years and above – 2 marks</li> <li>ii) Less than 5 years – 1 marks</li> </ol> </li> <li>5. Office Fit out Foreman</li> </ol>	20

	i) 5 years and above – 3marks ii) Less than 5 years – 1 marks	
7	Schedules of appropriate equipment, tools and transport in good working condition. i. Key equipment/tools – 6 marks ii. Transport (vehicles) – 4 marks iii. No means of transport and equipment – 0 mark Attach PROOF OF OWNERSHIP for each specific relevant equipment required in the construction work being tendered.	10
8	Provide a list of at least five (5) clients with references (names and telephone of contact persons) to which the company has undertaken similar Construction Works especially each valued at KShs.200,000,000 and above in the last 5years. The Authority may undertake due diligence on the list. Note: Bidder to provide copies of contract agreements or completion certificates and/or a letter from the client confirming execution of the contract, physical Location and amount. (3 Marks each)	15
9	Audited Financial Statements for the last Three (3) consecutive years (2023, 2024 and 2025) certified by a certified auditor. The evaluation committee will consider annual turnover i. Marks for average annual turnover of 100 Million and above ii. Marks for average annual turnover of 70 Million and below 100 Million iii. Marks for average annual turnover of 50 Million and below 70 Million iv. No mark for average annual turnover of below 50 Million	5
10	Litigation History i. Has had no construction-related litigation or arbitration case in the last five years ( 5 Marks) ii. Has not more than two construction-related litigation or arbitration cases in the last five years (2 Marks) iii. Has more than two construction-related litigation or arbitration cases in the last five years (0 Marks)	5
	<b>TOTAL SCORE</b>	100

**Only applicants who score 80 points and above in this Technical Evaluation shall be subjected to financial evaluation.**

### **STAGE 3: FINANCIAL EVALUATION**

- i. The financial ranking of the bids will in the first instance take into consideration the ranking from lowest to highest bidder.
- ii. Bidders will be evaluated against the overall estimate and percentage deviations from the estimate will be reported to assist in recommendation
- iii. In case of discrepancy between the unit price and the total price, the unit price shall prevail
- iv. Errors will be calculated and the effect of the error on the overall bid shall be noted, and the effect on the bid amount reported.
- v. The final ranking of the bids will take into consideration the financial reputation, ability to proceed with work during delayed payments and the ability to deliver as per the quotation without much litigation and complaints
- vi. The bidder with the best evaluated proposal (both technical and financial proposals) will be recommended for award of the contract

### **30 TENDER EVALUATION (ITT 35)-N/A**

Price evaluation: in addition to the criteria listed in ITT 35.2 (a) – (d) the following criteria shall apply:

- (i) Alternative Completion Times, if permitted under ITT13.2, will be evaluated as follows:  
.....
- (ii) Alternative Technical Solutions for specified parts of the Works, if permitted under ITT 13.4, will be evaluated as follows:.....
- (iii) Other Criteria; if permitted under ITT 35.2(j):  
.....

.....

40 *MULTIPLE CONTRACTS-N/A*

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

5.0 **ALTERNATIVE TENDERS (ITT 13.1) -N/A**

**Alternative Tenders (ITT 13.1)**

*An alternative if permitted under ITT 3.1, will be evaluated as follows:*

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

60 *MARGIN OF PREFERENCE-N/A*

61 If the TDS so specifies, the Procuring Entity will grant a margin of preference of fifteen percent (15%) to be loaded on evaluated prices of the foreign tenderers, where the percentage of share holding of Kenyan citizens is less than fifty-one percent (51%).

62 Contractors shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring Entity, a particular contractor or group of contractors qualifies for a margin of preference.

63 After Tenders have been received and reviewed by the Procuring Entity, responsive Tenders shall be assessed to ascertain their percentage of shareholding of Kenyan citizens. Responsive tenders shall be classified into the following groups:

- i) *Group A:* tenders offered by Kenyan Contractors and other Tenderers where Kenyan citizens hold shares of over fifty one percent (51%).
- ii) *Group B:* tenders offered by foreign Contractors and other Tenderers where Kenyan citizens hold shares of less than fifty one percent (51%).

64 All evaluated tenders in each group shall, as a first evaluation step, be compared to determine the lowest tender, and the lowest evaluated tender in each group shall be further compared with each other. If, as a result of this comparison, a tender from Group A is the lowest, it shall be selected for the award of contract. If a tender from Group B is the lowest, an amount equal to the percentage indicated in Item 6.1 of the respective tender price, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each tender from Group B. All tenders shall then be compared using new prices with added prices to Group B and the lowest evaluated tender from Group A. If the tender from Group A is still the lowest tender, it shall be selected forward. If not, the lowest evaluated tender from Group B based on the first evaluation price shall be selected.

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

a) In case the tender was subject to post-qualification, the contract shall be awarded to the lowest evaluated tenderer, subject to confirmation of pre-qualification data, if so required.

b) In case the tender was not subject to post-qualification, the tender that has been determined to be the lowest evaluated tenderer shall be considered for contract award, subject to meeting each of the following conditions.

i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow of Kenya Shillings

ii) Minimum average annual construction turnover of Kenya Shillings \_\_\_\_\_ *[insert amount]*, equivalent calculated as total certified payments received for contracts in progress and/or completed within the last \_\_\_\_\_ *[insert of year]* years.

iii) Atleast \_\_\_\_\_ *(insert number)* of contract(s) of a similar nature executed within Kenya, or the East African Community or a broad, that have been satisfactorily and substantially completed as a prime contractor, or joint venture member or sub-contractor each of minimum value Kenya shillings \_\_\_\_\_

- \_\_\_\_\_ equivalent.
- iv) Contractor's Representative and Key Personnel, which are specified as \_\_\_\_\_
- 
- v) Contractor's key equipment listed on the table "Contractor's Equipment" below and more specifically listed as *[specify requirements for each lot as applicable]*
- 
- iv) Other conditions depending on their seriousness.

**a) *History of non-performing contracts:***

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

**b) *Pending Litigation***

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

**c) *Litigation History***

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

**QUALIFICATION FORM\*N/A**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Item No.</b>	<b>Qualification Subject</b>	<b>Qualification Requirement</b>	<b>Document To be Completed by Tenderer</b>	<b>For Procuring Entity's Use (Qualification met or Not Met)</b>
1	Nationality	Nationality in accordance with ITT 3.6	Forms ELI – 1.1 and 1.2, with attachments	
2	Tax Obligations for Kenyan Tenderers	Has produced a current tax clearance certificate or tax exemption certificate issued by Kenya Revenue Authority in accordance with ITT 3.14.	Attachment	
3	Conflict of Interest	No conflicts of interest in accordance with ITT 3.3	Form of Tender	
4	PPRA Eligibility	Not having been declared ineligible by the PPRA as described in ITT 3.7	Form of Tender	
5	State- owned Enterprise	Meets conditions of ITT 3.8	Forms ELI – 1.1 and 1.2, with attachments	
6	Goods, equipment and services to be supplied under the contract	To have their origin in any country that is not determined ineligible under ITT 4.1	Forms ELI – 1.1 and 1.2, with attachments	
7	History of Non-Performing Contracts	Non-performance of a contract did not occur as a result of contractor default since 1 <sup>st</sup> January [.....].	Form CON-2	
8	Suspension Based on Execution of Tender/Proposal Securing Declaration by the Procuring Entity	Not under suspension based on-execution of a Tender/Proposal Securing Declaration pursuant to ITT 19.9	Form of Tender	
9	Pending Litigation	Tender's financial position and prospective long-term profitability still sound according to criteria established in 3.1 and assuming that all pending litigation will NOT be resolved against the Tenderer.	Form CON – 2	

1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	Document To be Completed by Tenderer	For Procuring Entity's Use (Qualification met or Not Met)
10	Litigation History	No consistent history of court/arbitral award decisions against the Tenderer since 1 <sup>st</sup> January <i>[insert year]</i> .	Form CON – 2	
11	Financial Capabilities	(i) The Tenderer shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as Kenya Shillings <i>[insert amount]</i> equivalent for the subject contract(s) net of the Tenderer's other commitments. (ii) The Tenderers shall also demonstrate, to the satisfaction of the Procuring Entity, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments. (iii) The audited balance sheets or, if not required by the laws of the Tenderer's country, other financial statements acceptable to the Procuring Entity, for the last <i>[insert number of years]</i> years shall be submitted and must demonstrate the current soundness of the Tenderer's financial position and indicate its prospective long-term profitability.	Form FIN – 3.1, with attachments	
12	Average Annual Construction Turnover	Minimum average annual construction turnover of Kenya Shillings <i>[insert amount]</i> , equivalent calculated as total certified payments received for contracts in progress and/or completed within the last <i>[insert of year]</i> years, divided by <i>[insert number of years]</i> years	Form FIN – 3.2	
13	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last <i>[insert number of years]</i> years, starting 1 <sup>st</sup> January <i>[insert year]</i> .	Form EXP – 4.1	

1	2	3	4	5
Item No.	Qualification Subject	Qualification Requirement	Document To be Completed by Tenderer	For Procuring Entity's Use (Qualification met or Not Met)
14	Specific Construction & Contract Management Experience	<p>A minimum number of <i>[state the number]</i> similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between 1st January <i>[insert year]</i> and tender submission deadline i.e.  ..... (number) contracts, each of minimum value Kenya shillings...  ..... equivalent.</p> <p><i>[In case the Works are to be tender as individual contracts under multiple contract procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options mentioned in ITT 35.4]</i></p> <p>The similarity of the contracts shall be based on the following: <i>[Based on Section VII, Scope of Works, specify the minimum key requirements in terms of physical size, complexity, construction method, technology and/or other characteristics including part of the requirements that may be met by specialized subcontractors, if permitted in accordance with ITT 34.3]</i></p>	Form EXP 4.2(a)	

SECTION IV - TENDERING FORMS QUALIFICATION FORMS

1. FOREIGN TENDERERS 40%RULE-N/A

Pursuant to ITT 3.9, a foreign tenderer must complete this form to demonstrate that the tender fulfils this condition.

ITEM	Description of Work Item	Describe location of Source	COST in K. shillings	Comments, if any
A	Local Labor			
1				
2				
3				
4				
5				
B	Sub contracts from Local sources			
1				
2				
3				
4				
5				
C	Local materials			
1				
2				
3				
4				
5				
D	Use of Local Plant and Equipment			
1				
2				
3				
4				
5				
E	Add any other items			
1				
2				
3				
4				
5				
6				
	TOTAL COST LOCAL CONTENT		XXXXX	
	PERCENTAGE OF CONTRACT PRICE			

## 2. FORMEQU: EQUIPMENT

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

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

Omit the following information for equipment owned by the Tenderer.

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

3. FORM PER -1

Contractor's Representative and Key Personnel Schedule

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

Contractor' Representative and Key Personnel

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

4. **FORM PER - 2:**

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

Name of Tenderer
------------------

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

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

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

*Declaration*

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

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

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

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

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

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

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

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

Countersignature of authorized representative of the Tenderer:

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

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

## 5. TENDERERS QUALIFICATION WITHOUT PREQUALIFICATION

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

### 51 FORM ELI -1.1

*Tenderer Information Form*

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

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

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

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

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

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

Tenderer's JV name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITT 3.6. <input type="checkbox"/> In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Procuring Entity, in accordance with ITT 3.5.
2. Included are the organizational chart and a list of Board of Directors.

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

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

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

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), Kenya Shilling Equivalent (exchange rate)
		Contract Identification: _____ Name of Procuring Entity: _____ Address of Procuring Entity: _____ Matter in dispute: _____ Party who initiated the dispute: __ Status of dispute: _____	
		Contract Identification: Name of Procuring Entity: Address of Procuring Entity: Matter in dispute: Party who initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			

- No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4.
- Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.

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

Include details relating to potential bid-rigging practices such as previous occasions where tenders were withdrawn, joint bids with competitors, subcontracting work to unsuccessful tenderers, etc.

**Financial Situation and Performance**

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

**5.4.1. Financial Data**

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

\*Refer to ITT 15 for the exchange rate

#### 5.4.2 Sources of Finance

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

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

#### 5.4.3 Financial documents

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

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

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

\_\_\_\_\_

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

**Average Annual Construction Turnover**

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

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

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

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

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

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

**Financial Resources**

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

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

**Current Contract Commitments / Works in Progress**

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

<b>Current Contract Commitments</b>					
<b>No.</b>	<b>Name of Contract</b>	<b>Procuring Entity's Contact Address, Tel,</b>	<b>Value of Outstanding Work [Current Kenya Shilling /month Equivalent]</b>	<b>Estimated Completion Date</b>	<b>Average Monthly Invoicing Over Last Six Months [Kenya Shilling /month]</b>
1					
2					
3					
4					
5					

**General Construction Experience**

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

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

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

59 **FORM EXP - 4.2(a)**

**Specific Construction and Contract Management Experience**

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

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

5.9 **FORM EXP - 4.2(a)**

**Specific Construction and Contract Management Experience**

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

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

Address: Telephone/fax number E-mail:	
--	--

**5.9**     **FORM EXP - 4.2 (a) (cont.)**

**Specific Construction and Contract Management Experience (cont.)**

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

**5.10 FORM EXP - 4.2(b)**

**Construction Experience in Key Activities**

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

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

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

Sub-contractor's Name<sup>2</sup> (as per ITT 34): \_\_\_\_\_ ITT No. and title: \_\_\_\_\_

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

1. Key Activity No One: \_

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

<sup>2</sup> If applicable

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

2. Activity No. Two

3. ....

OTHER FORMS

**6. FORM OF TENDER**

(Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)

**INSTRUCTIONS TO TENDERERS**

- i) *All italicized text is to help the Tenderer in preparing this form.*
- ii) *The Tenderer must prepare this Form of Tender on stationery with its letterhead clearly showing the Tenderer's complete name and business address. Tenderers are reminded that this is a mandatory requirement.*
- iii) *Tenderer must complete and sign CERTIFICATE OF INDEPENDENT TENDER DETERMINATION and the SELF DECLARATION FORMS OF THE TENDERER as listed under (xxii) below.*

**Date of this Tender submission:**.....[insert date (as day, month and year) of Tender submission] **Tender Name and Identification:**.....[insert identification] **Alternative No.:**.....[insert identification No if this is a Tender for an alternative]

To.....[Insert complete name of Procuring Entity]

**Date of this Tender submission:** [insert date (as day, month and year) of Tender submission] **Request for Tender No.:** [KoTDA/DIGITAL-HUB-KIKUYU/045/2025-2026] **Name and description of Tender-** PROPOSED DEVELOPMENT OD ICT DIGITAL HUB AND ASSOCIATED FACILITIES IN KIKUYU COUNTY, KENYA. [Insert as per ITT] **Alternative No.:** [insert identification No if this is a Tender for an alternative]

**To:** [insert complete name of Procuring Entity]

Dear Sirs,

1. In accordance with the Conditions of Contract, Specifications, Drawings and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to construct and complete the Works and remedy any defects therein for the sum<sup>3</sup> of Kenya Shillings [[Amount in figures] \_\_\_\_\_ Kenya Shillings [amount in words] \_\_\_\_\_

The above amount includes foreign currency<sup>4</sup> amount (s) of [state figure or a percentage and currency] [figures] \_\_\_\_\_ [words] \_\_\_\_\_

2. We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Architect notice to commence, and to complete the whole of the Works comprised in the Contract within the time stated in the Special Conditions of Contract.

\_\_\_\_\_

*This sum should be carried forward from the Summary of the Bills of Quantities. The percentage quoted above should not include provisional sums, and not more than two foreign currencies are allowed.*

3. We agree to hereby this tender until \_\_\_\_\_ *[Insert date]*, and it shall remain binding upon us and may be accepted at any time before that date.
4. We understand that you are not bound to accept the lowest or any tender you may receive.
5. We, the under signed, further declare that:
  - i) No reservations: We have examined and have no reservations to the tender document, including Addenda issued in accordance with ITT 28;
  - ii) Eligibility: We meet the eligibility requirements and have no conflict of interest in accordance with ITT 3 and 4;
  - iii) Tender - Securing Declaration: We have not been suspended nor declared ineligible by the Procuring Entity based on execution of a Tender-Securing or Proposal-Securing Declaration in the Procuring Entity's Country in accordance with ITT 19.8;
  - iv) Conformity: We offer to execute in conformity with the tendering documents and in accordance with the implementation and completion specified in the construction schedule, the following Works: *[insert a brief description of the Works]*;
  - v) Tender Price: The total price of our Tender, excluding any discounts offered in item 1 above is: *[Insert one of the options below as appropriate]*
  - vi) Option 1, in case of one lot: Total price is: *[insert the total price of the Tender in words and figures, indicating the various amounts and the respective currencies]*; or Option 2, in case of multiple lots:
    - (a) Total price of each lot *[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*; and
    - (b) Total price of all lots (sum of all lots) *[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]*;
  - vii) Discounts: The discounts offered and the methodology for their application are:
  - viii) The discounts offered are: *[Specify in detail each discount offered.]*
  - ix) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts]*;
  - x) Tender Validity Period: Our Tender shall be valid for the period specified in TDS 18.1 (as amended, if applicable) from the date fixed for the Tender submission deadline specified in TDS 22.1 (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
  - xi) Performance Security: If our Tender is accepted, we commit to obtain a Performance Security in accordance with the Tendering document;
  - xii) One Tender Per Tender: We are not submitting any other Tender(s) as an individual Tender, and we are not participating in any other Tender(s) as a Joint Venture member or as a sub-contractor, and meet the requirements of ITT 3.4, other than alternative Tenders submitted in accordance with ITT 13.3;
  - xiii) Suspension and Debarment: We, along with any of our subcontractors, suppliers, Engineer, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Public Procurement Regulatory Authority or any other entity of the Government of Kenya, or any

international organization.

- xiv) State-owned enterprise or institution: [select the appropriate option and delete the other] [We are not a state-owned enterprise or institution]/[We are a state-owned enterprise or institution but meet the requirements of ITT3.8];
- xv) Commissions, gratuities, fees: We have paid, or will pay the following commissions, gratuities, or fees with respect to the tender process or execution of the Contract: [insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity].

Name of Recipient	Address	Reason	Amount

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

- xvi) Binding Contract: We understand that this Tender, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- xvii) Not Bound to Accept: We understand that you are not bound to accept the lowest evaluated cost Tender, the Most Advantageous Tender or any other Tender that you may receive;
- xviii) Fraud and Corruption: We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption; and
- xix) Collusive practices: We hereby certify and confirm that the tender is genuine, non-collusive and made with the intention of accepting the contract if awarded. To this effect we have signed the "Certificate of Independent Tender Determination" attached below.
- xx) We undertake to adhere by the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal, copy available from \_\_\_\_\_ (specify website) during the procurement process and the execution of any resulting contract.
- xxi) **Beneficial Ownership Information**: We commit to provide to the procuring entity the Beneficial Ownership Information in conformity with the Beneficial Ownership Disclosure Form upon receipt of notification of intention to enter into a contract in the event we are the successful tenderer in this subject procurement proceeding.
- xxii) We, the Tenderer, have duly completed, signed and stamped the following Forms as part of our Tender:
- a) Tenderer's Eligibility; Confidential Business Questionnaire - to establish we are not in any conflict to interest.
  - (b) Certificate of Independent Tender Determination - to declare that we completed the tender without colluding with other tenderers.
  - (a) Self-Declaration of the Tenderer - to declare that we will, if awarded a contract, not engage in any form of fraud and corruption.
  - (d) Declaration and commitment to the Code of Ethics for Persons Participating in Public Procurement and Asset Disposal.

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

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

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

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

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

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

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

Notes

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

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

(a) TENDERER'S ELIGIBILITY-CONFIDENTIAL BUSINESS QUESTIONNAIRE Instruction

to Tenderer

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

(a) *Tenderer's details*

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

**General and Specific Details**

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

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

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

	Names of Partners	Nationality	Citizenship	% Shares owned
1				
2				

3				
---	--	--	--	--

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

- i) Private or public Company \_\_\_\_\_
- ii) State the nominal and issued capital of the Company \_\_\_\_\_

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

iii) Give details of Directors as follows.

	Names of Director	Nationality	Citizenship	% Shares owned
1				
2				
3				

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

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

If yes, provide details as follows.

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

(i) *Conflict of interest disclosure*

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

5	Any of the Tenderer's affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the tender.		
---	---	--	--

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

**Certification**

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

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

Title or Designation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

*(Signature)*

*(Date)*

b) CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

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

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

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

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

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

(c) SELF- DECLARATION FORMS

**FORM SD1**

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

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

1. THAT I am the Company Secretary/ Chief Executive/Managing Director/Principal Officer/Direct or of  
..... (insert name of the Company) who is a Bidder in respect of **Tender No. No.:**  
**[KOTDA/DIGITAL-HUB-KIKUYU/045/2025-2026]** Name and description of Tender- **PROPOSED DEVELOPMENT OD ICT**  
**DIGITAL HUB AND ASSOCIATED FACILITIES IN KIKUYU COUNTY, KENYA** For Konza Technopolis Development Authority and duly  
authorized and competent to make this statement.
2. THAT the aforesaid Bidder, its Directors and subcontractors have not been debarred from participating in procurement  
proceeding under Part IV of the Act.
3. THAT what is deponed to here in above is true to the best of my knowledge, information and belief.

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

Bidder Official Stamp

FORM SD2

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

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

1. THAT I am the Chief Executive/Managing Director/Principal Officer/Director of ..... (insert name of the Company) who is a Bidder in respect Tender No.: **KoTDA/DIGITAL-HUB-KIKUYU/045/2025-2026** Name and description of Tender- **PROPOSED DEVELOPMENT OD ICT DIGITAL HUB AND ASSOCIATED FACILITIES IN KIKUYU COUNTY, KENYA**. for KoTDA and duly authorized and competent to make this statement.
2. THAT the afore said Bidder, its servants and/or agents/subcontractors will not engage in any corrupt or fraudulent practice and has not been requested to pay any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (insert name of the Procuring entity) which is the procuring entity.
3. THAT the aforesaid Bidder, its servants and/or agents /subcontractors have not offered any inducement to any member of the Board, Management, Staff and/or employees and/or agents of ..... (name of the procuring entity).
4. THAT the aforesaid Bidder will not engage /has not engaged in any corrosive practice with other bidders participating in the subject tender
5. THAT what is deponed to here in above is true to the best of my knowledge information and belief.

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

Bidder's Official Stamp

*DECLARATION AND COMMITMENT TO THE CODE OF ETHICS*

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

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

Name of Authorized signatory.....

Sign.....

Position.....

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

E-mail.....

Name of the Firm/Company.....

Date.....

*(Company Seal/ Rubber Stamp where applicable)*

Witness

Name.....

Sign.....

Date.....

**PRE-BID CONFERENCE CERTIFICATE**



**KONZA TECHNOPOLIS DEVELOPMENT AUTHORITY CERTIFICATE OF TENDERER'S PRE-BID CONFERENCE HELD MONDAY 8<sup>TH</sup> JUNE 2026.**

This is to certify that

.....  
.....

... (Name of Tenderer OR Representative of the firm) of,

.....

..... (Name of Firm)

In the company of,

.....

..... (Name of client Representative)

Visited and attended the Pre-Bid Conference in connection with the tender for the **PROPOSED DEVELOPMENT OD ICT DIGITAL HUB AND ASSOCIATED FACILITIES IN KIKUYU COUNTY, KENYA. TENDER No.: KoTDA/DIGITAL-HUB-KIKUYU/045/2025-2026.**

Having previously studied the bid documents, I attended the Pre-Bid Conference;

1. I have made myself familiar with all the information likely to influence the assignment and the cost thereof.
2. I further certify that I am satisfied with the description of the assignment and the explanations given by the client's representative and that I understand perfectly the assignment to be done as specified and implied in the execution of the assignment given opportunity.

Signed by;

1. ....  
... (Tenderer's Representative)

Witnessed by;

2. ....  
(Client's Representative)

(d) APPENDIX 1 - FRAUD AND CORRUPTION

(Appendix 1 shall not be modified)

1. Purpose

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

2. Requirements

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

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

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

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

a) Defines broadly, for the purposes of the above provisions, the terms set forth below as follows:

- i) "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- ii) "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
- iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party; "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- iv) "obstructive practice" is:
  - Deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede investigation by Public Procurement Regulatory Authority (PPRA) or any other appropriate authority appointed by Government of Kenya into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
  - acts intended to materially impede the exercise of the PPRA's or the appointed authority's inspection and audit rights provided for under paragraph 2.3 e. below.

b) Defines more specifically, in accordance with the above procurement Act provisions set forth for fraudulent and collusive practices as follows:

"fraudulent practice" includes a misrepresentation of fact in order to influence a procurement or disposal process or the exercise of a contract to the detriment of the procuring entity or the tenderer or the contractor, and includes collusive practices amongst tenderers prior to or after tender submission designed to establish tender prices at artificial non-competitive levels and to deprive the procuring entity of the benefits of free and open competition.

- c) Rejects a proposal for award<sup>1</sup> of a contract if PPRA determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- d) Pursuant to the Kenya's above stated Acts and Regulations, may recommend to appropriate authority(ies) for sanctioning and debarment of a firm or individual, as applicable under the Acts and Regulations;
- e) Requires that a clause be included in Tender documents and Request for Proposal documents requiring(i) Tenderers (applicants/proposers), Consultants, Contractors, and Suppliers, and their Sub-contractors, Sub-consultants, Service providers, Suppliers, Agents personnel, permit the PPRA or any other appropriate authority appointed by Government of Kenya to inspect<sup>2</sup> all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the PPRA or any other appropriate authority appointed by Government of Kenya; and
- f) Pursuant to Section 62 of the above Act, requires Applicants/Tenderers to submit along with their Applications/Tenders/Proposals a "Self-Declaration Form" as included in the procurement document declaring that they and all parties involved in the procurement process and contract execution have not engaged/will not engage in any corrupt or fraudulent practices.

---

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

<sup>2</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Investigating Authority or persons appointed by the Procuring Entity to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a

*firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.*

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

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

Request for Tenders No:

\_\_\_\_\_

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

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

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

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

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

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

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

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

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

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

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

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

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

\_\_\_\_\_

*[Date]*

\_\_\_\_\_

*[Witness]*

\_\_\_\_\_

*[Signature of the Guarantor]*

\_\_\_\_\_

*[Seal]*

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

FORM OF TENDER - SECURING DECLARATION

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

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

Tender No.: KoTDA/DIGITAL-HUB-KIKUYU/045/2025-2026.

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

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

Signed ..... Capacity/title (director or partner or sole proprietor, etc.) ..... Name  
 ..... Duly authorized to sign the bid for

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

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

---

PART II

- WORKS REQUIREMENTS

---

## SECTION V - BILLS OF QUANTITIES

### BILLS OF QUANTITIES

#### Preambles

1. The method of measurement of completed work for payment shall be in accordance with as per the BQs]. The Sites shall be provided before Contract signing.
2. The Contractor shall visit the site and acquaint itself with its nature and position, the nature of the ground, substrata and other local conditions, positions of existing power, water and other services, access roads or any other limitations that might affect his cost or progress. No claim for extras shall be considered on account of lack of knowledge in this respect.
3. The Contractor shall obtain the Architect's approval on the siting of all temporary buildings, spoil heaps, temporary access path, and storage of materials. The Contractor shall also obtain the Architect approval and direction regarding the use of any materials found on the Site.
4. The drawings used in the preparation of these Bills of Quantities can be inspected at the offices of the Procuring Entity or Procuring Entity's Representative during normal working hours. Two sets of the Working Drawings shall be provided to the contractor, but additional copies shall be provided at a cost to be determined by the Engineer.
5. The Contractor shall allow for the payment of all bank charges in connection with the procurement of Bank Guarantees and stamp charges in connection with this contract Agreement.
6. The Contractor shall carry out the various sections of the Works in such an order as the Architect May direct. The Procuring Entity reserves the right to occupy the Works by sections on completion provided that such occupation is considered to be both practical and reasonable and will not interfere with the Works. The Contractor shall allow any costs associated with such occupation.
7. The main Contractor will be fully responsible for paying his Sub-Contractor, but the Procuring Entity reserves the right in very exceptional circumstances to make such payments direct in the interests of the project where the completion thereof might be jeopardized by any dispute or vicariousness between the Contractor and the Sub-Contractor involve.
8. The Contractor shall complete and deliver the Works in the period inserted in the Form of Tender as his time for completion of the Works from the date for Possession, to be agreed with the Engineer. The Contract Period is presumed to have been calculated making due allowance for seasonal inclement weather conditions. No claim for extension of time due to the normal inclement weather for this area shall be entertained.
9. The Contractor shall, upon receiving instructions to proceed with the Works, draw up a Programme and Progress Chart setting out the order in which the Works are to be carried out, with the appropriate dates thereof. This Chart shall be agreed with the Architect and no deviation from the order set out in it will be permitted without the written consent of the Engineer. The Contractor will be responsible for arranging the above programme with all his sub-Contractors and Specialties. The Contractor shall allow in his rates for carrying out this exercise, and for updating it as required.
10. The Contractor shall submit to the Architect on the first day of each week or such longer period as the Architect from time to time direct, a Progress Report and any information for the proceeding period, showing the progress during the period and the up-to-date cumulative progress on all important items of each section or portion of the Works.
11. The Contractor shall arrange for photographs of the Site to be taken by a professional photographer approved by the Engineer. The Photographs shall provide a record of the Site and adjacent are as prior to the commencement of the Works and shall cover such portion of the works in progress and completion as the Architect shall direct. All prints shall be full plate size, unmounted, and marked on the reverse side with the date of exposure, identification reference and brief description. The copyright of all photographs shall be vested in the Procuring Entity. The negatives and four prints from each negative shall be delivered to the Architect within two weeks of exposure.

12. Figured dimensions are to be followed in preference to dimensions scaled from the Drawings, but whenever possible dimensions are to be taken on the Site or from the buildings. Before any work commences by Sub- Contractors or Specialist Firms, dimensions must be checked on the site comparable dimensions shown on the drawings. The Contractor shall be responsible for the accuracy of such dimensions.
13. Prior to commencement of any work the Contractor is to ascertain from the relevant Authorities the exact position, depth and level of all existing electric cables, waterpipes or other services in the area and he shall make whatever provisions may be required by the Authorities concerned for the support and protection of such services. Any damage or disturbance caused to any services shall be reported immediately to the Architect and the relevant Authority and shall be made good to their satisfaction at the Contractor's expense. Where appropriate the Contractor shall open up the ground in advance of the main work by hand digging if necessary, to locate precisely the position and details of the services which are likely to affect his operations.
14. The Contractor shall include in his prices for the transport of materials, workmen, etc./, to and from the site of the proposed works, at such hours and by such route as are permitted by the Authorities.
15. The Contractor will be required to make good, at his own expense and damage he may cause to the present road surface and pavements within or beyond the boundary of the Site, during the period of the works. All existing paths, storm water channels, etc., that may be destroyed or damaged during the progress of the Works shall be reinstated by the Contractor to the satisfaction of the Engineer.
16. The Contractor is to allow for complying with all instructions and regulations of the Police Authorities.
17. All water shall be fresh, clean and pure, free from earthy, vegetable or organic matter, acid or alkaline substance in solution. The Contractor shall provide at his own risk and cost all water for use in connection with the Works, (including works of sub-contractors). If need be, he shall make arrangements with the Local Water Authority for the installation of a separate meter for all water used by him throughout the Contract and pay all cost and fees in connection therewith. He shall also provide temporary storage tanks and tubing, etc., as may be necessary, and clear away at completion.
18. The Contractor shall provide all artificial lighting and power for his own use on the Works, (including Sub — Contractor's) including all temporary connections, wiring, fittings, etc., and clearing away on completion. The Contractor shall pay all fees and obtain all permits in connection there with.
19. The Contractor shall constantly keep on the Works a Literate English-speaking Agent or Representative, competent and experienced in the kind of work involved, who shall give his whole time to the superintendence of the works. (Including works of sub – contractors). Such Agent or Representative shall receive on behalf of the Contractor directions and instruction from the Engineer, and such directions and instructions shall be deemed to be given to the contractor in accordance with the Conditions of Contract. The Agent shall not be replaced without the specific approval of the Engineer.
20. The Contractor shall ensure that the safety of his work people and all authorized visitors to the site are protected at all times. In particular, there shall be the proper provision of guard-rails to scaffolding, protection against falling materials, tools on site, dust, nail and other sharp objects. The site shall be kept tidy and clear of dangerous rubbish. The Architect shall be empowered to suspend work on site should it be considered this condition is not being observed and no claim arising from such suspension will be allowed.
21. The areas available to the Contractor for work yards, offices and other facilities shall be directed by the Architect and any existing features to remain shall be protected from damage throughout the Contract Period and handed back in good condition when they are vacated at the end of the Contract. If additional areas are required, the contractor shall source them at own cost.
22. The Contractor shall give the Architect reasonable notice of the intention to set out or take levels for any part of the Works so that arrangements may be made for checking the work. The accuracy of setting out and leveling shall be within the tolerances specified in the Specifications or on the Drawings. The checking of setting out or leveling by the Architect shall not relieve the Contractor of his duties or responsibilities under the Contract.

23. The Contractor must take steps necessary to safe guard and shall beheld fully responsible for any damage caused to existing and adjacent property, including buildings that are not a subject of demolition. He shall make good at his own cost damage to persons and property caused there on, and he shall indemnify the Procuring Entity against any loss or claim that may arise.
24. The Contractor shall take such steps and exercise such care and diligence as to minimize nuisance arising from dust, noise or any other cause to the occupiers of the existing and adjacent property. He must provide such temporary and special screens and tarpaulins or gummy bags, hoarding, barriers, warning signs etc. as he considers necessary and sufficient for the protection of the existing and adjacent property and or prevention of nuisance etc. as directed by Engineer.
25. The Contractors attention is drawn to the standards levy order which was amended on 15thOctober 1998. Legal notice No.154 of 1998. The Contractor is required to pay a monthly level of 0.2% of his factory price of construction works with effect from January 1999. Tenderer shall allow for this in the build-up of his rates.
26. The Contractor shall provide temporary sheds, offices mushrooms, sanitary, accommodation and other temporary buildings for the use of the contractor and sub-contractors, including lighting furniture equipment and attendance.
27. Contractor shall provide/build labor camp sat areas to be agreed with the Engineer. Labor camps shall be complete with sanitary accommodation and fencing gates.
28. The Contractor must provide the necessary toilet facilities to the requirement and satisfaction of the Health Authorities and maintain the same in a thoroughly clean and sanitary condition and pay all conservancy fees during the period of the Works and remove when no longer required.
29. The Contractor shall provide at his own risk and cost all watching and lighting as necessary to safeguard the Works, Plant and materials against damage and theft.
30. The Contractor shall provide all necessary hoists, tackle, plant, equipment, vehicles, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove the same on completion. All such plant, tools and equipment shall comply with all regulations in force throughout the period of the Contract and shall be altered or adopted during the Contract period as may be necessary to comply with any amendments in or additions to such regulations.
31. Provide, erect and maintain all necessary scaffolding, sufficiently strong and efficient for the due performance of the works, including Sub-Contract Works, provide special scaffolding as required by Sub Contractors, alter and adopt all scaffolding as and when required during the Works, and remove on completion. No scaffolding is measured here in after and the Contractor must allow in his rates for this.
32. The Contractor shall take all necessary precautions such as temporary fencing, hoarding fans, planked footways, guard-rails gantries screen, etc., for the safe custody of the Works, materials and public protection and adjacent properties.
33. Cover up all and protect from damage, including damage from inclement weather, all finished work and unfixed materials, including that of Sub-Contractors, etc., to the satisfaction of the Architect until the completion of the Contract.
34. The Contractor shall, after completion of the works, at his own expense, remove and clear away all surplus excavated demolition materials, plant, rubbish and unused materials and shall leave the whole of the Site and Works in a clean and tidy state to the satisfaction of the Engineer, sheds, camps, etc. Particular care shall be taken to leave clean all floors and windows and tore move all paint and cement all rubbish and dirt as it accumulates. The Contractor is to find his own dump and shall pay all charges in connection there with.
35. Concrete test cubes shall be prepared in a set of three, as described including testing fees, labor and materials, making molds, transport, handling, etc. Allow in your rates for making at least four cubes on each occasion, from different batches; the concrete being taken from the point of deposit.

36. The Contractor shall furnish at the earliest possible opportunity before work commences, and at his own cost, any samples of materials and workmanship that may be called for by the Architect for the approval or rejection, and any further samples in the case of rejection, until such samples are approved by the Engineer. Such samples, when approved, shall be the minimum standard for the work to which they apply. The procedure for submitting samples of materials for testing or approval and the method of marking for identification shall be as laid down by the Engineer. The Contractor shall allow in his Tender for such samples and tests, including those in connection with his Sub-Contractors work.
37. The Contractors' attention is drawn to the Finance Bill of the year 2000/2001 on withholding tax on contractual payment section 35(7)(i)(ii) which became effective on 1st July 2000. A 3% withholding tax will be applicable to all interim payments in respect of building or civil works. The contractor shall allow for any costs arising resulting there from in the buildup of rates.
38. Blasting will only be allowed with the express permission of the Architect in writing. All blasting operations shall be carried out at the Contractor's sole risk and cost, in accordance with any Government regulations in force for the time being, and any special regulations laid down by the Architect governing the use and storage of explosives.
39. The Contractor attention is drawn to Finance Bill of 1993 where VAT was introduced in all contracts for construction services. The tenderer is also drawn to VAT Act Cap 476 clause 19(9). The tenderer must allow for VAT 1.19 as instructed elsewhere.
40. The contractor shall allow and pay for all insurance to cover risks and indemnities required Items 17 and 18 of the Conditions of contract and also specified in the Special Conditions of Contract.
41. The Contractor also drawn to legal Notice Number 206 of 2023 introducing the Public Procurement Capacity Building Levy of 0.03% on all Government of Kenya Procurements.

# **BILLS OF QUANTITIES**

---

---

**PROPOSED DEVELOPMENT OF ICT DIGITAL HUB  
AND ITS ASSCIATED FACILITIES IN KIKUYU,  
KIAMBU COUNTY**

**JUNE 2026**

---

# PRELIMINARIES

---

Item No.	Description	Unit		Amount (Kshs)
1.1	<p><b><u>PRELIMINARIES BILL</u></b></p> <p><b><u>NO. 1</u></b></p> <p><b><u>Notes:</u></b></p> <p>1. Tenderers are advised that any item left unpriced shall be deemed to have been included or allowed for elsewhere in the prices. Adjustments for non-compliance with items of the Standard Preliminaries will be at the Engineer's discretion, notwithstanding that the said items may not have been priced.</p> <p>2. Only those items which are priced in this Section, Preliminaries of the Bills of Quantities - will be reviewed for adjustment in the event of a variation, extension of time, suspension and any such adjustment in each case shall be in accordance with the merits of each priced item in relation to the variation involved. Therefore it is a condition of this Contract that this Section is priced according to the merits of each item.</p> <p>3. The Contractor shall, within 14 days of taking possession of the site, give the Engineer a breakdown, subdivided into the below categories, of the amount for preliminaries in tabulated form, all to the satisfaction of the Engineer.</p> <p>The amount of the preliminaries shall be adjusted in the following categories:</p> <p>(i) A fixed charge which shall not be varied</p> <p>(ii) A value related charge varied in proportion to the contract value as compared to the contract sum</p> <p>(iii) A time related charge varied in proportion to the construction period as compared to the initial construction period</p> <p>Should the contractor fail to provide such information within the period stipulated then the amount for the preliminaries shall be distributed by the Engineer as they deem appropriate in accordance with the Preliminaries Pricing Schedule</p> <p><b>METHOD OF MEASUREMENTS</b></p>	Item	Kshs.	
1.1.1	<p>The Contract Bills have been prepared in accordance with The Standard Method of Measurement of Building Works and associated Civil works, Second Edition (Metric) June 2008, published by the Architectural Association of Kenya, Chapter of Quantity Surveyors, which is available for inspection at the offices of the Quantity Surveyor by appointment.</p> <p>Exceptions to the SMM include; -</p> <p>(i) Composite descriptions incorporating items which would be subject to separate measurements as included in the Bills. The contractor shall include for all works and items necessary to complete the works as described in the respective items.</p>			
	<b>Carried forward to Collection page</b>			

Item No.	Description	Unit		Amount (Kshs)
1.2	<p><b><u>CONTRACT PARTICULARS FORM OF CONTRACT</u></b></p> <p>The Conditions of Contract, Part I: General Conditions, shall be those forming Part 1 of the "Conditions of Contract for Construction – for Building and Engineering Works designed by the Employer," April 1999 edition), published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC). These Conditions are subject to the variations and additions set out in Part 2 hereof-entitled "Particular Conditions."</p> <p>The Contractor will be required to enter into a Contract which will be the FIDIC "Redbook" 1999 as above described, excepting in so far as varied in the Particular Conditions of Contract.</p> <p>The Contractor's attention is called to the following Clauses of the Conditions of Contract <b>which shall be read in reference to the Drawings, BQs, Particular Conditions of Contract &amp; the Specifications</b> as incorporated here-in the Tender documents and they shall allow any sums which they consider necessary for the carrying out and observance of such Conditions. <u>Appendix to Tender</u></p> <p>The Appendix to Tender shall be deemed to be completed as incorporated in Particular Conditions under Section 1.5 of this document.</p> <p><b><u>The tenderer shall make reference to the amendments, provisions and modifications made to the General Conditions in the Particular Conditions under Section 1.5 of the Contractual Requirements (first part) in this tender document. The tenderer shall allow any sums which they consider necessary for the carrying out, compliance and</u></b></p>			
	<p><b>observance of such Conditions.</b></p>			
1.2.1	<b>GENERAL PROVISIONS</b>			
1.2.1.1	Clause 1.1 Definitions	Item		
1.2.1.2	Clause 1.2 Interpretation	Item		
1.2.1.3	Clause 1.3 Communications	Item		
1.2.1.4	Clause 1.4 Law and Language	Item		
1.2.1.5	Clause 1.5 Priority of Documents	Item		
1.2.1.6	Clause 1.6 Contract Agreement	Item		
1.2.1.7	Clause 1.7 Assignment	Item		
			Kshs.	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
<b>GENERAL PROVISIONS Cont'd</b>				
1.2.1.8	Clause 1.8 Care and Supply of Documents	Item		
1.2.1.9	Clause 1.9 Delayed Drawings or Instructions	Item		
1.2.1.10	Clause 1.10 Employer's Use of Contractor's Documents	Item		
1.2.1.11	Clause 1.11 Contractor's Use of Employer's Documents	Item		
1.2.1.12	Clause 1.12 Confidential Details	Item		
1.2.1.13	Clause 1.13 Compliance with Laws	Item		
1.2.1.14	Clause 1.14 Joint and Several Liability	Item		
<b>1.2.2</b>	<b>THE EMPLOYER</b>			
1.2.2.1	Clause 2.1 Right of Access to the Site	Item		
1.2.2.2	Clause 2.2 Permits, Licences or Approvals	Item		
1.2.2.3	Clause 2.3 Employer's Personnel	Item		
1.2.2.4	Clause 2.4 Employer's Financial Arrangements	Item		
1.2.2.5	Clause 2.5 Employer's Claims	Item		
<b>1.2.3</b>	<b>THE ENGINEER</b>			
1.2.3.1	Clause 3.1 Engineer's Duties and Authority	Item		
1.2.3.2	Clause 3.2 Delegation by the Engineer	Item		
1.2.3.3	Clause 3.3 Instructions of the Engineer	Item		
1.2.3.4	Clause 3.4 Replacement of the Engineer	Item		
1.2.3.5	Clause 3.5 Determinations	Item		
<b>Carried forward to Collection page</b>			<b>Kshs.</b>	

Item No.	Description	Unit		Amount (Kshs)
<b>1.2.4</b>	<b>THE CONTRACTOR</b>			
1.2.4.1	Clause 4.1 Contractor's General Obligations	Item		
1.2.4.2	Clause 4.2 Performance Security	Item		
1.2.4.3	Clause 4.3 Contractor's Representative	Item		
1.2.4.4	Clause 4.4 Subcontractors	Item		
1.2.4.5	Clause 4.5 Assignment of Benefit of Subcontractor	Item		
1.2.4.6	Clause 4.6 Co-operation	Item		
1.2.4.7	Clause 4.7 Setting Out	Item		
1.2.4.8	Clause 4.8 Safety Procedure	Item		
1.2.4.9	Clause 4.9 Quality Assurance	Item		
1.2.4.10	Clause 4.10 Site Data	Item		
1.2.4.11	Clause 4.11 Sufficiency of the Accepted Contract Amount	Item		
1.2.4.12	Clause 4.12 Unforeseeable Physical Conditions	Item		
1.2.4.13	Clause 4.13 Rights of Way and Facilities	Item		
1.2.4.14	Clause 4.14 Avoidance and Interference	Item		
1.2.4.15	Clause 4.15 Access Route	Item		
1.2.4.16	Clause 4.16 Transport of Goods	Item		
1.2.4.17	Clause 4.17 Contractor's Equipment	Item		
1.2.4.18	Clause 4.18 Protection of the Environment	Item		
1.2.4.19	Clause 4.19 Electricity, Water and Gas	Item		
1.2.4.20	Clause 4.20 Employer's Equipment and Free-Issue Material	Item		
1.2.4.21	Clause 4.21 Progress Reports	Item		
1.2.4.22	Clause 4.22 Security of the Site	Item		
1.2.4.23	Clause 4.23 Contractor's Operation on Site	Item		
1.2.4.24	Clause 4.24 Fossils	Item		
			<b>Kshs.</b>	
	<b>Carried forward to Collection page</b>			

Item No.	Description	Unit		Amount (Kshs)
<b>1.2.5</b>	<b>NOMINATED SUBCONTRACTORS</b>			
1.2.5.1	Clause 5.1 Definition of "nominated subcontractor"	Item		
1.2.5.2	Clause 5.2 Definition of Nomination	Item		
1.2.5.3	Clause 5.3 Payment to Nominated Subcontractors	Item		
1.2.5.4	Clause 5.4 Evidence of payments	Item		
<b>1.2.6</b>	<b>STAFF AND LABOUR</b>			
1.2.6.1	Clause 6.1 Engagement of Staff and Labour	Item		
1.2.6.2	Clause 6.2 Rate of Wages and Conditions of Labour	Item		
1.2.6.3	Clause 6.3 Persons in the Service of Employer	Item		
1.2.6.4	Clause 6.4 Labour Laws	Item		
1.2.6.5	Clause 6.5 Working Hours	Item		
1.2.6.6	Clause 6.6 Facilities for Staff and Labour	Item		
1.2.6.7	Clause 6.7 Healthy and safety	Item		
1.2.6.8	Clause 6.8 Contractor's Superintendence	Item		
1.2.6.9	Clause 6.9 Contractor's Personnel	Item		
1.2.6.10	Clause 6.10 Records of contractor's Personnel and Equipment	Item		
1.2.6.11	Clause 6.11 Disorderly conduct	Item		
<b>1.2.7</b>	<b>PLANT, MATERIALS AND WORKMANSHIP</b>			
1.2.7.1	Clause 7.1 Manner of Execution	Item		
1.2.7.2	Clause 7.2 Samples	Item		
1.2.7.3	Clause 7.3 Inspection	Item		
1.2.7.4	Clause 7.4 Testing	Item		
1.2.7.5	Clause 7.5 Rejection	Item		
1.2.7.6	Clause 7.6 Remedial Work	Item		
1.2.7.7	Clause 7.7 Ownership of Plant and Materials	Item		
1.2.7.8	Clause 7.8 Royalties	Item		
			<b>Kshs.</b>	
	<b>Carried forward to Collection page</b>			
				-

Item No.	Description	Unit		Amount (Kshs)
<b>1.2.8</b>	<b>COMMENCEMENT, DELAYS AND SUSPENSION</b>			
1.2.8.1	Clause 8.1 Commencement of Works	Item		
1.2.8.2	Clause 8.2 Time for Completion	Item		
1.2.8.3	Clause 8.3 Programme	Item		
1.2.8.4	Clause 8.4 Extension of Time for Completion	Item		
1.2.8.5	Clause 8.5 Delays Caused by Authorities	Item		
1.2.8.6	Clause 8.6 Rate of Progress	Item		
1.2.8.7	Clause 8.7 Delay Damages	Item		
1.2.8.8	Clause 8.8 Suspension of Work	Item		
1.2.8.9	Clause 8.9 Consequences of Suspension	Item		
1.2.8.10	Clause 8.10 Payment for Plant and Materials in event of Suspension	Item		
1.2.8.11	Clause 8.11 Prolonged Suspension	Item		
1.2.8.12	Clause 8.12 Resumption of Work	Item		
<b>1.2.9</b>	<b>TESTS ON COMPLETION</b>			
1.2.9.1	Clause 9.1 Contractor's Obligations	Item		
1.2.9.2	Clause 9.2 Delayed Tests	Item		
1.2.9.3	Clause 9.3 Retesting	Item		
1.2.9.4	Clause 9.4 Failure to Pass Tests on Completion	Item		
<b>1.2.10</b>	<b>EMPLOYER'S TAKING OVER</b>			
1.2.10.1	Clause 10.1 Taking Over of the Works and Sections	Item		
1.2.10.2	Clause 10.2 Taking Over Parts of the Works	Item		
1.2.10.3	Clause 10.3 Interference with Tests on Completion	Item		
1.2.10.4	Clause 10.4 Surfaces Requiring Reinstatement	Item		
	<b>Carried forward to Collection page</b>		<b>Kshs.</b>	

Item No.	Description	Unit		Amount (Kshs)
<b>1.2.11</b>	<b>DEFECTS LIABILITY</b>			
1.2.11.1	Clause 11.1 Completion of Outstanding Work and Remediating Defects	Item		
1.2.11.2	Clause 11.2 Cost of Remediating Defects	Item		
1.2.11.3	Clause 11.3 Extension of Defects Notification Period	Item		
1.2.11.4	Clause 11.4 Failure to Remedy Defects	Item		
1.2.11.5	Clause 11.5 Removal of Defective Work	Item		
1.2.11.6	Clause 11.6 Further Tests	Item		
1.2.11.7	Clause 11.7 Right of Access	Item		
1.2.11.8	Clause 11.8 Contractor to Search	Item		
1.2.11.9	Clause 11.9 Performance Certificate	Item		
1.2.11.10	Clause 11.10 Unfulfilled Obligations	Item		
1.2.11.11	Clause 11.11 Clearance of Site	Item		
<b>1.2.12</b>	<b>MEASUREMENT AND EVALUATION</b>			
1.2.12.1	Clause 12.1 Works to be Measured	Item		
1.2.12.2	Clause 12.2 Method of Measurement	Item		
1.2.12.3	Clause 12.3 Evaluation	Item		
1.2.12.4	Clause 12.4 Omissions	Item		
<b>1.2.13</b>	<b>VARIATIONS AND ADJUSTMENTS</b>			
1.2.13.1	Clause 13.1 Right to Vary	Item		
1.2.13.2	Clause 13.2 Value Engineering	Item		
1.2.13.3	Clause 13.3 Variation Procedure	Item		
1.2.13.4	Clause 13.4 Payment in Applicable Currencies	Item		
1.2.13.5	Clause 13.5 Provisional Sums	Item		
1.2.13.6	Clause 13.6 Daywork	Item		
1.2.13.7	Clause 13.7 Adjustments for Changes in Legislation	Item		
1.2.13.8	Clause 13.8 Adjustments for Changes in Cost	Item	<b>Kshs.</b>	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
<b>1.2.14</b>	<b>CONTRACT PRICE AND PAYMENT</b>			
1.2.14.1	Clause 14.1 The Contract Price	Item		
1.2.14.2	Clause 14.2 Advance Payment	Item		
1.2.14.3	Clause 14.3 Application for Interim Payment Certificate	Item		
1.2.14.4	Clause 14.4 Schedule of Payments	Item		
1.2.14.5	Clause 14.5 Plant and Materials intended for the Works	Item		
1.2.14.6	Clause 14.6 Issue of Interim Payment Certificate	Item		
1.2.14.7	Clause 14.7 Payment	Item		
1.2.14.8	Clause 14.8 Delayed Payment	Item		
1.2.14.9	Clause 14.9 Payment of Retention Money	Item		
1.2.14.10	Clause 14.10 Statement at Completion	Item		
1.2.14.11	Clause 14.11 Application for Final Payment Certificate	Item		
1.2.14.12	Clause 14.12 Discharge	Item		
1.2.14.13	Clause 14.13 Issue of Final Payment Certificate	Item		
1.2.14.14	Clause 14.14 Cessation of Employer's Liability	Item		
1.2.14.15	Clause 14.15 Currencies of Payment	Item		
<b>1.2.15</b>	<b>TERMINATION BY EMPLOYER</b>			
1.2.15.1	Clause 15.1 Notice to Correct	Item		
1.2.15.2	Clause 15.2 Termination by Employer	Item		
1.2.15.3	Clause 15.3 Valuation at Date of Termination	Item		
1.2.15.4	Clause 15.4 Payment after Termination	Item		
1.2.15.5	Clause 15.5 Employer's Entitlement to Termination	Item		
<b>Carried forward to Collection page</b>			<b>Kshs.</b>	

Item No.	Description	Unit		Amount (Kshs)
<b>1.2.16</b>	<b>SUSPENSION AND TERMINATION BY CONTRACTOR</b>			
1.2.16.1	Clause 16.1 Contractor Entitlement to Suspend Work	Item		
1.2.16.2	Clause 16.2 Termination by Contractor	Item		
1.2.16.3	Clause 16.3 Cessation of Work and Removal of contractor`s Equipment	Item		
1.2.16.4	Clause 16.4 Payment on Termination	Item		
1.2.17	<b>RISKS AND RESPONSIBILITIES</b>			
1.2.17.1	Clause 17.1 Indemnities	Item		
1.2.17.2	Clause 17.2 Contractor`s Care of the Works	Item		
1.2.17.3	Clause 17.3 Employer`s Risks	Item		
1.2.17.4	Clause 17.4 Consequences of the Employer`s Risks	Item		
1.2.17.5	Clause 17.5 Intellectual and industrial Property Rights	Item		
1.2.17.6	Clause 17.6 Limitation of Liability	Item		
1.2.18	<b>INSURANCE</b>			
1.2.18.1	Clause 18.1 General Requirements for Insurance	Item		
1.2.18.2	Clause 18.2 Insurance for Works and Contractors Equipment	Item		
1.2.18.3	Clause 18.3 Insurance against Injuriy to Persons and Damage to Property	Item		
1.2.18.4	Clause 18.4 Insurance for Contractors Personnel	Item		
1.2.19	<b>FORCE MAJEURE</b>			
1.2.19.1	Clause 19.1 Definition of Force Majeure	Item		
1.2.19.2	Clause 19.2 Notice of Force Majeure	Item		
1.2.19.3	Clause 19.3 Duty to Minimise Delay	Item		
1.2.19.4	Clause 19.4 Consequences of Force Majeure	Item		
1.2.19.5	Clause 19.5 Force Majeure Affecting Subcontractor	Item		
			<b>Kshs.</b>	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
1.2.20	<b>CLAIMS ,DISPUTES AND ARBITRATION</b>			
1.2.20.1	Clause 20.1 Contractor`s claims			
1.2.20.2	Clause 20.2 Appointment of the Dispute Adjudication Board			
1.2.20.3	Clause 20.3 Failure to Agree Dispute Adjudication Board			
1.2.20.4	Clause 20.4 Obtaining Dispute Adjudication Board`s Decision			
1.2.20.5	Clause 20.5 Amicable settlement			
1.2.20.6	Clause 20.6 Arbitration			
1.2.20.7	Clause 20.7 Failure to comply with Dispute Adjudication Board`s Decision			
1.2.20.8	Clause 20.8 Expiry of Dispute Adjudication Board`s Decision Appointment			
1.2.22	<b><u>Particular Conditions Part A (Contract Data) &amp; B (Special Provisions)</u></b>			
1.2.22.1	Any sums and cost implications which are considered necessary for the carrying out and observance of the Items in the Particular Conditions to the Conditions of Contract shall be priced against the relevant clauses above	Item		
1.3	<b><u>GENERAL MATTERS</u></b>			
1.3.1	<b>SUFFICIENCY OF TENDER</b>  The Contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the works and of the rates and prices used in arriving at the lump sum price(s) stated in the priced Tender Documents which rates and prices shall cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the works.	Item	Kshs.	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
1.3.2	<p><b>DRAWINGS &amp; REPORTS</b></p> <p>i) Drawings used for the tender documents are attached to the tender.</p> <p>Contractor to note that any difference between the tender drawings and the construction drawings / and or measured quantities do not give room for any claims.</p> <p>ii) Before submitting tenders Contractors may examine all the drawings and reports satisfy themselves regarding all details as no claim by reason of ignorance to this connection will be entertained.</p> <p>iii) The Contractor shall satisfy himself as to the correctness of all drawings, reports and measurements. If the Contractor finds any discrepancy into the drawing, geotechnical report or between the drawings/report and the Bills of Quantities, he shall immediately refer the same to the Consultants who shall decide which shall be followed.</p> <p>iv) Figured dimensions will be used in preference to scales mentioned on or attached to any drawing.</p> <p>v) The Contractor is to take the necessary particulars for ordering his materials and work from the drawings and the work in progress on the building and not use the Bills of Quantities for that purpose.</p>	Item		
1.3.3	<p><b>SITE</b></p> <p>The site is located at the junction of Sheikh Abdullas Road and Narok Road, Buxton Mombasa County, near Nyali Bridge</p> <p>The site of the works shall be used solely for the purpose of executing and completing the Contract to the satisfaction of the Engineer.</p> <p>The Contractor shall obtain the necessary approvals for the access, working time, security, siting of all temporary storage areas for materials. All costs associated with temporary working arrangements shall be borne by the excavations contractor.</p>		Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
	<p>The proposed project is situated adjacent to the completed Phase 1 of the Project and comprises 4No. Typical Blocks of Ground plus 16No. accommodation floors. Each Block comprises of 16No. 1-bedroom units, 55No. 2-bedrooms units, 50No. 3-bedrooms units, and 2No. 4-bedrooms units. Other utilities in the project include inter alia a Community Centre, and an Early Childhood Development Centre. The project comprises of Piling foundation works to be executed by a Nominated Subcontractor.</p> <p>The works shall also be inclusive of all associated external and civil works, utility buildings, water and power supply, sanitation works, project maintenance and protection and continuous protection services. The scope under this tender also includes installation of Electrical &amp; plumbing/drainage works and any other specialist works to be executed by nominated subcontractor(s) as described in the Bills of Quantities.</p> <p>The phasing of the project will be at the sole discretion of the Employer in contract packages which will depend on the budgetary figures. The phasing plan may be altered and the scope to be awarded to the Successful Tenderer is at the Employer's sole discretion. The award of a Phase does also not guarantee the winning bidder of the award of the other phases</p> <p>The above description of the works is not necessarily complete and shall not define or limit the work to be carried out by the successful tenderer. The tenderer is strongly advised to study the drawings and the bills of quantities, and also visit the site to fully understand the scope of the works and the site constraints before submitting the tender</p> <p>The Contractor shall visit the site to acquaint themselves with its nature and position, scope of the works, the nature of the ground, substrata, site and other local conditions, site constraints, position of power and water supplies, access, neighbourhood or any other limitations, and no claims for extras will be considered on account of lack of knowledge in this respect.</p> <p>The contractor must obtain the Client's and Engineer's approval and directions regarding the use of any material found on the Site. Any such material utilized in the execution of the Contract or carried away except those described here-in shall be measured and value assessed by the Quantity Surveyor and the amount credited to the Employer.</p> <p><b>Carried forward to Collection page</b></p>	Item	Kshs.	-

Item No.	Description	Unit		Amount (Kshs)
1.3.4	<p><b>STAMP CHARGES</b></p> <p>The Contractor shall allow for the payment of all Stamp Charges in connection with the Performance Security and Contract Agreement.</p>	Item		
1.3.5	<p><b>FIGURED DIMENSIONS</b></p> <p>Figured dimensions are to be followed in preference to dimensions scaled from the Drawings; but whenever possible dimensions are to be taken on the site or from the Buildings. Before any work is commenced by Sub-Contractors or Specialist Firms, dimensions must be checked on the Site and/or buildings and agreed with the Contractor, irrespective of the comparable dimensions shown on the Drawings. The Main Contractor shall be responsible for the accuracy of such dimensions.</p>	Item		
1.3.6	<p><b>PROVISIONAL WORK</b></p> <p>All "Provisional" and other work liable to adjustment under this Contract shall be left uncovered for a reasonable time to allow all measurements needed for such adjustment to be taken by the Engineer. Immediately the work is ready for measurement, the Contractor shall give notice to the Engineer.</p> <p>If the Contractor makes default in these respects, he shall, if the Engineer so directs, uncover the work at his own expense to enable the measurements to be taken.</p>	Item		
1.3.7	<p><b>SITE CONSTRAINTS</b></p> <p>The Contractor must take all steps necessary to safeguard existing property, make good at their own expense any damage to persons or property caused thereon</p> <p>The Contractor shall also allow for relocation of all services i.e water, power, sewerlines, telephone and data, etc at their own expense.</p> <p>The Contractor shall minimize nuisance from dust, noise or any other source of nuisance to the occupants of the existing and adjacent property</p>	Item	Kshs.	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
1.3.8	<p><b>SETTING OUT</b></p> <p>The Contractor shall set out the Works in accordance with the dimensions and levels shown on the drawings and shall be responsible for the correctness of all dimensions and levels so set out by him and will be required to amend all errors arising from inaccurate setting out at his own cost and expense. In the event of any error or discrepancy in the dimensions or levels marked on the drawings being discovered, such errors or discrepancies must be reported by the Contractor to the Consultants for their immediate attention.</p> <p>No work shall be commenced by the Contractor until he has received written instructions from the Engineer to adjust such discrepancies which may be proved. Upon receipt of such instruction the Contractor shall thereupon be responsible for adjustments necessary to comply with such instruction, and no claim for extra expense or relief from the provisions or clauses of the Conditions of Contract based on any discrepancy or error in the dimensions or levels shown on the drawings may be made thereafter.</p> <p><b>SETTING OUT Cont'd</b></p>			
1.3.8	<p>Before any work is commenced by sub-contractors or specialist firms, dimensions must be checked on the site and/or buildings and agreed with the Contractor, irrespective of the comparable dimensions shown on the drawings. The Contractor shall be responsible for the accuracy of such dimensions.</p>	Item		
1.3.9	<p><b>SHOP DRAWINGS</b></p> <p>The Contractor shall prepare for scrutiny and issue to the Consultants, copies of detailed shop drawings of all specialist works. Following the Engineer's checking of these shop drawings the Contractor shall immediately amend them as necessary and when approved, promptly issue to the Consultants four copies for general use.</p> <p>Shop drawings are drawings, diagrams, designs, illustrations, schedules, performance charts, brochures, setting out drawings, shop details and other data which are prepared by the Contractor, Subcontractor, manufacturer, supplier or distributor which illustrate manufacturing details and methods of execution of work.</p> <p>Only shop drawings and/or samples submitted for review shall be considered by the Engineer. The Engineer's approval of shop drawings and/or samples shall be limited to checking for general conformity with design and specification and shall not alter the design responsibilities in terms of the Contract. The Engineer may refer shop drawings and/or samples for approval to the relevant professional consultant who has delegated authority.</p> <p><b>Carried forward to Collection page</b></p>		Kshs.	-

Item No.	Description	Unit		Amount (Kshs)
1.3.9	<p>A site plan including the measures implemented to accomplish prevention of soil erosion and collapse of the sides of excavations shall be provided to the Engineer.</p> <p>Where shop drawings are called for:</p> <p>(a) the Contractor shall:</p> <ul style="list-style-type: none"> <li>(i) prepare or ensure that a Subcontractor, manufacturer, supplier or distributor prepares shop drawings at their own expense,</li> <li>(ii) submit sufficient copies of shop drawings to the Engineer for approval,</li> <li>(iii) allow the Engineer reasonable time to approve shop drawings,</li> <li>(iv) keep a record of all shop drawings submitted to the Engineer,</li> <li>(v) ensure that shop drawings conform to the dimensions of built work,</li> <li>(vi) submit sufficient copies of the approved shop drawings to the Engineer for his use and for use in the Works,</li> <li>(vii) ensure that work is not executed from shop drawings that have not been approved by the Engineer, and</li> </ul> <p><b>SHOP DRAWINGS Cont'd</b></p> <p>(viii) not be entitled to payment for Materials (for example steel roof truss components such as gussets, connection plates and the like) of which shop drawings may have been approved by the Engineer and/or the relevant professional consultant who has delegated authority but which are in excess of the design parameters stipulated by such professional consultant. Payment shall be based on the design parameters stipulated by the relevant professional consultant.</p> <p>(b) The Engineer shall:</p> <ul style="list-style-type: none"> <li>(i) check timeously the shop drawings submitted by the Contractor, and</li> <li>(ii) advise the Contractor whether shop drawings are approved or are to be resubmitted.</li> </ul> <p>The scrutiny of shop drawings by the Consultants shall be for general conformity, including conformity with the work of others and to co-ordinate the contract work in space. Such approval shall not imply any further indication of correctness Shop Drawings shall be in Auto CAD *.dwg format</p> <p>The Contractor shall provide a Design Indemnity for Design Build elements of the construction.</p> <p>Without limiting or derogating from the Employer's right, the Contractor shall:</p> <p>(a) Ensure that every Sub-Contractor signs and delivers to the Employer a design, materials and workmanship warranty undertaking (design warranty) in favour of the Employer.</p> <p><b>Carried forward to Collection page</b></p>		Kshs.	-

Item No.	Description	Unit		Amount (Kshs)
1.3.10	<p>(b) Provide the Employer with evidence of suitable professional indemnity insurance for all Sub-Contractors where the sub-contract involves design work other than for temporary works.</p> <p>Pending delivery of the design warranty and the required evidence of professional indemnity insurance, the Contractor shall, notwithstanding anything to the contrary in the agreement and without limiting or derogating from the employer's rights, be responsible for the design undertaken by the relevant Sub- Contractor.</p> <p>All Sub-Contractors shall submit their Shop Drawings to the Main Contractor who will then distribute them to the Consultants. The Main Contractor will then track the process to approval by the Consultants.</p> <p>The stages of approval will be as follows:-</p> <p>(a) Approved  (b) Approved subject to comments being implemented  (c) Rejected, to be re-submitted</p> <p><b>SITE LEVELS</b></p>	Item		
1.3.11	<p>Before commencing work the Contractor must arrange for and agree with the Engineer the existing site levels and similarly establish and agree a bench mark for use in the works.</p> <p><b>SAMPLES AND MOCK UPS</b></p>	Item		
1.3.12	<p>The Contractor shall furnish at the earliest possible opportunity before works commences and at his own cost, samples of materials or workmanship that may be called for by the Engineer for approval or rejection and any further samples in the case of rejection until such samples are approved by the Consultants and such samples when approved shall be the minimum standard for the works to which they apply.</p> <p><b>EXISTING SERVICES</b></p> <p>Prior to commencement of any work the Contractor is to ascertain from the relevant authorities the exact position, depth and level of all existing electric cables, water pipes or other services in the area and he shall make whatever provisions may be required by the authorities concerned for the support and protection of such services. Any damage or disturbance caused to any service shall be reported immediately to the Engineer and the relevant authority and shall be made good to their satisfaction at the Contractor's expense. Contractor is to liaise with the relevant utilities and allow for costs therein related to relocation of utilities on site.</p>	Item	Kshs.	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
1.3.13	<p><b>AS BUILT DRAWINGS</b></p> <p>The Contractor shall prepare the requisite "As Built" drawings for Architectural and Mechanical/ Electrical works to the satisfaction of the Engineer. All expenses therewith shall be borne by the contractor. The contractor shall allow for the maintenance of As Built Drawings as the Works progress to ensure that the Works are accurately captured.</p> <p>All as-built drawings shall be on blue prints, at least A2 and shall bear the name, address, and telephone number of the firm preparing the drawing</p> <p>and the date the as-built data is added to the original via the revision block. The "AS-BUILT DRAWING" or "RECORD DRAWING" shall be clearly labelled on each sheet. All drawings shall be submitted in the following formats:  Native CAD files (*.pln;*.pla; *.dwg etc.);  and PDF format – files should be generated using the same page size as the drawings Title Blocks.  Hard copies – sheet size and the no. of copies to be determined through consultation with the Engineer.</p> <p>The Contractor shall provide the Engineer with "as-built" Drawings or information for the preparation of "as-built" Drawings as required by the Engineer and indicating inter alia the following:</p> <p>(a) service routings for all services,  (b) junctions in service routings, and  (c) salient features for the operation and maintenance of the services.</p>	Item		
1.3.14	<p><b>MATERIALS, TOOLS AND PLANT</b></p> <p>The Contractor shall provide all necessary cranes, passenger and goods hoists, machinery, tackle, plant, vehicles, scaffolding, working platforms, tools and appliances of every description for the due and satisfactory completion of the Works and shall remove same on completion.</p> <p>Tools and plant include all necessary equipment, tools, plant, and other appliances facilitating the execution of the measured works including scaffolding, small tools and safety apparatus.</p>		Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
	<p>All Plant, tools, scaffolding and materials used in the execution of the works shall be of the best quality and shall be safe for use. Any such plant condemned by the Engineer shall immediately be removed from the site at the Contractor's expense and replaced with appropriate.</p> <p>The Contractor shall provide all necessary hessian cloths complete with supporting scaffolding and any other special dust and safety screens that may be necessary, and as shall be directed by the Engineer.</p> <p>Scaffolding shall be constructed of approved tubular steel of sufficient scantlings and be provided with planked footways and guard-rails to approval.</p> <p>All such plant, tools and scaffolding shall comply with all regulations whether general or local in force throughout the period of the Contract and shall be altered or adapted during the Contract as may be necessary to comply with any amendments in or additions to such regulations.</p> <p>All such plant, tools and scaffolding is not measured hereinafter, and the Contractor must allow here or in his rates for the above.</p>	Item		
1.3.15	<p><b>STATUTORY REGULATIONS AND BY LAWS</b></p> <p>The Contractor is to comply with all local regulations and by-laws of the Local Authority including serving of notices and application for statutory licences and paying of fees.</p> <p>The Contractor shall provide, one month before practical completion of the project, all the documentation pertaining to the contractor that is necessary for the application of the Occupation Certificate from Local Authorities including but not limited to concrete cube test results, statutory inspection certificates and plumbing certificates.</p>	Item		
1.3.16	<p><b>SUPERVISION</b></p> <p>The said Works shall be executed under the direction and to the entire satisfaction of the Engineer and who shall at all times have access to the works and to the yards and workshops of the Contractor or other places where work is being prepared for the building works</p>	Item		
	Carried forward to Collection page		Kshs.	

Item No.	Description	Unit		Amount (Kshs)
1.3.17	<p><b>TRANSPORT TO AND FROM THE SITE</b></p> <p>The Contractor shall include in his prices for the transport of spoil, materials, workmen, etc., to and from the site of the proposed Works, at such hours and by such routes as are permitted by the authorities and the Engineer, and as per the conditions in the NEMA license.</p> <p>The contractor shall ensure that the picking and dropping off of workmen at the construction site happens within the boundaries of the site.</p> <p>All current rules issued by the Transport Licensing Board (TLB) of the Republic of Kenya shall be adhered to.</p>	Item		
1.3.18	<p><b>ACCOMMODATION ON SITE</b></p> <p>No accomodation on site will be permitted for the Contractors staff or work people including those of sub-contractors unless with the approval of the Engineer, the Main Contractor and relevant authorities.</p>	Item		
1.3.19	<p><b>FAIR WAGES</b></p> <p>The Contractor shall pay rates of wages and observe hours and conditions of labour not less favourable than the minimum rates of remuneration and minimum conditions of employment applicable in the district in which the work is carried out. The relevant notice must be posted up and kept posted upon the site where it can conveniently be read by the employees concerned.</p> <p>The Contractor is to comply with the Regulation of Wages and Conditions of the Employment Act, Building and Construction Industry Wages Council and is to be responsible for compliance by sub-contractors employed in the execution of the Contract. If required he is to notify the Consultants of the name and addresses of all such sub-contractors. Any Contractor or sub-contractor not so complying will not be permitted to tender for other work for such period as the Consultants may determine.</p>			
1.3.19	<p><b>FAIR WAGES Cont'd</b></p> <p>Should a claim be made to the Consultants alleging the Contractor's default in payment of Fair Wages of any workman employed on the Contract and if proof thereof satisfactory to the Consultants is furnished</p> <p>by the Labour Department, the Consultants may, failing payment by the contractor, pay the claim out of any monies due or which may become due to the contractor under this contract.</p> <p>The contractor is to furnish to the Consultants, if called upon to do so, such particulars of the rates of wages, hours and conditions of labour referred above, as the Consultants may direct.</p>	Item	Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
1.3.20	<p><b>SECURITY OF WORKS</b></p> <p>The Contractor shall be entirely responsible for the security of all the works, stores, materials, plant, personnel, etc., both his own and sub-contractors and shall provide all necessary watching, lighting and other precautions as necessary to ensure the Security and the protection of the public.</p>	Item		
1.3.21	<p><b>PUBLIC AND PRIVATE ROADS, PAVEMENT, ETC.</b></p> <p>The Contractor will be required to make good at his own expense any damage he may cause to the present approach road surfaces during the period of the Works.</p> <p>The contractor will ensure that his delivery trucks entering or leaving the site causes minimal environmental concerns by putting in place dust and mud control and by ensuring that he adhere strictly to NEMA by laws &amp; conditions of the NEMA license regarding the same. The contractor shall also adhere to the neighbourhood association conditions including any fees payable.</p> <p>The contractor shall ensure that an adequate storm water management plan and drainage system is in place within and around the site.</p>	Item		
1.3.22	<p><b>AREA TO BE OCCUPIED BY CONTRACTOR</b></p> <p>The area of the site which may be occupied by the contractor for use as storage and for the purpose of erecting workshops, etc, shall be defined on the site by the Engineer.</p>	Item		
1.3.23	<p><b>WORKING HOURS AND OVERTIME</b></p> <p>The working hours shall be 8.00am to 5.00pm Monday to Friday, and 8.00am to 1.00pm on Saturdays aor in accordance with the timelines in the Project NEMA Permit. The work shall not be carried on to saturdays, gazetted public holidays or above working hours unless under direct permission of NEMA as allowed for in the NEMA By Laws.</p> <p>All working hours must conform to the requests of the statutory authorities</p>	Item	Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
1.3.24	<p><b>CONTRACTORS' SUPERINTENDENCE</b></p> <p>The Contractor shall constantly keep on the Works two literate, technical and fluent English speaking Agents or Representative, competent and experienced in the kind of work involved, who shall give their whole time to the superintendence of the Works. Such Agents or Representatives shall be expected to receive on behalf of the Contractor, directions and instructions from the Engineer and such directions and instructions shall be deemed given to the Contractor in accordance with the Conditions of Contract. The Agents shall not be replaced without the specific approval of the Engineer.</p> <p>The Contractor shall submit the Site Organogram to the Engineer for approval.</p> <p>It is to be a specific condition of this Contract that the successful Tenderer shall provide on site throughout the period upto the date for Practical Completion a suitably qualified, experienced and competent person to ensure that the works are carried out to the standard required by the specifications and detailed on the Drawings; and shall ensure that upon any termination of employment a suitable replacement is found.</p> <p>The Contractor shall also provide a Sub-Contracts Manager to specifically co-ordinate Sub-Contractors activities.</p> <p>The Engineer's decision will be final regarding the suitability (or otherwise) of the proposed Representative(s).</p> <p>The Engineer shall for the entire duration of the contract, retain the right to ask the contractor to replace any site agent to the Engineer's approval.</p>	Item		
1.3.25	<p><b>SUB-CONTRACTORS ATTENDANCE</b></p> <p>The Contractor shall accept responsibility for providing the following to all Sub-Contractors:</p> <p>ATTENDANCE shall be as defined and prescribed in the Preambles Section of the tender document, and shall include and not limited to;-</p> <p>a) Use, for the purpose of the Sub-Contractor Works of any scaffolding belonging to or provided by the Contractor while it remains so erected upon the site, provided that no warranty or other liability on the part of the Contractor or of his other sub-contractors shall be created or implied in regard to the fitness, condition or suitability of the said scaffolding.</p>		Kshs.	
	Carried forward to Collection page			-

Item No.	Description	Unit		Amount (Kshs)
1.3.26	<p>b) Provision of power , water, lighting, watching and attendance for the purpose of the Sub-Contract Works</p> <p>c) Use of sanitary accomodation, mess rooms and welfare facilities</p> <p>d) Provision of space for erection of offices or stores or space for storage of plant and materials</p> <p>e) Clearing away rubbish produced by them</p> <p><b>NOMINATED SUPPLIERS &amp; SUB-CONTRACTORS</b></p> <p>The Contractor shall take delivery anywhere in Mombasa of all materials or goods supplied by the Nominated Suppliers and shall sign a receipt as having received them in good order and condition. He shall offload, transport to site, unload, hoist, provide safe storage and thereafter be responsible for any loss or damage or replacement of any such lost or damaged articles at his own expense and shall return empty cases if so required. Provision is made herein following each appropriate P.C. sums for the cost of the foregoing services against items reading "Take Delivery and Fix Only"</p> <p>The Contractor shall fully responsible for the management and coordination of the Nominated Sub-contractors including sequencing of the works, contractual and financial responsibilities all in accordance with the subcontract agreements.</p> <p>The Contractor shall also provide general and special attendance to the Nominated Sub-contractors as per the general and particular conditions of contract, preambles and other sections of the tender documents.</p>	Item		
1.3.27	<p><b>PRIME COST RATES</b></p> <p>Where description of items include a P.C. rate per unit this rate is to cover the nett supply cost of the unit only. The Contractor's price must include for the cost of the unit at the rate stated, plus waste, taking delivery, storage, fixing in position, profit and overheads. The actual nett cost per unit will be adjusted within the Final Account against the P.C. rate stated.</p>	Item		
1.3.28	<p><b>LIGHTING AND POWER</b></p> <p>The Contractor shall provide at his own risk and cost all artificial lighting and power on a 24 hour/7 day basis for use on the works, including Consultants offices and all sub-contractors and specialists requirements and including all temporary connections, wiring, fittings etc., and clearing away on completion, The Contractor shall pay all fees and obtain all permits in connection therewith. All such temporary lighting and power works shall be cleared away on completion. The Contractor shall pay all fees and obtain all permits in connection therewith.</p> <p>The Contractor shall provide a standby generator of requisite capacity for all works on the site.</p> <p><b>Carried forward to Collection page</b></p>	Item	Kshs.	-

Item No.	Description	Unit		Amount (Kshs)
1.3.29	<p><b>PROTECTIVE CLOTHING</b></p> <p>The Contractor shall provide all protective or any other special clothing or equipment for his employees that may be necessary. This shall include, inter-alia, safety helmets, gloves, goggles, earmuffs, safety boots, face masks, high visibility jackets, overalls and all Personal Protective Equipment according to the type of work. The Contractor shall ensure that safety helmets are worn by all staff and authorised visitors on site at all times.</p>	Item		
1.3.30	<p><b>PROGRAMME OF WORKS</b></p> <p>A programme for the works is to be submitted in accordance with the Conditions of Contract. The programme is to be a computerized critical path programme schedule which the Contractor will prepare, develop and maintain during the course of the Contract. The schedule shall show in detail the construction time and order in which each section of the work is to be carried out and be sub-divided into elements, trades and tasks. The time schedule is to be agreed with the Consultants.</p> <p>At the every site meeting the Contractor is to incorporate actual start and finish dates into the time schedule and produce a construction schedule update and analysis for the Engineer. The analysis is to show actual start and finish dates, identify out of sequence work, critical activities and any</p> <p>constraints which have or may effect the progress of the works. In addition, the Contractor shall provide a two-week look ahead programmes and weekly reports.</p> <p>During the execution of the works the Contractor will incorporate any changes to the time schedule only if approved 'in writing' by the Consultants arising for whatsoever reason, and produce a revised schedule.</p> <p>The Contractor will provide the Engineer with an editable soft copy of the time schedule including monthly updates, progress reports comprising photos and analysis together with four printed copies of the relevant data.</p> <p>The contractor shall within the programme, allow for at least 14 days for the approval of any submitted samples.</p>	Item	Kshs.	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
1.3.31	<p><b>WATER</b></p> <p>The Contractor shall provide at his own risk and cost all water for use in connection with the Works including Consultants office and the work of sub-contractors; make arrangements with the Local Authority for the installation of a separate meter for all water used by him throughout the Contract and pay all costs and fees in connection therewith. He shall also provide temporary storage tanks and tubing etc, as he may consider necessary and clear away at completion.</p> <p>All water shall be fresh, clean and pure, free from earthy, vegetable or organic matter, acid or alkaline substance in solution or suspension.</p>	Item		
1.3.32	<p><b>OCCUPATION CERTIFICATE</b></p> <p>The Contractor shall ensure that they follow up and ensure all the necessary inspections are carried out by the relevant county government departments with regard to the occupation certificate. The contractor shall comply with all county government requirements in this regard.</p>	Item		
1.3.33	<p><b>SAFETY</b></p> <p>The Contractor shall comply at all times with the requirements of the Occupational Safety and Health Act, 2007; Work Injury Benefits Act, 2007; the regulations issued by the Directorate of Occupational Safety and Health Services (DOSHS); and the subsidiary legislation and regulations under the Acts, and ensure that the safety of his work people and authorized visitors to the Site is protected at all times. In particular, there shall be proper provision of planked footways and guard rails to scaffolding, etc., protection against falling materials and tools and the Site shall be kept tidy and clear of dangerous rubbish.</p> <p>The Contractor shall appoint four Safety Officers to the approval of the Engineer and as required by the Occupational Safety and Health Act, 2007; Work Injury Benefits Act, 2007; the regulations issued by the Directorate of Occupational Safety and Health Services (DOSHS); and the subsidiary legislation and regulations under the Acts. The Safety Officers shall be on site at all times and all directions given by the Engineer to the Safety Officers shall be deemed to be Engineer's Instructions and shall be complied with promptly without additional cost to the Contract.</p> <p>The Contractor shall within seven days of appointment provide a Health and safety management plan which details site rules, safety regulations</p> <p>The Engineer shall be empowered to suspend work on the Site should he consider these conditions are not being observed, and no claim arising from such a suspension will be allowed.</p> <p><b>Carried forward to Collection page</b></p>	Item	Kshs.	-

Item No.	Description	Unit		Amount (Kshs)
1.3.34	<p><b>OCCUPATIONAL HEALTH AND SAFETY (OHS)</b></p> <p>The Contractor shall allow for meeting all requirements under the Occupational Health and Safety Act, 2007, including the Work Injury Benefits Act, 2007; and subsequent regulations therewith, including compliance with all directives issued by Occupational Safety and Health Administration (OSHA) and the Directorate of Occupational Safety and Health Services (DOSHS)</p> <p>The Contractor shall allow for meeting all requirements under the Health Act (No. 21 of 2017) and subsequent regulations issued under the Act.</p>	Item		
1.3.35	<p><b>ENVIRONMENTAL MANAGEMENT PLAN (EMP)</b></p> <p>The Contractor shall provide the Project's Environmental Management Plan and allow for meeting all requirements and recommendations</p>	Item		
1.3.36	<p><b>COVID-19 PANDEMIC</b></p> <p>In furtherance of the directive issued by His Excellency Uhuru Kenyatta on Sunday 15th March 2020, the National Construction Authority issued guidelines and steps to ensure compliance with the Standards for Management of Construction Sites and Welfare of Workers. The Contractor shall adhere to the quality assurance, safety and all the directives issued by the Ministry of Health and the NCA, which include inter alia:</p> <ul style="list-style-type: none"> <li>a) Provision of clean water, soap for washing and hand sanitizers to all workers and visitors on site,</li> <li>b) Introduction of signage at visible site locations containing Corona Virus prevention guidelines</li> <li>c) Ensuring that workers maintain reasonable social distance from each other through, for instance, working in shifts or rearranging the work schedule to accommodate social distancing;</li> <li>d) Sending home any workers exhibiting symptoms, especially a coughs and fever or shortness of breath. Those affected or suspected should be referred to the nearest health facility.</li> <li>d) Complying with curfew restrictions implemented by the Kenyan Government.</li> </ul> <p>The Contractor shall continue to adhere and implement any further directions issued by the NCA and the National Government departments and institutions as they arise.</p>		Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
	<p>The Contractor shall allow into his work programme and tender pricing the impact of the pandemic in relation to the procurement of materials and labour accordingly.</p> <p>Contractor to ensure compliance with the Standards for Management of Construction Sites and Welfare of Workers issued by the National Construction Authority on 3rd April 2020 and any other subsequent regulations regarding the COVID-19 Pandemic. The document can be accessed on the link; <a href="https://nca.go.ke/wp-content/uploads/2020/04/draft-n-COVID-19-Construction-Standards-NCA-converted-1.pdf">https://nca.go.ke/wp-content/uploads/2020/04/draft-n-COVID-19-Construction-Standards-NCA-converted-1.pdf</a></p> <p>Contractor to ensure compliance with the Occupational Safety and Health Postcovid-19 Return to Work Advisory issued by the Directorate of Occupational Safety and Health Services on 29th June 2020, and any other subsequent advisories. Contractor to ensure compliance with the provisions of the Public Health Act (CAP 242) and the regulations issued under the Act.</p>	Item		
1.3.36	<p><b>RAIN &amp; DELAYS</b></p> <p>Contractors Method Statement and Programme should reflect how the wet seasons envisaged during the contract period and any adverse weather that is reasonably forecasted by the Kenya Metereological department at the time of tender, with commensurate delays, will be accommodated within the contract period. No claim of extension of time with relation to rains delays will be entertained.</p> <p>In addition, it is noted that exceptionally adverse weather is weather that is exceptionally adverse for that time and location, that is weather over a calendar month that has occurred on average less frequently than once in 10 years and consideration must be made for in the Contractors price and programme</p>	Item		
1.4	<p><b><u>MATERIALS AND WORKMANSHIP</u></b></p>			
1.4.1	<p><b>GENERALLY</b></p> <p>All materials shall be new unless otherwise directed or permitted by the Engineer and in all cases where the quality of goods or materials is not described or otherwise specified, is to be the best quality obtainable in the ordinary meaning of the word "best" and not merely a trade signification of that word.</p> <p><b>All materials and workmanship shall, unless otherwise specified or described, conform to the appropriate British Standards Institution Specification current at the date of Tender.</b></p>		Kshs.	
	<p><b>Carried forward to Collection page</b></p>			-

Item No.	Description	Unit		Amount (Kshs)
	<p>The Contractor shall order all materials to be obtained from overseas immediately after the Contract is signed and shall also order materials to be obtained from local sources as early as necessary to ensure that such materials are on Site when required for use in the Works. The same shall extend to domestic and nominated sub-contractors.</p> <p>The Contractor shall be responsible for and shall replace or make good at his own expense any materials lost or damaged.</p> <p>The Works throughout shall be executed by skilled workmen well versed in their respective trades, and the same shall extend to domestic and nominated sub-contractors.</p> <p>The contractor shall carry out concrete cube tests for all major concrete works for analysis by an independent laboratory to be approved by the consultants, the results of which must be shared with the consultants upon receipt of the results.</p>	Item		
1.4.2	<p><b>REJECTED WORKMANSHIP OR MATERIALS</b></p> <p>Any workmanship or materials not complying with the specific requirements or approved samples or which have been damaged, contaminated or have deteriorated, must immediately be removed from the Site and replaced at the Contractor's expense, as required. The same shall extend to domestic and nominated sub-contractors.</p>	Item		
1.4.3	<p><b>PROPRIETARY MATERIALS</b></p> <p>Where proprietary materials are specified herein-after, the Contractor may propose the use of materials of other manufacturer but of equal quality for approval by the Engineer.</p> <p>All materials and goods, where specified to be obtained from a particular manufacturer or supplier are to be used or fixed strictly in accordance with their instructions.</p>	Item		
1.5	<p><b><u>TEMPORARY WORKS</u></b></p>			
1.5.1	<p><b>ACCESS TO SITE AND TEMPORARY ROADS</b></p> <p>Means of access to the site shall be agreed with the Engineer and the contractor shall submit a traffic management plan which shall always be implemented and observed. The contractor shall employ traffic marshalls and maintain them throughout the contract. The Contractor must allow for building any temporary access roads for the transport of materials, plant and workmen as may be required for the complete execution of the works including the provision of temporary culverts, crossings, bridges or any other means of gaining access.</p>		Kshs.	
	<p><b>Carried forward to Collection page</b></p>			-

Item No.	Description	Unit		Amount (Kshs)
1.5.2	<p>All access shall be in accordance with the soil erosion and sedimentation control plan for the project as prepared by the contractor.</p> <p>The Contractor shall provide a Traffic Management and Logistic plan for the approval of the Engineer.</p> <p>Upon the completion of the Works the Contractor shall remove such temporary roads, temporary culverts, bridges etc., and make good and reinstate all works and services disturbed to the satisfaction of the Engineer.</p> <p><b>TEMPORARY BUILDINGS AND SITE OFFICE</b></p> <p>The Contractor shall provide site office, mess rooms and all other buildings required by the contractor for his own use and the use of sub contractors. The buildings shall be subject to subject to the approval of the Engineer. Upon completion all temporary buildings are to be removed and cleared away.</p> <p>A Site Office shall be provided for holding of Site Meetings. This shall be fully equipped with a table and chairs of sufficient size and number to hold meetings for a minimum of 30 people.</p> <p>Notice boards and drawers shall be provided for drawings, photographs, notices, programme, etc.</p> <p>Separate toilet facilities shall be provided for the Employer / Consultants sole use. Artificial lighting and cleaning shall be provided.</p>	Item		
1.5.3	<p>The Contractor shall keep on the site and maintain in good condition dumpy or quickset levels, total station theodolites, metric levelling staffs, 30 metre steel tapes, etc for the use of the Engineer.</p> <p><b>SHEDS FOR STORAGE OF MATERIALS</b></p> <p>The Contractor shall provide, erect and maintain on the site, in such positions as may be directed, ample temporary watertight, lock-up sheds for the proper storage and protection of cement and other materials liable to damage and shall remove same at completion and make good all surfaces disturbed. The Contractor shall also keep a logbook of all materials which shall be availed to the Engineer on request.</p>	Item	Kshs.	
	<b>Carried forward to Collection page</b>			-

Item No.	Description	Unit		Amount (Kshs)
1.5.4	<p><b>TELEPHONE &amp; DATA SERVICES</b></p> <p>The Contractor shall provide a cell phone for use on site for the period of the Works, and the contractor shall be responsible for all expenses involved with the relevant provider. The cellphone shall remain on site until completion of the works.</p> <p>The Contractor shall also provide data connection services for use by the Client/Consultant representatives on the site by way of Wi-Fi connection or any other approved internet connection and the contractor shall be responsible for all periodic expenses involved.</p>	Item		
1.5.5	<p><b>SANITATION OF THE WORKS</b></p> <p>The Contractor shall make arrangements for the necessary toilet facilities for their staff and workmen to the requirements and satisfaction of the Health authorities and maintain the same in a thoroughly clean and sanitary condition and pay all conservancy fees during the period of the Works and remove when no longer required. The shed and water closet shall be completed before the contractor will be permitted to commence the works.</p> <p>The Contractor shall maintain for the duration of the contract standard size portable toilets of high capacity polyethylene construction with vent stack, self-closing doors with interior locks and 'occupied' indicator. Sufficient paper capacity to coincide with standard cleaning schedule for replenishment. All to be compliant with the industry standard, complete with a weekly service and exhaustion service. 1 No. Portable toilet is to be provided for every 20 workmen and 1 No. Portable toilet to be provided exclusively for the site office. All to be located within 100 metres of place of work and to be distributed throughout the site.</p> <p>Separate Male and Female ablution facilities shall be provided.</p> <p>The Contractor shall allow for removing the said facilities and leaving the ground clean and free from pollution upon completion to the satisfaction of the County, Health and Medical Authorities.</p>	Item		
1.5.6	<p><b>SIGN BOARD</b></p> <p>The Contractor shall provide the signboard as per the design furnished by the Engineer.</p> <p>The Signboard and lettering on same for the display of the General and Sub-Contractors' names shall be of an approved size with the Employer's name painted thereon. The Engineer's, Quantity Surveyor's and other Consultants' names shall be printed in 50 mm letters all to the Engineer's approved design. No other signboard or advertising will be permitted without prior permission from the Engineer.</p> <p>The contractor shall also allow for maintenance of the board including payments for all necessary permits and approvals until project completion</p>	Item	Kshs.	
	<b>Carried forward to Collection page</b>			

Item No.	Description	Unit		Amount (Kshs)
1.5.7	<p><b>SAFETY BOARDS</b></p> <p>The Contractor shall allow for all safety notices and boards, as required by the OHS and Kenyan Law and as directed by the Engineer</p>	Item		
1.5.8	<p><b>COPYRIGHT</b></p> <p>The copyright of these documents is vested in the Quantity Surveyor and they may not be reproduced in whole or in part without the Quantity Surveyor's written permission.</p>	Item		
1.5.9	<p><b>HOARDING/SITE BOUNDARY</b></p> <p>The Main Contractor shall provide all necessary materials, labour, tools and equipments and enclose the site, with a hoarding 2.40 metres high (<b>Approx. 460 linear metres</b>), complete with openings and gates as required, constructed of 100x50mm timber posts at 3m c/c with and including 3no. 75x50mm horizontal members nailed /bolted/ to timber posts to approval and covered with new corrugated 28G IT5 galvanised iron sheeting - colour to approval of the Architect.</p> <p>The Contractor shall also allow for thoroughly maintaining the same in good condition throughout the works, and clearing away and making good disturbed surfaces on completion. All materials arising shall remain the property of the Contractor and he should allow credit against this accordingly.</p> <p>The Contractor shall allow the Employer to erect and face the Hoarding with advertising should they so require</p>	Item		
1.5.10	<p><b>PROTECTION AND CLEANING HOUSE KEEPING AND CLEANING</b></p> <p>The Contractor shall during and, upon completion of the Works, at his own expense, remove and clear away plant, rubbish and unused materials and shall leave the whole of the Site and Works in a clean and tidy state to the satisfaction of the Engineer, including clearing away and making good all traces of temporary access roads, offices, sheds, camps, etc. The Contractor is to find his own dump and shall pay all charges in connection therewith.</p> <p>Contractor shall at all times keep site in a clean safe and tidy state including cleaning and watering of access roads, paths and storm water drains around and adjacent to the site.</p>	Item	Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
1.5.11	<p><b>OVERLOADING</b></p> <p>The Contractor shall take all necessary steps to ensure that no damage occurs due to overloading of any portion of the Works or temporary works, e.g. scaffolding, etc. The Contractor shall submit details of his proposed loading, storage, plant erection, etc., to the Engineer for his approval prior to proceeding with such loading, storing or erecting and shall comply with and pay for the Engineers requirements in connection with the provision of temporary support work, etc. Any damage caused to the Works by overloading shall be made good by the Contractor at his sole expense.</p> <p>Notwithstanding any approval, comments or directions given by the Engineer the Contractor shall be entirely responsible for damage caused to the Works by overloading which damage shall be made good by the Contractor at his sole expense</p>	Item		
1.6	<p><b><u>GENERAL</u></b></p>			
1.6.1	<p><b><u>CONCRETE AND OTHER TESTS</u></b></p> <p>The Contractor must allow in his price for all costs in relation to concrete and other tests. The Contractor shall also submit a testing plan to the Engineer for approval prior to commencing works.</p> <p>The Laboratory for the tests shall be to the approval of the Engineer. Concrete test cubes i.e. per set of three as later described in the specifications, including testing fees, labour and materials, making moulds, transport and handling e.t.c. and ensuing copies of tests results are promptly dispatched to the Engineer's offices.</p> <p>Tenderer to allow for undertaking successful tests throughout the project period as and when required at an approved Laboratory for approval by the Engineer.</p> <p>All tests and outcomes are to be referenced to Kenya Ministry of Public Works'; The Standard Specifications for Roads and Bridge Construction and Roads Design Manual Part III</p>	Item		
1.6.2	<p><b>STANDARDS LEVY</b></p> <p>The Contractor's attention is drawn to Legal Notice No 267 of 2nd June 1990, which requires payment by the Contractor of a Standard Levy to the Kenya Bureau of Standards. The Contractor shall allow in the Preliminaries of this Contract for all costs arising or resulting therefrom.</p>	Item	Kshs.	
	<p><b>Carried forward to Collection page</b></p>			-

Item No.	Description	Unit		Amount (Kshs)
1.6.3	<p><b>TRAINING LEVY</b></p> <p>The Contractor's attention is drawn to Legal Notice No 237 of October, 1971 which requires payment by the Contractor of a Training Levy on all Contracts of more than Kshs. 50,000/= in value and his Tender must include for all costs arising or resulting therefrom.</p>	Item		
1.6.4	<p><b>VALUE ADDED TAX (VAT)</b></p> <p>The Contractor's attention is drawn to The Finance Bill, 1993 which requires payment by the Contractor of Value Added Tax (VAT) to the Government of Kenya for all contracts entered into after 1st September 1993.</p> <p>As the Project is applying for VAT exemption, the contractor is required to provide all required documentation to the Employer and support the Employer with this process at no additional cost.</p> <p>VAT shall be shown separately in the Main Tender Summary and NOT included in the rates.</p>	Item		
1.6.5	<p><b>WITHHOLDING TAX</b></p> <p>The Contractors attention is drawn to The Finance Bill 2002, and amendments to it, The Contractor shall ensure that he has full knowledge of the workings of withholding tax. Withholding tax shall be deducted from all payments, as applicable.</p>	Item		
1.6.6	<p><b>NATIONAL CONSTRUCTION AUTHORITY</b></p> <p>The Contractor's attention is drawn to The National Construction Authority Act No., 41 of 2011, and the regulations issued by the Authority therewith.</p> <p>Within 7 (Seven) days of the award of Contract, the Contractor shall obtain all the relevant forms and fill in all the necessary details to facilitate the project registration as required of the employer in the act.</p> <p>Whereas the project registration levy has been scrapped by the Authority, the contractor shall facilitate the issuance and obtaining of the Compliance Certificate &amp; project registration.</p> <p>The Contractor shall allow for all other costs arising in the application/project registration and costs associated with compliance with the Act and the regulations issued from time to time during the duration of the contract. No claim of costs and extension of time or any other shall be allowed as a result of non-compliance with the Act</p>	Item	Kshs.	
<b>Carried forward to Collection page</b>				-

Item No.	Description	Unit		Amount (Kshs)
1.6.7	<p><b>NEMA REQUIREMENT</b></p> <p>The Contractor shall be responsible for complying with NEMA requirements including abiding by the conditions issued in the against the NEMA license. The contractor shall allow for all costs arising or resulting therefrom. No claim of costs and extension of time shall be allowed as a result of complains to NEMA requirements.</p> <p>The NEMA license shall have been obtained by the Employer and a copy of NEMA license may be inspected in the Engineer's office by prior notice.</p> <p>The contractor shall bear responsibility for any deviations from the terms and conditions issued against the Nema License</p>	Item		
1.6.8	<p><b>STATUTORY REGULATIONS</b></p> <p>The Contractor is to allow for complying with all instructions and regulations of all Statutory Authorities not included above including all current County government regulations etc. Any costs or time spend arising out of the failure to comply with all statutory regulations shall be borne by the contractor.</p>	Item		
1.6.9	<p><b>COPYRIGHT</b></p> <p>The copyright of this documents is vested in the Quantity Surveyor and they may not be reproduced in whole or part without the Quantity Surveyor's written approval.</p>	Item		
1.6.10	<p><b>GEOTECHNICAL ANALYSIS (SITE INVESTIGATION)</b></p> <p>The contractor should allow for all necessary works associated with geotechnical investigation of the site including but not limited to mobilization and demobilization of drilling rigs and equipment, trial pits, boreholes, standard penetration tests (SPT), collection of soil and rock samples, laboratory testing, groundwater level determination, analysis and interpretation of data, and submission of a detailed geotechnical report to the Engineer, complete with foundation recommendations and soil bearing capacity.</p>	Item		
1.6.11	<p><b>TOPOGRAPHICAL SURVEY</b></p> <p>The contractor should allow for undertaking a detailed topographical survey of the site using Total Station and/or GNSS equipment to establish site boundaries, natural and man-made features, spot heights, contours, existing structures, drainage paths, and utilities. The survey data shall be used to generate an accurate topographical map in digital (AutoCAD/Civil 3D) and hard copy formats, referenced to local or national grid systems. The output shall include a survey report and drawing with contour intervals not exceeding 0.5 meters or as directed by the Engineer.</p>	Item		
	<b>Carried forward to Collection page</b>		<b>Kshs.</b>	

Item No.	Description	Unit		Amount (Kshs)
	<b><u>COLLECTION PAGE</u></b>			
	Total brought forward from P/1			
	Total brought forward from P/2			
	Total brought forward from P/3			
	Total brought forward from P/4			
	Total brought forward from P/5			
	Total brought forward from P/6			
	Total brought forward from P/7			
	Total brought forward from P/8			
	Total brought forward from P/9			
	Total brought forward from P/10			
	Total brought forward from P/11			
	Total brought forward from P/12			
	Total brought forward from P/13			
	Total brought forward from P/14			
	Total brought forward from P/15			
	Total brought forward from P/16			
	Total brought forward from P/17			
	Total brought forward from P/18			
	<b>Total Carried forward to page P/32</b>		<b>Kshs.</b>	-

Item No.	Description	Unit		Amount (Kshs)
	<b><u>COLLECTION PAGE Cont'd</u></b>			
	<b><i>Total brought forward from P/31</i></b>			-
	Total brought forward from P/19			
	Total brought forward from P/20			
	Total brought forward from P/21			
	Total brought forward from P/22			
	Total brought forward from P/23			
	Total brought forward from P/24			
	Total brought forward from P/25			
	Total brought forward from P/26			
	Total brought forward from P/27			
	Total brought forward from P/28			
	Total brought forward from P/29			
	Total brought forward from P/30			
	Total brought forward from P/31			
	Total brought forward from P/32			
	Total brought forward from P/33			
	<b><u>TOTAL AMOUNT</u></b>			
	<b><u>BILL NO. 1 : GENERAL &amp; PARTICULAR PRELIMINARIES</u></b>			
	Carried to Grand Summary		Kshs.	-

---

## **JITUME - ENHANCED KIKUYU DIGITAL HUB**

---

Item	Description	Qty	Unit	Rate	Amount (KShs.)
A	<p><b>DEMOLITIONS &amp; REMOVALS (ALL PROVISIONAL)</b></p> <p><u>NOTE: Site visit is highly recommended since there will be no acceptance of review of cost due to lack of knowledge of any information while quoting in this section; Contractors to allow for providing support of existing structure not to be demolished; maintaining for the duration of the construction period; adapting to allow progress of new works to the satisfaction of the Structural Engineer; all salvaged material</u></p> <p><b>EXISTING HOUSES</b></p> <p>Demolish Existing 11 No. single storey houses: Carefully remove existing permanent and temporary structures comprising of natural stone block walling; galvanized iron sheet walling and roofing on timber trusses; demolition down to ground floor level; grub up foundations; Hand over redeemed material to the employer and cart away resulting</p>	1	Item		-
<i>Carried to Collection</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
<b><u>ELEMENT NO. 1: SUBSTRUCTURES (ALL PROVISIONAL)</u></b>					
A	Clear site off all vegetation including small trees, scrubs and bushes: removal of any materials dumped on site	700	Sm		-
<b><u>EARTHWORKS</u></b>					
B	Excavate to remove top soil starting from existing ground level to reduce levels: average depth of 300mm	700	Sm		-
C	Bulk excavate to remove unsuitable soil commencing from reduced level: not exceeding 1.5m deep from reduced level	880	Cm		-
D	Ditto: exceeding 1.5 but not exceeding 3 m deep from reduced level	350	Cm		-
E	Extra over all excavations for excavating in hard rock class II	270	Cm		-
F	Plank and strut to uphold sides of excavations: keep excavations free from all fallen material		Item		-
G	Keep excavations free from general water: by pumping or any other means including barring off underground springs or		Item		-
H	Remove surplus spoil from site to a place approved by the County Council	1230	Cm		-
I	Approved imported well compacted material filling around foundations	752	Cm		-
<i>Carried to Collection</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>CONCRETE</b>				
	Insitu plain concrete (1:4:8) : in				
A	50 mm thick blinding under column bases	300	Sm		-
B	Ditto: under strip footing	200	Sm		-
	insitu reinforced concrete class C30/35: in				
C	Column bases	250	Cm		-
D	Strip footing	55	Cm		-
E	Columns	16	Cm		-
F	150mm Thick floor bed	533	Sm		-
	rairaced formwork: marine ply: to				
H	Sides: column bases	216	Sm		-
I	Sides: strip footing	72	Sm		-
J	Vertical sides: columns	122	Sm		-
K	Sides: floor beds:over 150 mm but not exceeding 225 mm wide	112	Lm		-
	<u>High yield square twisted steel bar reinforcement to BS 4461 and KS 02-22:1976 (Provisional)</u>				
M	Assorted Reinforcement Bars	14550	Kg		-
N	Mesh reinforcement No. A142 weighing 2.22 kg per square metre: in floor slab: including all necessary supports: allow for laps and bonding to existing slabs	533	Sm		-
<i>Carried to Collection</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>FOUNDATION WALLING</u></b>				
	Natural hard approved quarry stone walling with a crushing strength of 8.0 N/mm <sup>2</sup> ; walling bedded and jointed in cement and sand (1:4) mortar, reinforced with and including 25mm wide x 20 gauge hoop iron at every alternate course as described in:				
A	Foundation walling	620	Sm		-
	<b><u>HARDCORE</u></b>				
B	300mm thick selected hardcore filling of approved inert material in making up levels under floors: spread, leveled, well rammed and consolidated in 150 mm thick (maximum) layers	555	Sm		-
C	Ditto 600 mm murrum layer to raise levels	286	Cm		-
	<b><u>ANTI-TERMITE TREATMENT</u></b>				
D	Termidor 25 EC or other equal approved anti-termite chemical treatment: applied by an approved professional pest control specialist: 10 year warranty: strictly applied in accordance with the manufacturer's instructions	533	Sm		-
	<b><u>BLINDING</u></b>				
E	50 mm Thick approved quality murrum or quarry dust blinding to surfaces of hardcore to receive damp proof membrane	555	Sm		-
	<b><u>DPM</u></b>				
F	1000 Gauge polythene black sheet or other equal and approved polythene sheeting as damp proof membrane laid on blinded hardcore	533	Sm		-
<i>Carried to Collection</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>Plinth Finishes</u></b>				
	20 mm Thick cement and sand (1:4) rendering: on concrete or stonework: wood float finished: to				
A	Plinths: externally	17	Sm		-
	<u>Prepare surfaces and apply undercoat and two finishing coats black bitumastic or other equal approved water resistant paint:</u>				
	on rendered surfaces: to				
B	Plinths: externally	17	Sm		-
<i>Carried to Collection</i>					-
	<b><u>Collection</u></b>				
	From page 1				-
	From page 2				-
	From page 3				-
	From page 4				-
	From page 5 Above				-
<b>TOTAL FOR SUBSTRUCTURES CARRIED TO MAIN SUMMARY</b>					<b>-</b>

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>ELEMENT NO. 1 : SUPERSTRUCTURE CONCRETE</b>				
	<u>RC works to each floor are measured starting from the finished surfaces of the (but not including) slab below upto and including floor slab above</u>				
	In situ reinforced concrete class 25/20: in				
A	Columns	38	Cm		-
B	Beams	74	Cm		-
C	External Steps	5	Cm		-
D	150mm Suspended Slab	792	Sm		-
E	150mm Staircase Landing	20	Sm		-
F	Staircase Waist	55	Sm		-
G	Staircase Steps	4	Cm		-
	<u>Hollow pot suspended slab construction: comprising 380 x 230 x 300 mm high hollow concrete blocks: 150 mm wide vibrated reinforced concrete class 25/20 at 530 centres: 75 mm thick vibrated</u>				
H	reinforced concrete class 25/20 topping reinforced with A142 mesh 300 mm thick overall floor slab	248	Sm		-
	<u>High yield square twisted steel bar reinforcement to BS 4461 and KS 02-22:1976 (Provisional)</u>				
I	Assorted Reinforcement Bars	25081	Kg		-
J	Mesh reinforcement No. A142 weighing 2.22 kg per square metre: in floor slab: including all necessary supports: allow for laps and bonding to existing slabs	248	Sm		-
Carried to Collection					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	Sawn formwork: to Vertical				
A	sides of columns Sides and	521	Sm		-
B	soffits: beams Risers to	898	Sm		-
C	external steps Soffit of	14	Sm		-
D	suspended slab Ditto landing	876	Sm		-
E	Ditto to sloping soffit of staircase waist Risers girth	20	Sm		-
F	75mm -150mm	55	Sm		-
G	Sides of steps cut to profile	159	Lm		-
H	Edges of Suspended Slab	20	Sm		-
I		513	Lm		-
<i>Carried to Collection</i>					
	<b>Collection</b>				
	From page 1				-
	From page 2 Above				-
<b>TOTAL FOR R.C SUPERSTRUCTURE CARRIED TO SUMMARY</b>					<b>-</b>

Item	Description	Qty	Unit	Rate	Amount (KShs.)
<b><u>ELEMENT NO. 2 : WALLING EXTERNAL</u></b>					
<b><u>WALLS</u></b>					
A	Machine cut natural stone: bedded, jointed and pointed in cement sand (1:3) mortar 200 mm Thick walls	1077	Sm		-
B	Horizontal bituminous hessian base to BS 743 type A: or other equal approved damp-proof course: in cement/ sand (1:3) mortar: to 200 mm Wide: under walling	129	Lm		-
C	Extra over for raking and cutting	39	Lm		-
<b><u>INTERNAL WALLS</u></b>					
D	Machine cut natural stone: bedded, jointed and pointed in cement sand (1:3) mortar 200 mm Thick walls 150	782	Sm		-
E	mm Thick walls	68	Sm		-
F	Bituminous hessian base to BS 743 type A: or other equal approved damp-proof course: in cement/ sand (1:3) mortar 200 mm Wide	147	Lm		-
G	150 mm Wide	39	Lm		-
H	Precast concrete coping size 300 x 50mm thick to dwarf walls bedded and jointed in gauged cement sand (1:3) mortar	69	Lm		-
<b><u>Aluminium Curtain Walling</u></b>					
I	Supply And Fix 150 X 80 Mm X 3mm Thick Powder Coated Aluminium Framed Curtain Walling: With 12mm Thick Laminated Glass As Per Attached Specifications:- Curtain Walling Generally; Irrespective Of Shape	40	Sm		-
<i>Carried to Collection</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
A	<p><b><u>Aluminium Partition</u></b></p> <p>Approved colour powder coated aluminium framed partitions :100 x 50 x 2.5mm frames as detailed in Architect's drawings on and including stained softwood sub-frames : complete with glazing beads and neoprane gasket strips : with 5mm thick toughened glass and glazing or other equal and approved, Hermetically sealed with feature beading strips : glazing in weather tight system: all in</p> <p>Aluminium partition</p>	150	Sm		-
<i>Carried to Collection</i>					
	<p><b><u>Collection</u></b></p> <p>From page 3</p> <p>From page 4 Above</p>				-
<b>TOTAL FOR WALLING CARRIED TO SUMMARY</b>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<p><b><u>ELEMENT NO. 3 : DOORS</u></b></p> <p><b><u>PS: ALL DOORS ARE AS PER SCHEDULE PROVIDED BY THE ARCHITECT</u></b></p> <p><b><u>Aluminium Door</u></b></p> <p><u>Powder coated aluminium: hollow sections: glazed door: 100 x 50 x 3mm hollow section top rail and stiles: 100 x 50 x 3 mm hollow section bottom rail: infilled with and including 8 mm thick toughened tinted glass: 20 x 20 mm glazing beads and rubber washleather gaskets</u></p>				
A	<p>Supply and fix aluminium glazed double door size 1800 x 3000mm high: complete with and including appropriate iron mongary</p>	1	No		
	<p><b><u>Steel Door</u></b></p> <p><u>Supply, Assemble and fix Mild steel pannelled doors: 100 x 50 x 3mm Thick frame plugged to concrete or blockwork with 100mm long fishtailed 25 x 25 x 2mm Thick angle section, 50 x 50 x 3mm Thick hollow section stiles, top, bottom and middle rails at 600mm centres vertical and 1016mm centers horizontal, angles cut, mitred and welded; grilled upper panel infilled with 50 x 50 x 4mm Thick mild steel square hollow sections; lower panel infilled with 16 gauge mild steel plate complete with 'multi - lock ' 4 way lock model 285, high security multi lock cylinder protector with stainless steel door handles as 'Union' or equal and approved, one coat manufacturer's primer; all welding ground to smooth finish, all to the satisfaction of</u></p>				
B	<p>Single door in two openable leaves: overall size 1000 x 3000mm high Double door in two openable leaves: overall size 1800 x 3000mm high Glazing</p>	3	No		
C	<p><u>4mm thick one way sheet glass and glazing in metal putty in:</u></p>	4	No		
E	<p>Panes over 0.1sm but not exceeding 0.50sm</p>	60	Sm		
<i>Carried to Collection</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>Flush Doors</b>				
	50 mm thick solid cored flush doors: hardwood lipped all round: plywood faced both sides:				
A	Door size 900 x 2100mm high Door size	32	No		-
B	800 x 2100mm high	11	No		-
C	Double Door size 1800 x 2100mm high Double	5	No		-
D	Door size 1400 x 2100mm high <b>Duct Doors</b>	4	No		-
	HDF Duct doors size 600mm wide x 3000mm high Wrot				
E	Cypress: prime grade	7	No		-
	150 x 50mm door frame with three labours 40 x 15				
F	mm Architrave: plugged	458	Lm		
G	30 x 30 mm Quadrant: plugged	458	Lm		
H	<b>Ironmongery</b>	458	Lm		
	<u>Supply and fix English "Union" or other equal approved</u> ironmongery: matching screws: locks to include a set of 3 keys				
	2-Lever mortice door lock complete with aluminium handles and set lever furniture				
I	38 mm Diameter rubber door stop: cat. no. 8400 100 x 75mm	52	No		
J	heavy duty steel hinges	70	No		
K	100 x 75mm brass butt steel hinges	63	Prs		
L		44	Prs		
<i>Carried to Collection</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
A	250 x 25 x 2mm thick L-shaped mild steel fixing cramps one end split and fanged and built into natural stone wall other end drilled and screwed to frame  <u>Prepare and apply one coat of aluminium wood primer paint equal and approved: on timber surfaces into contact with masonry or concrete: to</u>  General timber surfaces 100 - 200mm girth	236	No		
B	<u>Prepare surfaces and apply undercoat and two finishing coats silk vinyl emulsion paint equal approved on wood surfaces: to</u>  General timber surfaces 0 - 100mm girth General	458	Lm		
C	timber surfaces 100 - 200mm girth General timber	458	Lm		
D	surfaces	458	Lm		
E	<u>Prepare surfaces and apply three coats gloss oil paint equal approved: on steel surfaces: to</u>  General surfaces of steel casement surfaces internally Ditto, externally	299	Sm		
F		31	Sm		
G		31	Sm		
<i>Carried to Collection Below</i>					
	<b>Collection</b>  From page 5  From page 6  From page 7 Above				
<b>TOTAL FOR DOORS CARRIED TO SUMMARY</b>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>ELEMENT NO. 4 : WINDOWS</u></b>				
	<b><u>PS: ALL WINDOWS ARE AS PER SCHEDULE PROVIDED BY THE ARCHITECT</u></b>				
	Approved pre-cast concrete cill: bedded and jointed in cement (sand (1:3) mortar: pointed in matching coloured cement 275 x 75 mm				
A	Thick cill; once weathered and throated 175 x 50 mm Window	174	Lm		
B	board plugged	174	Lm		
C	12 mm quadrant cover moulded ditto	174	Lm		
	<u>Prepare and apply one coat of aluminium wood primer: on timber surfaces in contact with concrete or masonry:</u>				
D	Surfaces: 200 - 300mm girth	174	Lm		-
	<u>Knot prime stop and prepare and apply three coats of clear polyurethane varnish to</u>				
E	Surfaces: 200 - 300mm girth	174	Lm		-
<i>Carried to Collection Below</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>Steel Windows</b>				
	<u>steel casement windows complete with hinges, buglar proof and building lugs to masonry or concrete and incorporating louvered permanent ventilation panels infilled with approved mosquito gauze wire netting, primed with onecoat or re-oxide primer, comprising standard T-section framing, SHS 50x25X3mm and Intermediate members 25x25x3mm MS T-Section including all necessary couling mulions, transomes, metal gauge permanent vents and afterwards easing and oiling and adjusting opening lights on :-</u>				
A	Window overall size 1500 x 2400mm high	23	No		
B	Window overall size 3000 x 2400mm high	26	No		
C	Window overall size 4500 x 2400mm high	1	No		
D	Window overall size 1000 x 2400mm high	1	No		
E	Window overall size 3600 x 900mm high	1	No		
F	Window overall size 1900 x 2400mm high	3	No		
G	Window overall size 2400 x 900mm high	1	No		
H	Window overall size 8000 x 900mm high	3	No		
IJ	Window overall size 900 x 900mm high	12	No		
K	Window overall size 1500 x 900mm high	4	No		
	Window overall size 1500 x 2400mm high	2	No		
	Glazing				
L	<u>5mm thick one way sheet glass and glazing in metal putty in:</u>				
M	Panes over 0.1sm but not exceeding 0.50sm	324	Sm		
	Ditto 5mm thick obscure	23	Sm		
<i>Carried to Collection</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	Prepare surfaces and apply three coats gloss oil paint equal approved: on steel surfaces: to				
A	General surfaces of steel casement surfaces internally Ditto, externally	347	Sm		
B		347	Sm		
<i>Carried to Collection Below</i>					
	<p><b>Collection</b></p> <p style="text-align: center;">From page 8</p> <p style="text-align: center;">From page 9</p> <p style="text-align: center;">From page 10 Above</p>				
<b>TOTAL FOR WINDOWS CARRIED TO SUMMARY</b>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>ELEMENT NO. 5: ROOFING (All Provisional) ROOF (All Provisional)</u></b>				
	<b><u>ROOF STRUCTURE</u></b>				
	<b><u>Mild steel roof trusses:</u></b> with and including all connections as per the Structural Engineer's details				
	The following in Truss '1-7': various spans, various height and hoisting 9000 mm high from existing ground level				
A	75 x 75 x 3mm SHS Joist 75 x 75	1228	Kg		-
B	x 3mm SHS Rafters	1436	Kg		-
C	50 x 50 x 3mm SHS Kingpost, Struts and ties Other members in roof structure	1434	Kg		-
D	100 x 50 x 20 x 2mm Z Purlins	1815	Kg		-
E	Wall plate: fixed to concrete or masonry with 12mm dia. x 200mm long m.s. bolts at 1000 mm centres (m/s)	1131	Kg		-
F	12mm dia. x 200mm long m.s. high density rag bolt built into beam: including nut and washer	170	No		-
	<b><u>ROOF COVERING</u></b>				
	<u>IT5 gauge 28 roofing sgeets on treated 50 x 50 s/w timber battens on s/w timber joists and trusses to S.E.'s details (30 deg pitch)</u>				
G	Roof covering	717	Sm		-
H	Ridge/hip cap	36	Lm		-
I	Valley Flashing	48	Sm		-
J	Fascia and Barge Board Covers	119	Lm		-
<i>Carried to Collection Below</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>Roof Finishes</u></b>				
	UPVC: prime grade				
A	25 mm thick UPVC T&G board to eaves: tongued and grooved joints: nailed on and including 50 x 50 mm long framing	72	Sm		-
B	200 x 40 mm Fascia board on 50 x 50mm s.w. framing	119	Lm		-
	<u>Prepare surfaces: and apply undercoat and two finishing coats first grade gloss enamel paint other equal approved: on wooden surfaces: to</u>				
C	Fascia boards: surfaces over 200 but not exceeding 300 mm girth	119	Lm		-
	<b><u>Water Proofing Membrane</u></b>				
	Screed/ plaster: waterproof cement and lightweight aggregate (1:4):				
	on horizontal concrete surfaces: laid to falls				
D	50mm Thick screed: to flat roof: to receive APP (ms)	86	Sm		-
	<u>APP Membrane to weigh 4 kg/sq.mt (or 3 mm thick): stone chipped finish: 100 mm side laps and 150 mm end laps: bonding between layers: with and including bituminous primer and bonding to cement sand screed base (m/s): laid to falls</u>				
E	To flat roofs	86	Sm		-
	<u>The Following Flat roof concrete tiles fixed with approved adhesive. laid and jointed with waterproofing bituminous compound</u>				
F	20mm thick interlocking Concrete tiles of size 225 x 225mm	71	Sm		-
<i>Carried to Collection Below</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>Rainwater goods</u></b>				
A	UPVC gutter 150 x 100mm with bracket supports at 600mm c/c 300 mm	78	Lm		-
B	diameter fulbora outlet	3	No		-
C	100 mm diameter downpipe	90	Lm		-
D	Extra over down pipe for swan neck Ditto for	10	No		-
E	shoe	10	No		-
<i>Carried to Collection Below</i>					
	<b><u>Collection</u></b>				
	From page 11				
	From page 12				
	From page 13 Above				
<b>TOTAL FOR ROOFING CARRIED TO SUMMARY</b>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b><u>ELEMENT NO. 6: FINISHES</u></b>				
	<b><u>Floor finishes</u></b>				
	Cement and sand (1:4) screed with approved hardener: to concrete surfaces: To receive Nonslip Ceramic Floor tiles				
A	32 mm thick screed	1443	Sm		-
B	Ditto To Skirting 100mm high	910	Lm		
	<u>Ceramic floor tiles fixed with cement/waterproof tile adhesive to Architect's pattern: : colour to architect's scheme: Including grouting joints in waterproof grout: in</u>				
C	To floors:	1151	Sm		
D	Ditto Skirting	731	Lm		
	<u>Non-slip Ceramic floor tiles fixed with cement/waterproof tile adhesive to Architect's pattern: : colour to architect's scheme: Including grouting joints in waterproof grout: in</u>				
E	To floors:	292	Sm		
F	Ditto Skirting	180	Lm		
	<b><u>Internal Wall Finishes</u></b>				
	Cement, and sand (1:4)render: to walls: in				
G	10 mm Thick backing: to receive Ceramic tiles	305	Sm		-
	<u>Ceramic wall tiles fixed with cement/waterproof tile adhesive to Architect's pattern: colour to architect's scheme: Including grouting joints in waterproof grout:</u>				
H	To walls	305	Sm		-
<i>Carried to Collection Below</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<u>Plaster: 9 mm first coat of cement/lime putty/sand (1:2:9); 3 mm second coat of cement/lime putty/sand (1:1:6); steel troweled on masonry or concrete:</u>				
A	To Internal Walls To	2936	Sm		-
B	Columns	521	Sm		-
C	To Opening Reveals Soffit	221	Sm		-
D	of suspended slab Sloping	1124	Sm		-
E	Soffit of Waist Soffit of	55	Sm		-
F	Landing	20	Sm		-
G	Edges of waist	20	Sm		-
	<u>Prepare surfaces and apply undercoat and two finishing coats silk vinyl emulsion paint equal approved on plastered masonry or concrete surfaces: to</u>				
	Plastered walls and concrete surfaces: internally To				
H	Columns	2936	Sm		-
I	To Opening Reveals Soffit	521	Sm		-
J	of suspended slab Sloping	221	Sm		-
K	Soffit of Waist Soffit of	1124	Sm		-
L	Landing	55	Sm		-
M	Edges of waist	20	Sm		-
N		20	Sm		-
<i>Carried to Collection Below</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>External wall finishes</b>				
	<u>Plaster: 9 mm first coat of cement/lime putty/sand (1:2:9); 3 mm second coat of cement/lime putty/sand (1:1:6); steel troweled on masonry or concrete: to</u>				
A	Walls and concrete: externally	1532	Sm		-
	<u>Prepare surfaces: apply undercoat and two finishing coats. Permaplast emulsion paint equal approved: to steel trowelled plastered surfaces</u>				
	Plastered walls and concrete surfaces: externally				
B	<u>Extra over stone walls for wire brushing and pointin in cement and sand to horizontal key joints</u>	1532	Sm		-
	Externally to bush-hammered stone walling				
C	<b>Chip Board ceiling</b>	0	Sm		-
	<u>9mm thick chip board to ceilings: fixed with and including 50 x 50 mm brandaring</u>				
	Flush and bulkhead Ceiling:				
D	Ditto but to Cornice	427	Sm		-
E	<u>Prepare surfaces and apply undercoat and two finishing coats silk vinyl emulsion paint equal approved on gypsum surfaces: to</u>	393	Lm		-
	Flush and bulkhead Ceiling:				
F	Ditto but to Cornice	427	Sm		-
G	Extra over for forming removable access trap door size 750 x 750mm with 100 x 50mm sawn treated cypress trimming joists 120 x 25mm wrot cedar frame all round	393	Lm		-
H	and 12mm soft board removable panel set loose on top of framing including painting	17	No		-
<i>Carried to Collection Below</i>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
A	<b>Pavings</b> Supply and lay 600 x 600mm medium duty paving blocks round the Building including laying, spreading and compacting 100mm thick approved sand bed blinding to approval.	117	Sm		-
<i>Carried to Collection Below</i>					
	<b>Collection</b>  From page 14  From page 15  From page 16  From page 17 Above				-
<b>TOTAL FOR FINISHES CARRIED TO SUMMARY</b>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>ELEMENT NO. 7: JOINERY FIXTURES (ALL PROVISIONAL)</b>				
	<b><u>PS: THE EMPLOYER RETAINS THE RIGHT TO SUBCONTRACT ANY OR ALL OF THE WORKS DESCRIBED TO A SPECIALIST SUBCONTRACTOR AT NO COST TO THEMSELVES</u></b>				
	<b><u>PS: ALL FIXTURES ARE AS PER SCHEDULE PROVIDED BY THE ARCHITECT</u></b>				
	<b><u>JOINERY</u></b>				
	<b><u>Low Level Cabinets</u></b>				
A	Supply and fix low level kitchen cabinets overall size 6300 x 600 x 900mm high comprising 20mm thick laminated MDF in 1 No. Shelf; 5 No. cabinet doors average size 550 x 800mm high; complete with iron mongery for doors; Worktops and other concrete works (m/s); All to Architect's detail and approval	1	No		
B	Ditto but overall size 5000 x 600 x 900mm high; with 4 No. cabinet doors average size 500 x 800mm high	1	No		
C	Ditto but overall size 1800 x 600 x 900mm high; with 4 No. cabinet doors average size 500 x 800mm high	4	No		
	<b><u>High Level Cabinets</u></b>				
D	High level Kitchen cabinets overall size 6300 x 350 x 700mm high in 20mm Thick laminated MDF with 4 No. cabinet doors each size 550 x 700mm high complete with iron mongery, bearers, plugs etc; All to Architect's detail and approval	1	No		
E	Ditto but overall size 2600 x 350 x 1050mm high	1	No		
<i>Carried to Collection</i>					-

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<b>CONCRETE</b>				
	In situ concrete (1:2:4): vibrated: reinforced				
A	100 mm thick reinforced concrete walls to achieve support for worktop	9	Sm		-
B	100 mm thick suspended reinforced concrete worktop including recessing 100 mm deep into wall to achieve support for worktop	8	Sm		-
C	Extra over ditto for making hole size 800 x 450mm for double bowl sink				
D	Mesh reinforcement No. A98 weighing 1.54 kg per square metre: in worktop: including all necessary supports	14	No		-
	In situ concrete (1:3:6):	8	Sm		-
E	100 mm Thick bottom mass concrete plinth Wrot formwork	8	Sm		
F	Edges of 100 mm plinth <u>20mm thick Approved first quality Ceaserstone top with rounded edge: allow a rate of Kshs. 15,000 per square metre for purchase: add for wastage, transport and fixing on site: allow for bedding and jointing in cement mortar (1:4): grouting joints with matching cement</u>	25	Lm		
	Worktop				
G	Extra over ditto for making hole size 800 x 450mm for double bowl sink	8	Sm		
H		14	No.		
<i>Carried to Collection</i>					
<b>Collection</b>					
From page 18					
From page 19 Above					
<b>TOTAL FOR JOINERY FIXTURES CARRIED TO SUMMARY</b>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
<b><u>ELEMENT NO. 8 : BALUSTRADING</u></b>					
<u>Staircase Balustrading</u>					
A	1200mm high overall milds steel balusters balustrading; comprising of 50 x 1.5 mm CHS moulded handrail:25 mm diameter mild steel bars and 2No. middle rails; 900mm high x 75 x 4mm tapering to 40mm mild steel balustres at 300mm centers: one end of balustres grouted to concrete floor and other end screwed to handrail all as per architect's detail	53	Lm		-
B	Ditto to balconies but 450mm high Ditto to retaining wall 900mm high	18	Lm		-
C		114	Lm		-
<u>Prepare surfaces and apply three coats gloss oil paint equal approved: on steel surfaces: to</u>					
D	General surfaces of steel balustrading	346	Sm		
<b>TOTAL FOR BALUSTRADING CARRIED TO SUMMARY</b>					

Item	Description	Qty	Unit	Rate	Amount (KShs.)
	<u>SUMMARY</u>				
1	SUBSTRUCTURE				
2	RC SUPERSTRUCTURE				
3	WALLING				
4	DOORS				
5	WINDOWS				
6	ROOFING				
7	FINISHES				
8	JOINERY FIXTURES				
9	BALUSTRADES				
TOTAL FOR GROUND FLOOR CARRIED TO MAIN SUMMARY					-

## KIKUYU DIGITAL HUB

PLUMBING , DRAINAGE, FIRE PROTECTION &  
AIR CONDITIONING SUPPLY, INSTALLATION,  
TESTING AND COMMISSIONING WORKS

## KIKUYU DIGITAL HUB SANITARY INSTALLATION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT ( Ksh)
A	Supply,deliver,install,test and commision the following sanitary appliances complete with all the accessories including all connections to the services, waste, joining to water supply overflows,supports and all plugging and screwing to walls and floors. Note: 1. All sanitary fittings shall be in approved colour 2. The model and Ref No: indicated is only a guide to the type and quality of the fittings 3. Equipment & Approved models may be acceptable				
	<b><u>Water Closet</u></b>  WC with cistern and all accessories as PLAYA Ideal Standard Size 480x350 in white complete with Heavy Duty Seat and cover with Stainless Steel hinges suitable for use with flush-button flush mechanism	No.	8		-
B	<b><u>Ground Floor</u></b>	No.	6		-
	<b><u>Second Floor</u></b>				
C	<b><u>Wash hand basin ( WHB )</u></b> Countertop Washbasin size 450mm with one central taphole, fixing brackets and Semi-Pedestal for 450mm basin as Space Counter Ideal Standard complete with 32mm diameter plastic bottle P- trap with 75 mm seal with extension to the wall and wall flange, with a chrome mono mixer	No.	10		-
	<b><u>Ground Floor</u></b>	No.	6		-
D	<b><u>Angle Valves for WHB &amp; WC</u></b> Schlosser Germany: Angle Valve 1/2"x3/8" CP #1712 with 350 mm long service connection	No	30		-
	<b><u>Flexiable Tubing</u></b> 15mm diameter × 300mm long fexiable connectors complete with chrome angle valves	No	30		-
	TO COLLECTION PAGE FOR SANITARY FITTINGS			-	-

## KIKUYU DIGITAL HUB SANITARY INSTALLATION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<b>Toilet Paper Holder</b> Toilet Paper Holder with round lid cover polished chrome finish and stainless steel lid as Mediclinic or approved equivalent.	No.	16		-
B	<b>Paper Towel Dispenser</b> Surface mounted Paper Towel Dispenser with a stainless steel with a lock and a special key for opening as Mediclinic or approved equivalent.	No.	8		-
C	<b>Mirror</b> Plain size bevelled 6mm thick glass plate mirror size 1800mm x 600mm. Complete with foam lining and dome headed chrome plated fixing Screws	No.	4		-
	Plain size bevelled 6mm thick glass plate mirror size 600mm x 600mm. Complete with foam lining and dome headed chrome plated fixing Screws	No.	4		-
D	<b>Soap dispenser</b> Wall mounted Stainless Steel Soap dispenser with a capacity of about 0.6 Litre having a press action Soap release mechanism complete with fixing screws as Tapis or approved equivalent	No.	12		-
E	<b>Kitchen Sink</b> kitchen sink Single bowl,single drainer Stainless Steel complete with 40mm diameter chrome plated bottle trap,40mm waste fitting and single pillar type kitchen sink	No.	1		-
	<b>Ground Floor</b>	No.	1		-
F	<b>Floor</b>	No	2		-
G	<b>Angle Valves for Kitchen Sink</b> Schlosser Germany: Angle Valve 1/2"x3/8" CP #1712 with 350 mm long service connection	No.	2		-
	<b>Urinal Bowl</b> 450x300x375mm white ceramic urinal bowl set complete with shared cistern, spreaders,40mm heavy duty plastic bottle traps and 40mm diameter chrome plated outlet with grating firmly fixed on the wall with chrome plated screws. Pipe work to be provided with adequate fasteners to the walls. The fittings shall be Orient or equal and approved.	No.	3		-
H	<b>Ground Floor</b> <b>Second Floor</b> <b>Urinal Divider</b> Divider deal Standard Ceramic Urinal	No	5		-
	TO COLLECTION PAGE FOR SANITARY FITTINGS				-

## KIKUYU DIGITAL HUB SANITARY INSTALLATION

	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
A	<p><b><u>Disabled Toilets</u></b>  <b><u>Water Closet</u></b></p> <p>WC with cistern and accessories as PLAYA Ideal Standard Size 480x350 in white complete with Heavy Duty Seat and cover with Stainless Steel hinges suitable for use with flush-button flush mechanism</p>	No.	2		-
B	<p><b><u>Wall hung WHB in disabled toilets</u></b></p> <p>White Wall Hung Washbasin size 450mm with one central taphole, fixing brackets and Semi-Pedestal for 450mm basin as Ideal Standard San Remo No. E-7420 complete with 32mm diameter plastic bottle P- trap with 75 mm seal with mono mixer.</p>	No.	2		-
C	<p><b><u>Disabled Toilet Grab Rails</u></b></p> <p><b>Mediclinics</b> Stainless Steel AISI 304, 1.5mm thick and 32mm diameter, 735mm long, satin finish swing-up grab bar with toilet roll holder hook bar and complete with 3mm SS mounting flange and screws Ref BG0800CS</p>	No.	2		-
D	<p><b>Mediclinics</b> Stainless Steel AISI 304, 1.5mm thick and 32mm diameter, 610mm long between flange centres, satin finish straight grab bar and complete with 3mm SS mounting flanges and screws Ref BR0600CS</p>	No.	2		-
E	<p><b><u>Angle Valves for WHB</u></b></p> <p>Schlosser Germany: Angle Valve 1/2"x3/8" CP #1712 with 350 mm long service connection</p>	No	2		-
	TO COLLECTION PAGE FOR SANITARY FITTINGS				-

KIKUYU DIGITAL HUB SANITARY INSTALLATION

	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<p>COLLECTION PAGE FOR SANITARY FITTINGS</p> <p>-----</p> <p>-----</p>				<p>-</p> <p>-</p> <p>-</p>
	<p>SUB-TOTAL FOR KIKUYU DIGITAL HUB SANTARYWARE NSTALLATION</p>				-
	<p>KIKUYU DIGITAL HUB SUMMARY OF COSTS PAGE</p>				-

KIKUYU DIGITAL HUB PLUMBING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>INTERNAL PLUMBING (COLD WATER)</b>				
	Supply,deliver, install,test and commission the following plumbing installation as described and shown on the drawing. All pipework and fittings in this installation to be PP-R.Tenderers must allow for jointings,couplings,pluggings,clampings,reducers,mortices,hangers,clippings etc necessary for proper functioning of the installation when pricing.				
	<b>PPR Pipework</b>				
A	25mm diameter pipework	Lm	40		-
B	32mm diameter pipework	Lm	120		-
C	50mm diameter pipework	Lm	47		-
	<b>Bends (90 deg elbow)</b>				
D	25mm diameter bend	No.	23		-
E	32mm diameter bend	No.	21		-
F	50mm diameter bend	No.	12		-
	<b>Valves</b>				
G	50mm gate valves	No.	2		-
H	32mm gate valves	No.	8		-
I	Non return valve	No.			-
	<b>Reducers</b>				
J	32x25mm PP-R reducing socket	No.	12		-
	32x50mm PP-R reducing socket	No.	10		-
	<b>Tees</b>				
K	25 x 25 x 25mm equaltee	No.	18		-
L	32 x 32 x 25mm tee	No.	20		-
M	32 x 32 x 32mm equaltee	No.	8		-
	<b>Union</b>				
N	50mm diameter pipe unions	No.	12		-
O	32mm diameter pipe unions	No.	30		-
	<b>Adaptor/Brass male Threaded</b>				
M	32mm brass threaded adapter	No.	8		-
N	25mm brass threaded adapter	No.	20		-
	<b>Adaptor/Brass Female Threaded</b>				
O	32mm brass threaded adapter	No.	8		-
P	25mm brass threaded adapter	No.	20		-
	CARRIED FORWARD TO COLLECTION PAGE				-

KIKUYU DIGITAL HUB PLUMBING

	DESCRIPTION		QTY	RATE	AMOUNT
A	<p><b>Surface Water Storage Tank (10000L)</b></p> <p>Supply,deliver and install vertical close end plastic moulded tank of capacity 10000 litres and diameter 285cm and of height 200cm. The tank to be assembled with 25mm medium pressure ball valve,cover and having screwed connections for inlet,outlet, overflow, drain pipes and any necessary item for its proper functioning. The tank shall be mounted on a flat ground slaB and shall be KENTANK model or approved equivalent.</p>	No.	1		-
B	<p><b>Roof Top Water storage Tanks</b></p> <p>Supply,deliver and install vertical close end plastic moulded three tanks of capacity 4000Litres and diameter 173cm and of height 197cm. The tanks to consist of cover and having screwed connections for inlet,outlet, overflow, drain pipes and any necessary item for its proper functioning.The tanks to be supplied with 50mm diameter brass float valves.The tanks shall be mounted on a flat roof and shall be KENTANK model or approved equivalent. One tank to be isolated for fire suppression purposes</p>	No.	3		-
C	<p><b>Water Booster Pump</b></p> <p>Supply , Install &amp; Commission (1 No. Pumps), surface booster Pumps with a capacity of 75 l/min at 2 bars with electrical controls. Inclusive of all connection accessories and non return valve</p>	No.	1		-
D	<p><b>Water Meter</b></p> <p>Volumetric Rotary Piston Water Meter ( Cold Water ) 1" Maximum pressure 16 bar. CE approval. Accuracy class 2. Register is sealed with a special liquid to keep a clear reading in long term service. Mechanical parts use of high-quality material to ensure a stable characteristic as " B Meter "</p>	No.	1		-
E	<p><b>Pump and Meter Chamber</b></p> <p>600x450mm masonry meter and valve chamber complete with with recessed top including heavy duty 600 x 450mm wide to BS 497 &amp; 556 including angle framing</p>	No.	1		-
	CARRIED FORWARD TO COLLECTION PAGE				-

KIKUYU DIGITAL HUB PLUMBING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSH
	COLLECTION PAGE FOR PLUMBING PIPEWORK				-
	SUB-TOTAL FOR KIKUYU DIGITAL HUB PLUMBING INSTALLATIONS				-
	KIKUYU DIGITAL HUB SUMMARY OF COSTS PAGE				-

KIKUYU DIGITAL HUB FOUL DRAINAGE

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>FOUL DRAINAGE</b>				<b>KSH</b>
	Supply, deliver,install,test and commission Upvc soil system to BS 4660 and BS 4515 and MuPVC waste system to BS5255 with screwed and socketed joints to BS21. Solvent welded joints shall be per the system's manufacturer's written instructions. Tenderers must allow in their pipework prices for all the couplings, clippings,joints etc. for the proper and satisfactory functioning of the system.				
	<b>PIPING</b>				
A	150mm diameter heavy duty grey uPVC pipe	Lm	70		-
B	100mm ditto	Lm	66		-
C	70mm ditto	Lm	6		-
D	50mm ditto	Lm	40		-
E	40mm ditto	Lm	40		-
	<b>Floor Traps</b>				
F	100×50mm steel floor trap and grating	No.	8		-
	<b>Bends</b>				
G	100mm diameter sweep bend 90 deg	No.	20		-
H	50mm diameter sweep bend 90 deg	No.	10		-
I	50mm diameter sweep bend 45 deg	No.	11		-
	40mm diameter sweep bend 90 deg	No.	30		-
	<b>Tees</b>				
J	100×100×100mm tee 90 deg	No.	10		-
K	100×100×50mm tee 90 deg	No.	4		-
L	50×50×50mm tee 135 deg	No.	6		-
M	50×50×50mm tee 90 deg	No.	6		-
N	40×40×40mm tee 90 deg	No.	30		-
	<b>WC/ Urinal Connectors</b>				
O	100 mm diameter WC flexible connector	No.	16		-
P	50mm diameter urinal flexible connector	No.	6		-
	<b>Gully Traps</b>				
Q	Gully trap comprising of 100mm diameter golden brown uPVC gully piece, 100mm diameter uPVC trap spigot outlet with screws and washers, and 300 x 300mm masonry gully trap chamber with mild steel plate and a heavy duty iron cover.	No.	5		-
	<b>Manhole</b>				
R	600×450mm manhole with rectangular reinforced concrete heavy duty cover . Manual depth to be determined on site but to a minimum of 600mm	No.	8		-
	<b>Excavation</b>				
S	Excavate trench for 150mm pipe not exceeding 1500mm deep and average 400mm deep,part return in,fill and surplus cart away.	Lm	58		-
	<b>Plumbing and Drainage Connections</b>				
Y	Allow for connection of sanitary fittings to the plumbing and drainage pipework	Item	1		-
U	Testing and commissioning Allow for testing and commissioning of foul drainage system	Item	1		-
	TO COLLECTION PAGE FOR FOUL DRAINAGE				-

KIKUYU DIGITAL HUB FOUL DRAINAGE

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	COLLECTION PAGE FOR FOUL DRAINAGE				-
	SUB-TOTAL FOR KIKUYU DIGITAL HUB DRAINAGE INSTALLATIONS				-
	TO KIKUYU DIGITAL HUBS SUMMARY OF COSTS PAGE				-

KIKUYU DIGITAL HUB FIRE PROTECTION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>HOSEREEL INSTALLATIONS</b>				
	Supply, deliver ,install, paint,test and commission the appropriate colour code for the following fire fighting installation and equipment as described and shown on the contract drawings or as shall be instructed by the Engineer. Tenderers should allow for all fittings, jointings couplings including unions and clamps where necessary for the proper functioning of the installation when pricing.				
	<b>Hosereel</b>				
A	Automatic,non-recessed swing type hose reel as Angus fire Armour model-1 or equal approved equivalent. Hose reel shall have the following characteristics - Full 180 degree swing,delivery valve 25mm BSP inlet to BS5274- 25mm×30mm long hose pipe-mild steel feed pipe to BS1387 class"B"	No.	3		-
	<b>Hosereel Associated Pipe work</b>				
	Supply, deliver and install galvanized mild steel pipes to BS 1387 class 'B' with screwed and socketed joints to BS 134 and 1256 and of approved manufacturer with galvanizing to BS 729.	LM	20		-
B	50mm diameter pipework	LM	7		-
C	25mm diameter pipework				
	<b>Extra Over Galvanised Mild Steq Pipework</b>				
	<b>Bends and elbows</b>	No.	12		-
D	50mm diameter 90 deg bend	No.	4		-
	25 mm diameter 90 deg bend				
F	<b>Tees</b>				
	50 mm tee				
	<b>Reducers</b>	No.	8		-
	50x 25mm diameter reducer				
	<b>Valves</b>	No.	1		-
	<b>50mm gate valve as Pegler</b>	No.	1		-
	50mm non-return valve	No.	3		-
	25mm gate valves				
	CARRIED FORWARD TO COLLECTION PAGE				-

KIKUYU DIGITAL HUB FIRE PROTECTION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>Unions</b>				
A	50mm diameter pipe union	No.	6		-
	25mm diameter pipe union	No.	6		-
	<b>Fire cabinets</b>				
B	Supply,deliver and install (3 No.) fire cabinets	No.	3		-
	<b>Painting</b>				
C	Allow for painting of the hosereel installation with 2 coats of super gloss paint on a primer coats per F.O.C rules, 29th Edition with latest ammendments and to the approval of the Engineer.	Item	1		-
	<b>Portable Fire Extinguishers</b>				
	Supply, deliver, install, test and commission the following portable fire extinguishers and conforming to BS EN 3 / BS 1449.				
D	5kg carbon dioxide gas portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets. as "NAFFCO "	No	3		-
F	9L water based portable fire extinguisher complete with pressure gauge, initial charge and mounting brackets .as "NAFFCO "	No	3		-
G	Supply and fix signs indicating the words "FIRE POINT" in 80mm	No	3		-
H	high letters	No	2		-
	Fire Blanket 1.2 x 1.2m Certified to BS EN 1869:1997				
	Testing and Commissioning				
I	Allow for testing and commissioning of the Hosereq and portable existinguisher works Installation works to the satisfaction of the Engineer	Item	1		-
	CARRIED FORWARD TO COLLECTION PAGE				-

KIKUYU DIGITAL HUB FIRE PROTECTION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT KSH
	<p>COLLECTION PAGE FOR HOSEREEL INSTALLATIONS</p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>				<p>-</p> <p>-</p>
	<p>SUB-TOTAL FOR KIKUYU DIGITAL HUB HOSEREEL &amp; PORTABLE EXISTINGISHERS INSTALLATIONS</p>				-
	<p>KIKUYU DIGITAL HUB SUMMARY OF COSTS PAGE</p>				-

KIKUYU DIGITAL AIR CONDITIONING

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>SERVER ROOM AIR CONDITIONING UNIT</b>				
A	Supply,deliver,install, test and commission (2 No.) one duty and one standby wall-mounted Air Conditioning system with a capacity of 7000 BTU complete with a corresponding (2 No.) outdoor units, copper pipes,insulation, wired control,remote control,drainage and other accessories needed for it function properly. The maximum distance between indoor and outdoor unit is 12 metres	No.	1		-
	<b>KITCHEN HOOD</b>				
B	Supply, deliver , install and commission prefabricated Kitchen Hood, Extraction rate: at 410 m3/h, hence quickly ensuring optimal kitchen air quality, Halogen lighting: for optimal, energy efficient illumination of the hob, Power supply 110Watts c/w 3 removable grease filters, Especially quiet: high performance at just 67 dB. The kitchen hood to be as Bosch model DWW09W460B	No.	2		-
C	Allow for testing and commissioning of server room air conditioning unit and kitchen hood	Item	1		-
	-----				
	SUB-TOTAL FOR KIKUYU DIGITAL HUB SERVER ROOM AIR CONDITIONING UNIT				-
	TO KIKUYU DIGITAL HUB SUMMARY OF COSTS PAGE				-

KIKUYU DIGITAL HUB SUMMARY

<b>KIKUYU DIGITAL HUB PRICE SUMMARY</b>		<b>AMOUNT KSHs</b>
<b>2</b>	<b>Bill No. 2 Sanitaryware Installation,testing and commissioning;.....</b>	-
<b>3</b>	<b>Bill No. 3 Plumbing Installation,testing and commissioning.....</b>	-
<b>4</b>	<b>Bill No. 4 Drainage Installation,testing and commissioning.....</b>	-
<b>5</b>	<b>Bill No. 6 Hosereel Installation &amp; Portable Extinguishers Installation,testing and commissioning.....</b>	-
<b>6</b>	<b>Bill No. 7 Air conditioning unit Installation,testing and commissioning.....</b>	-
<b>Total for Plumbing , Drainage &amp; Fire Fighting Installation Works</b>		

---

## **ELECTRICAL WORKS**

---

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB**  
**BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KS HS)
	<b>GROUND FLOOR</b>				
(i)	<b>LIGHTING INSTALLATIONS</b>				
	<b>Supply and install ,test and commission the following as described below:-</b>				
1.01	Lighting points wired in 3 X 1.5 sq. mm single core copper cables drawn in 20 mm diameter pvc heavy gauge conduits complete with with necessary accessories				
	(i) One way Switching	No	128		
	(ii) Two way switching	No	19		
1.02	10 Amps moulded flush mounted plate switches as Mk or an approved equivalent:-				
	(i) One gang two way	No	18		
	(iii) Two gang two way	No	8		
	(iv) Three gang one way	No	0		
1.03	<b>Install, test and commission the following complete with cool white (4000K) LED lamps, control gear/drivers, suspension kit, minimum of 30,000 life hours atleast 3 years warranty and all necessary fixing accessories</b>				
	<b>TYPE B1-</b> 18Watts 150mm Surface mount Circular 6500K Panel Downlight with low depreciation SMD LEDs and drivers As Phillips/Osram or equivalent and Approved	No	45		
	<b>TYPE B1 E</b> As Type B1 above but equipped with emergency kit	No	5		
	<b>TYPE D</b> diameter surface mounted cylindrical 9W 6500K LED panel downlighter with low glare diffuser	No	14		
	<b>TYPE D E</b> As above but equipped with emergency kit	No	3		
	<b>TYPE C1</b> 36 Watts 6500K 600mmx600mm Rectangular, surface mounted Luminaire withwhite finish as Philips /OSRAM or equal and approved	No	29		
	<b>TYPE C1 E</b> As Type E above but emergency kit	No	8		
	<b>TYPE A</b> IP 65 OUTDOOR BULK HEAD C/W B27 15 W BULB as Tronic or Approved equivalent	No.	6		
	<b>Type EXIT-</b> Surface mount LED Exit light with 3 hrs batteries backup As Robus,OMS,Thorn or equivalent	No	4		
	<b>Photocell Switch:</b> 220–240V AC, 50/60Hz; Load rating 10A; Turns ON at <30 Lux, OFF at >80 Lux; 3-wire (Live, Neutral, Load); Delay 10–30s as Tronic or approved equivalent	No.	1		
	<b>PIR</b> Occupancy Sensor , 240V / 50Hz 500Watt rated 360° ceiling mounted PIR occupancy sensor switch with a circular detection zone coverage of 5m; time lag range of 5 seconds to 15 munites and a selectable manual override	No	5		
TOTAL CARRIED TO GROUND FLOOR COLLECTION PAGE					0

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB**  
**BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KSHS)
<b>(ii)</b>	<b>SMALL POWER INSTALLATIONS</b>				
	<b>Supply,install,test and commission the following as described below :-</b>				
2.0	13Amp ring circuit raw power points wired in 3x 2.5 sq.mm in 25mm diameter HG PVC conduits	No	51		
2.0	20Amp radial circuit power points wired in 3x 4 sq.mm in 25mm diameter HG PVC conduits for FAP & Fans	No	2		
3.0	13 A Twin white moulded switched 1 socket outlet plate as MK or an approved equivalent	No	51		
4.0	Supply and install 20A DP Switches for ACs	No	1		
5.0	Supply and install 20A Spur Switch for FAP and security	No	1		
	Supply and install a cooker circuit wired using 3x6sqmm copper cables drawn in 32mm diameter PVC heavy gauge conduits, but excluding the cooker control and connection units.		1		
	Cooker control unit complete with 45Amp DP switch + 13A switched socket with neon indicators MK logic plus Cat No.5061 WHI complete with connection unit		1		
7.0	Lockable metallic enclosure DB comprising 6-Way Distribution Board with 100A TP integral isolator Schneider Electric manufacture or equal and approved, for recessed in and complete with earthing bar and all necessary accessories.	No	1		
8.0	MCBs for the item above:	No.	3		
	a) 10A SP.	No.	8		
	b) 32A SP.	No.	1		
	c) 40A SP.	No.	6		
	d) Blanking plates	No	6		
<b>(iii)</b>	<b>CABLE MANAGEMENT</b>				
	complete with	LM	14		
1.0	100 x 50 mm 2 compartment PVC trunking cover and all accessories the work stations				
2.0	(i) Twin outlets	No	16		
	(ii) Single outlets	No	8		
<b>TOTAL CARRIED TO GROUND FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KSHS)
(iv)	<b>FIRE ALARM SYSTEM</b>				
1.0	Fire alarm Outlet points comprising of wiring in 1.5 sq mm 2 core fire tuff cable and 25mm dia HG conduits from the panel to the above devices complete with all the necessary accessories				
	(i) Break glass point	No	4		
	(ii) Smoke/heat detector	No	19		
	(iii) Fire alarm sounder point	No	4		
2.0	Addressable Multi-cd temporal strobe,high/low dB output in RED complete with all necessary accessories as Menvier or equivalent and approved	No.	4		
3.0	Addressable Break Glass Unit complete with cover and all necessary accessories as Menvier or Protect	No.	4		
4.0	Optical smoke detectors complete with back cover and all necessary accessories as Menvier or Protect	No.	18		
5.0	Optical heat detectors complete with back cover and all necessary accessories as Menvier or Protect	No.	1		
6.0	Addressable Fire 2 Loop Detection Control Panel complete with power supply unit As Menvier or Protect	No.	1		
7.0	Back up Non spillable battery	No.	1		
8.0	Programing, Testing and Commissioning	item	1		
<b>TOTAL CARRIED TO GROUND FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

**GROUND FLOOR COLLECTION PAGE**

ITEM	DESCRIPTION	AMOUNT(KS HS)
1.0	TOTAL FOR LIGHTING BOUGHT FORWARD	
2.0	TOTAL FOR SMALL POWER B/F	
3.0	TOTAL FOR FIRE ALARM B/F	
<b>TOTAL FOR GROUND FLOOR CARRIED TO SUMMARY PAGE</b>		

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KSHS)
	<b>FIRST FLOOR</b>				
(i)	<b>LIGHTING INSTALLATIONS</b>				
	<b>Supply and install ,test and commission the following as described below:-</b>				
1.01	Lighting points wired in 3 X 1.5 sq. mm single core copper cables drawn in 20 mm diameter pvc heavy gauge conduits complete with with necessary accessories				
	(i) One way Switching	No	61		
	(ii) Two way switching	No	14		
1.02	10 Amps moulded flush mounted plate switches as Mk or an approved equivalent:-				
	(i) One gang two way	No	3		
	(ii) Two gang two way	No			
	(iii)three gang two way	No	5		
1.03	<b>Install, test and commission the following complete with cool white (4000K) LED lamps, control gear/drivers, suspension kit, minimum of 30,000 life hours atleast 3 years warranty and all necessary fixing accessories</b>				
	<b>TYPE B1-</b> 18Watts 150mm Surface mount Circular 6500K Panel Downlight with low depreciation SMD LEDs and drivers As Phillips/Osram or equivalent and Approved	No	15		
	<b>TYPE B1 E</b> As Type B1 above but equipped with emergency kit	No	4		
	<b>TYPE D</b> diameter surface mounted cylindrical 9W 6500K LED panel downlighter with low glare diffuser	No	3		
	<b>TYPE D E</b> As above but equipped with emergency kit	No			
	<b>TYPE C1</b> 36 Watts 6500K 600mmx600mm Rectangular, surface mounted Luminaire withwhite finish as Philips /OSRAM or equal and approved	No	39		
	<b>TYPE C1 E</b> As Type E above but emergency kit	No	5		
	<b>Type EXIT-</b> Surface mount LED Exit light with 3 hrs batteries backup As Robus,OMS,Thorn or equivalent	No	1		
	<b>PIR</b> Supply and install 240V / 50Hz 500Watt rated 360 <sup>0</sup> ceiling mounted PIR occupancy sensor switch with a circular detection zone coverage of 5m; time lag range of 5 seconds to 15 munites and a selectable manual override	No			
<b>TOTAL CARRIED TO FIRST FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KS HS)
<b>(ii)</b>	<b>SMALL POWER INSTALLATIONS</b>				
	<b>Supply,install,test and commission the following as described below :-</b>				
1.0	13Amp ring circuit raw power points wired in 3x 2.5 sq.mm in 25mm diameter HG PVC conduits	No	135		
2.0	20Amp radial circuit power points wired in 3x 4 sq.mm in 25mm diameter HG PVC conduits for FAP & Fans	No			
3.0	13 A Twin white moulded switched 1 socket outlet plate as MK or an approved equivalent	No	135		
4.0	Supply and install 20A DP Switches for ACs	No			
5.0	Supply and install 20A Spur Switch for FAP and security	No			
7.0	Lockable metallic enclosure DB comprising 6-Way Distribution Board with 100A TP integral isolator Schneider Electric manufacture or equal and approved, for recessed in and complete with earthing bar and all necessary accessories.	No	1		
8.0	MCBs for the item above:				
	a) 10A SP.	No.	3		
	b) 32A SP.	No.	11		
	c) 20A SP.	No.	0		
	d) Blanking plates	No	6		
<b>(iii)</b>	<b>CABLE MANAGEMENT</b>				
1.0	100 x 50 mm 2 compartment PVC trunking cover and all accessories the work stations complete with	LM	134		
2.0	(i) Twin outlets	No	119		
	(ii) Single outlets	No	60		
<b>TOTAL CARRIED TO FIRST FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KS HS)
(iv)	<b>FIRE ALARM SYSTEM</b>				
1.0	Fire alarm Outlet points comprising of wiring in 1.5 sq mm 2 core fire tuff cable and 25mm dia HG conduits from the panel to the above devices complete with all the necessary accessories				
	(i) Break glass point	No	3		
	(ii) Smoke/heat detector	No	10		
	(iii) Fire alarm sounder point	No	3		
2.0	Adressable Multi-cd temporal strobe,high/low dB output in RED complete with all necessary accessories as Menvier or equivalent and approved	No.	3		
3.0	Adressable Break Glass Unit complete with cover and all necessary accessories as Menvier or Protect	No.	3		
4.0	Optical smoke detectors complete with back cover and all necessary accessories as Menvier or Protect	No.	10		
5.0	Optical heat detectors complete with back cover and all necessary accessories as Menvier or Protect	No.			
<b>TOTAL FOR FIRE ALARM CARRIED FORWARD</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

**FIRST FLOOR COLLECTION PAGE**

ITEM	DESCRIPTION	AMOUNT(KS HS)
1.0	TOTAL FOR LIGHTING BOUGHT FORWARD	
2.0	TOTAL FOR SMALL POWER B/F	
3.0	TOTAL FOR FIRE ALARM B/F	
<b>TOTAL FOR FIRST FLOOR CARRIED TO SUMMARY PAGE</b>		

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KS HS)
	<b>SECOND FLOOR</b>				
(i)	<b>LIGHTING INSTALLATIONS</b>				
	<b>Supply and install ,test and commission the following as described below:-</b>				
1.01	Lighting points wired in 3 X 1.5 sq. mm single core copper cables drawn in 20 mm diameter pvc heavy gauge conduits complete with with necessary accessories	No	200		
	(i) One way Switching	No			
	(ii) Two way switching	No			
1.02	10 Amps moulded flush mounted plate switches as Mk or an approved equivalent:-	No	15		
	(i) One gang one way	No	2		
	(ii) Two gang one way	No	1		
	(iv) Three gang one way	No			
1.03	<b>Install, test and commission the following complete with cool white (4000K) LED lamps, control gear/drivers, suspension kit, minimum of 30,000 life hours atleast 3 years warranty and all necessary fixing accessories</b>				
	<b>TYPE B1-</b> 18Watts 150mm Surface mount Circular 6500K Panel Downlight with low depreciation SMD LEDs and drivers As Phillips/Osram or equivalent and Approved	No	2		
	<b>TYPE B1 E</b> As Type B1 above but equipped with emergency kit	No			
	<b>TYPE D</b> diameter surface mounted cylindrical 9W 6500K LED panel downlighter with low glare diffuser	No	30		
	<b>TYPE D E</b> As above but equipped with emergency kit	No	10		
	<b>TYPE C1</b> 36 Watts 6500K 600mmx600mm Rectangular, surface mounted Luminaire withwhite finish as Philips /OSRAM or equal and approved	No	41		
	<b>TYPE C1 E</b> As Type E above but emergency kit	No	11		
	<b>Type EXIT-</b> Surface mount LED Exit light with 3 hrs batteries backup As Robus,OMS,Thorn or equivalent	No	1		
	<b>PIR</b> Supply and install 240V / 50Hz 500Watt rated 360° ceiling mounted PIR occupancy sensor switch with a circular detection zone coverage of 5m; time lag range of 5 seconds to 15 munites and a selectable manual override	No	2		
<b>TOTAL CARRIED TO SECOND FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB**  
**BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KSHS)
	<b>SECOND FLOOR</b>				
<b>(ii)</b>	<b>SMALL POWER INSTALLATIONS</b>				
	<b>Supply and install ,test and commission the following as described below:-</b>				
1.0	13Amp ring circuit raw power points wired in 3x 2.5 sq.mm in 25mm diameter HG PVC conduits	No	69		
2.0	20Amp radial circuit power points wired in 3x 4 sq.mm in 25mm diameter HG PVC conduits for FAP & Fans	No	0		
3.0	13 A Twin white moulded switched I socket outlet plate as MK or an approved equivalent	No	69		
4.0	Supply and install 20A DP Switches for ACs	No	0		
5.0	Supply and install 20A Spur Switch for FAP and security	No	0		
	Supply and install a cooker circuit wired using 3x6sqmm copper cables drawn in 32mm diameter PVC heavy gauge conduits, but excluding the cooker control and connection units.	No	1		
	Cooker control unit complete with 45Amp DP switch + 13A switched socket with neon indicators MK logic plus Cat No.5061 WHI complete with connection unit	No	1		
7.0	Lockable metallic enclosure DB comprising 6-Way Distribution Board with 100A TP integral isolator Schneider Electric manufacture or equal and approved, for recessed in and complete with earthing bar and all necessary accessories.	No	1		
8.0	MCBs for the item above:	No.	3		
	a) 10A SP.	No.	8		
	b) 32A SP.	No.	1		
	c) 40A SP.	No.	6		
	d) Blanking plates	No	6		
<b>(iii)</b>	<b>CABLE MANAGEMENT</b>				
	complete with				
1.0	100 x 50 mm 2 compartment PVC trunking cover and all accessories the work stations	LM	18		
2.0	100 x 50 mm Trunking face plates:	No	24		
	(i) Twin outlets	No	12		
	(ii) Single outlets	No	12		
<b>TOTAL CARRIED TO GROUND FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KS HS)
(iv)	<b>FIRE ALARM SYSTEM</b>				
1.0	Fire alarm Outlet points comprising of wiring in 1.5 sq mm 2 core fire tuff cable and 25mm dia HG conduits from the panel to the above devices complete with all the necessary accessories				
	(i) Break glass point	No	3		
	(ii) Smoke/heat detector	No	19		
	(iii) Fire alarm sounder point	No	3		
2.0	Adressable Multi-cd temporal strobe,high/low dB output in RED complete with all necessary accessories as Menvier or equivalent and approved	No.	3		
3.0	Adressable Break Glass Unit complete with cover and all necessary accessories as Menvier or Protect	No.	3		
4.0	Optical smoke detectors complete with back cover and all necessary accessories as Menvier or Protect	No.	18		
5.0	Optical heat detectors complete with back cover and all necessary accessories as Menvier or Protect	No.	1		
<b>TOTAL CARRIED TO SECOND FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

**SECOND FLOOR COLLECTION PAGE**

ITEM	DESCRIPTION	AMOUNT(KS HS)
1.0	TOTAL FOR LIGHTING BOUGHT FORWARD	
2.0	TOTAL FOR SMALL POWER B/F	
3.0	TOTAL FOR FIRE ALARM B/F	
<b>TOTAL FOR SECOND FLOOR CARRIED TO SUMMARY PAGE</b>		

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT(KS HS)
(i)	<b>POWER DISTRIBUTION</b> <b>Supply, install, test and commission the following:-</b>				
1.0	200 Amps Lockable Type Tested WallMount FORM 2 TYPE 2 Low Voltage Switch Board complete with Powder Coated enclosure As Schneider PRISMA manufacture or an approved equivalent, i) 200A TP MCCB 36kA INCOMER c/w shunt trip iii) 3NO. 125A TP MCCB 25kA outgoer to 0-2 iv)40A TP MCCB 25kA outgoer to Fire Pump viii) 1 No. 100Amps DP MCCBS for spare breaker ix) 1no. Busbars Rated at 160A including neutral and earth bar xi) digital meter cable of showing the following parameters Voltages,KW,KVA,HZ,Current	ITEM	1		
2.0	Fire Mans Switch to be located at the main entrance and connected to 200Amps MCCB coil	No	1		
3.0	4 Core 50 sqmm CU/XLPE/SWA/PVC + 1C 25 sqmm CU/PVC single core earthing copper cable from UTILITY METER	LM	30		
4.0	4 Core 16sq.mm CU/XLPE/SWA/PVC + 1C 10mmsq CU/PVC single core earthing copper cable to DB on ground, first and second floor	LM	35		
(ii)	<b>LIGHTNING PROTECTION</b> <b>Supply install and maintain a lightning Protection system and earthing/ bonding to British Standards</b>				
1.0	10mm <sup>2</sup> CU/PVC cable run in 32 mm diameter heavy gauge PVC conduit concealed in the wall between air termination and the earthing pit	Lm	60		
2.0	Earthing comprising of 1500mm long x 12mm diameter copper bond rod, cast rod to tape clamp and in 300 x 300 x 300 mm earth inspection pit as FURSE or equal and approved.	No.	4		
3.0	Solid copper air terminal comprising the following: (i) 15mm diameter multiple point copper air terminal as Furse Cat. No. RA 600. (ii) Copper air terminal base as Furse Cat. No SD 105	No. No.	4 4		
<b>GROUND FLOOR COLLECTION PAGE</b>					

**PROPOSED KIKUYU CENTER OF EXCELLENCE JITUME HUB  
BILLS OF QUANTITIES FOR ELECTRICAL INSTALLATION WORKS**

<b>SUMMARY PAGE</b>		
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>PRICE (KSHS)</b>
1.0	TOTAL B/F FROM <b>GROUND FLOOR COLLECTION PAGE</b>	-
2.0	TOTAL B/F FROM <b>FIRST FLOOR COLLECTION PAGE</b>	-
3.0	TOTAL B/F FROM <b>SECOND FLOOR COLLECTION PAGE</b>	-
4.0	TOTAL B/F FROM <b>POWER DISTRIBUTION AND LIGHTNING PROTECTION</b>	-
5.0	<b>16% VAT</b>	-
6.0	<b>TOTAL</b>	-

---

# ICT WORKS

---

No.	Item Description	UNIT	QTY	RATE in KES	AMOUNT
<b>Data Cabinets</b>					
1	42U 600x800 mm metal cabinet Floor Standing with a perforated metal door complete with fans, power socket, grounding kits and castors	No	2		-
2	48port Cat6 Patch Panel	No	15		-
3	2U Rack mount cable management	No	15		-
4	6 or 9 Way Rack Mount Power Outlet Power Data Unit (PDU)	No	6		-
5	Grounding the system at cabinet level	LS	3		-
<b>Subtotal</b>					-
<b>Active Equipment</b>					
6	Hikvision DS-2CD2183G2-IU 4K 8MP IP Camera 2.8mm Lens PoE Vandal-Resistant Dome IP67 IK10 H.265+ or approved equivalent	No	8		-
7	Hikvision DS-7632NXI-K2 AcuSense 32 Channel IP NVR, 4K Resolution with 20TB HDD Included or approved Equivalent	No	1		-
8	42" TV UHD (4K) or approved equivalent	No	1		-
9	Magnetic locks system to allow for door closure and release	No	3		-
10	WiFi 6 Enterprise Access Point (U6-Enterprise) 2.4/5/6 GHz bands) 10.2 Gbps aggregate throughput rate or approved equivalent	No	8		-
11	48 Port Gigabit POE Managed/Smart Switch with SFP ports and modules or approved equivalent	No	2		-
12	24 Port Gigabit POE Managed/Smart Switch or approved equivalent	No	1		-
13	Cat.6A, 4-Pair UTP Cable (Indoor cable) 1 roll	No	2		-
14	Cat 6 Data Point and Telephone Complete Dual Faceplates	No	72		-
15	CAT6 UTP RJ45 connector	No	100		-
16	Preterminated Cat6A Patch Cables 0.3-0.5m long or approved equivalent	No	50		-
17	1500 VA Rack mountable Uninterruptible Power Supply (UPS)unit with LCD display	Pcs	4		-
<b>Subtotal</b>					-
<b>General Requirements</b>					
18	Preparation of technical Solution/ proposal	LS	1		-
19	Allow for labelling all telecommunication cables, active devices and telecommunication points and all necessary documentation including operation manuals where applicable	LS	1		-
<b>Subtotal</b>					-
<b>Collection</b>					
<b>Data Cabinets</b>					
<b>Active Equipment</b>					
<b>General Requirements</b>					
<b>CCTV and Access Control Total</b>					-

No.	Item Description	UNIT	QTY	RATE in KES	AMOUNT	
<b>Data Cabinets</b>						
1	22 U 600x800 mm metal cabinet Floor Standing with a perforated metal door complete with fans, power socket, grounding kits and castors	No	0		-	
2	6 or 9 Way Rack Mount Power Outlet Power Data Unit (PDU)	No	0		-	
3	Grounding the system at cabinet level	LS	0		-	
<i>Subtotal</i>					-	
<b>Active Equipment</b>						
4	Hikvision DS-2CD2183G2-IU 4K 8MP IP Camera 2.8mm Lens PoE Vandal-Resistant Dome, P67 IK10 H.265+ or approved equivalent	No	5		-	
5	Hikvision DS-7632NXI-K2 AcuSense 32 Channel IP NVR, 4K Resolution with 20TB HDD Included or approved Equivalent	No	0		-	
6	42" TV UHD (4K) or approved equivalent	No	0		-	
6	Magnetic locks system to allow for door closure and release	No	0		-	
7	WiFi 6 Enterprise Access Point (U6-Enterprise) 2.4/5/6 GHz bands) 10.2 Gbps aggregate throughput rate or approved equivalent	No	6		-	
8	48 Port Gigabit POE Managed/Smart Switch with SFP ports and modules or approved equivalent	No	0		-	
9	24 Port Gigabit POE Managed/Smart Switch or approved equivalent	No	0		-	
10	Cat.6A, 4-Pair UTP Cable (Indoor cable) 1 roll	No	2		-	
11	Cat 6 Data Point and Telephone Complete Dual Faceplates	No	50		-	
12	CAT6 UTP RJ45 connector	No	70		-	
13	Preterminated Cat6A Patch Cables 0.3-0.5m long or approved equivalent	No	20		-	
14	1500 VA Rack mountable Uninterruptible Power Supply (UPS)unit with LCD display	Pcs	0		-	
<i>Subtotal</i>					-	
<b>General Requirements</b>						
15	Preparation of technical Solution/ proposal	LS	1		-	
16	Allow for labelling all telecommunication cables, active devices and telecommunication points and all necessary documentation including operation manuals where applicable	LS	1		-	
<i>Subtotal</i>					-	
<b>Collection</b>						
<b>Data Cabinets</b>						
-						
<b>Active Equipment</b>						
-						
<b>General Requirements</b>					<b>CCTV and Access Control Total</b>	-

No.	Item Description	UNIT	QTY	RATE in KES	AMOUNT
<b>Data Cabinets</b>					
<b>1</b>	22 U 600x800 mm metal cabinet Floor Standing with a perforated metal door complete with fans, power socket, grounding kits and castors	No	0		-
<b>2</b>	6 or 9 Way Rack Mount Power Outlet Power Data Unit (PDU)	No	0		-
<b>3</b>	Grounding the system at cabinet level	LS	0		-
<i>Subtotal</i>					-
<b>Active Equipment</b>					
<b>4</b>	Hikvision DS-2CD2183G2-IU 4K 8MP IP Camera 2.8mm Lens PoE Vandal-Resistant Dome, P67 IK10 H.265+ or approved equivalent	No	7		-
<b>5</b>	Hikvision DS-7632NXI-K2 AcuSense 32 Channel IP NVR, 4K Resolution with 20TB HDD Included or approved Equivalent	No	0		-
<b>6</b>	42" TV UHD (4K) or approved equivalent	No	0		-
<b>7</b>	Magnetic locks system to allow for door closure and release	No	0		-
<b>8</b>	WiFi 6 Enterprise Access Point (U6-Enterprise) 2.4/5/6 GHz bands) 10.2 Gbps aggregate throughput rate or approved equivalent	No	7		-
<b>9</b>	48 Port Gigabit POE Managed/Smart Switch with SFP ports and modules or approved equivalent	No	0		-
<b>10</b>	24 Port Gigabit POE Managed/Smart Switch or approved equivalent	No	0		-
<b>11</b>	Cat.6A, 4-Pair UTP Cable (Indoor cable) 1 roll	No	1		-
<b>12</b>	Cat 6 Data Point and Telephone Complete Dual Faceplates	No	25		-
<b>13</b>	CAT6 UTP RJ45 connector	No	30		-
<b>14</b>	Preterminated Cat6A Patch Cables 0.3-0.5m long or approved equivalent	No	0		-
<b>14</b>	1500 VA Rack mountable Uninterruptible Power Supply (UPS)unit with LCD display	Pcs	0		-
<i>Subtotal</i>					-
<b>General Requirements</b>					
<b>15</b>	Preparation of technical Solution/ proposal	LS	1		-
<b>16</b>	Allow for labelling all telecommunication cables, active devices and telecommunication points and all necessary documentation including operation manuals where applicable	LS	1		-
<i>Subtotal</i>					-
<b>Collection</b>					
<b>Data Cabinets</b>					
<b>Active Equipment</b>					
<b>General Requirements</b>					
<b>CCTV and Access Control Total</b>					-

No.	Item Description	UNIT	QTY	RATE in KES	AMOUNT
	<i>SUMMARY</i>				
	<i>GROUND FLOOR</i>				-
	<i>FIRST FLOOR</i>				-
	<i>SECOND FLOOR</i>				-
	<i>CCTV and Access Control Total</i>				-

---

**PRIME COST SUMS AND PROVISIONAL SUMS**

---

Item	Description	Qty	Unit	Rate	Amount (Kshs.)
	<b>PROVISIONAL SUMS</b>				
	<u>The following Provisional Sums are to be measured on completion and priced in accordance with the rates contained in these bills of Quantities or pro-rata thereto or deducted in the whole not required</u>				
A	Allow a provisional sum of Kenya Shillings <b>Three Hundred Thousand</b> for foul drainage connection		Item		300,000.00
	<b>PRIME COST SUMS</b>				
	<b><u>P.C. Sums for works to be executed by nominated Sub-contractors</u></b>				
B	Provide a Prime Cost Sum of Kenya Shillings <b>One Million Two Hundred Thousand</b> for Furniture placement for the Jitume Center		Item		1,200,000.00
C	<b>Allow for profits and attendance</b>				
D	Provide a Prime Cost Sum of Kenya Shillings <b>Seven Hundred Thousand</b> for Branding and Signages		Item		700,000.00
E	<b>Allow for profits and attendance</b>				
F	Provide a Prime Cost Sum of Kenya Shillings <b>One Million Five Hundred Thousand</b> for External Paving Works		Item		1,500,000.00
	<b>Allow for profits and attendance</b>				
G	Provide a Prime Cost Sum of Kenya Shillings <b>Four Million</b> for Lift Installation		Item		4,000,000.00
	<b>Allow for profits and attendance</b>				
<b>TOTAL FOR P. C. AND PROVISIONAL SUMS CARRIED TO MAIN SUMMARY</b>					

---

## **MAIN SUMMARY**

---

ITEM	BILL NO.	DESCRIPTION	AMOUNT (KSHS)
<u>SUMMARY</u>			
1		PARTICULAR PRELIMINARIES	
2		CONTRACT PARTICULARS	
3		GENERAL PRELIMINARIES	
4	BILL NO. 2	JITUME - KIKUYU DIGITAL HUB	
5	BILL NO. 3	PLUMBING, DRAINAGE, HVAC, AND FIRE FIGHTING	
6	BILL NO. 3	ELECTRICAL AND ICT WORKS	
7	BILL NO. 4	PC AND PROVISIONAL SUMS	
8		<b>CONTINGENCIES</b> Provide the Provisional Sum of <b>Four Hundred and Forty Thousand</b> for Contingencies to be expended at the discretion of the Architect	<b>440,000.00</b>
<b>SUB-TOTAL CARRIED FORWARD</b>			

ITEM	BILL NO.	DESCRIPTION	AMOUNT (KSHS)
9		<p style="text-align: right;"><b>BROUGHT FORWARD</b></p> <p><b><u>VALUE ADDED TAX</u></b></p> <p>The Contractor's attention is drawn to the Finance Bill, 1993 which requires the Contractor to pay Value Added Tax (V.A.T.) To the Government of Kenya for all Contracts entered into after 1st September 1993. The Contractor is therefore to allow for such taxes as are chargeable by the Government of Kenya. Including the Capacity Building Levy (CBL) as provided by PPRA.</p> <p><b>NB: Value Added Tax to be applied only on All Works exclusive PC Sums, Provisional Sums and Contingencies</b></p>	<b>IN RATES</b>
<b>TOTAL CARRIED TO FORM OF TENDER</b>			<b>0.00</b>

Signed

Date:

<b>TENDERER:</b>	
<b>Date:</b>	





a. To be entered by the Tenderer.

*Bill No. 5: Schedule of Daywork Rates - Contractor's Equipment*

<i>Item no.</i>	<i>Description</i>	<i>Nominal quantity (hours)</i>	<i>Basic hourly rental rate</i>	<i>Extended amount</i>
	Allow ___percent <sup>a</sup> of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 5 above.			
Total for Daywork: Contractor's Equipment (carried forward to Daywork Summary, p. _____)				

a. To be entered by the Tenderer.

*Bill No. 6: Daywork Summary*

	<i>Amount<sup>a</sup></i>	<i>% Foreign</i>	<i>Currency</i>
1. Total for Daywork: Labor			
2. Total for Daywork: Materials			
3. Total for Daywork: Contractor's Equipment			
Total for Daywork (Provisional Sum) (carried forward to Summary of Bills of Quantities, p. )			

**Bill No. 7: Provisional Sums**

<i>Bill no.</i>	<i>Item no.</i>	<i>Description</i>	<i>Amount</i>
1			
2			
3			
4			
etc.			
Total for Specified Provisional Sums (carried forward to Grand Summary			

**GRAND SUMMARY**

<b>SUMMARY ITEMS</b>	<i>Page</i>	<i>Amount</i>
Bill No. 1: Preliminary Items		
Bill No. 2: Work Items		
Bill No 3: Daywork Summary		
Bill No 4: Provisional Sums		
Subtotal of Bills No 1-4		
Allow for any Discounts <sup>i</sup>		
TOTAL TENDER PRICE Carried forward to Form of Tender		

(i) If a percentage used, it should be indicated on which Bill No. items but on Bill No.4 – Provisional Sums.

## SECTION VI - SPECIFICATIONS

### Notes for preparing Specifications

1. Specifications must be drafted to present a clear and precise statement of the required standards of materials, and workmanship for tenderers to respond realistically and competitively to the requirements of the Procuring Entity and ensure responsiveness of tenders. The Specifications should require that all materials, plant, and other supplies to be permanently incorporated in the Works be new, unused, of the most recent or current models, and incorporating all recent improvements in design and materials unless provided otherwise in the Contract. Where the Contractor is responsible for the design of any part of the permanent Works, the extent of his obligations must be stated.
2. Specifications from previous similar projects are useful and may not be necessary to re-write specifications for every Works Contract.
3. There are considerable advantages in standardizing **General Specifications** for repetitive Works in recognized public sectors, such as high ways, urban housing, irrigation and water supply. The General Specifications should cover all classes of workmanship, materials and equipment commonly involved in constructions, although not necessarily to be used in a particular works contract. Deletions or addenda should then adapt the General Specifications to the particular Works.
4. Care must be taken in drafting Specifications to ensure they are not restrictive. In the Specifications of standards for materials, plant and workmanship, existing Kenya Standards should be used as much as possible, otherwise recognized international standards may also be used.
5. The Procuring Entity should decide whether technical solutions to specified parts of the Works are to be permitted. Alternatives are appropriate in cases where obvious (and potentially less costly) alternatives are possible to the technical solutions indicated in tender documents for certain elements of the Works, taking into consideration the comparative specialized advantage of potential tenderers.
6. The Procuring Entity should provide a description of the selected parts of the Works with appropriate reference to Drawings, Specifications, Bills of Quantities, and Design or Performance criteria, stating that the alternative solutions shall be at least structurally and functionally equivalent to the basic design parameters and Specifications.
7. Such alternative solutions shall be accompanied by all information necessary for a complete evaluation by the Procuring Entity, including drawings, design calculations, technical specifications, breakdown of prices, proposed construction methodology, and other relevant details. Technical alternatives permitted in this manner shall be considered by the Procuring Entity each on its own merits and independently of whether the tenderer has priced the item as described in the Procuring Entity's design included with the tender documents.

## SECTION VII - DRAWINGS

**Note** A list of drawings should be inserted here. The actual drawings including Site plans should be annexed in a separate booklet.

## A) COMPLIANCE WITH TECHNICAL SPECIFICATIONS

### Note

*On compliance with Technical Specifications, bidders shall supply equipment/items which comply with the technical specifications set out in the bid document. In this regard, the bidders will be required to submit relevant technical brochures/catalogues with the tender document, highlighting (using a mark-pen or highlighter) the Catalogue Number/model of the proposed items. Such brochures/catalogues should indicate comprehensive relevant data of the proposed equipment/items which should include but not limited to the following:*

- (i) Standards of manufacture;*
- (ii) Performance ratings/characteristics;*
- (iii) Material of manufacture; (iv) Electrical power ratings; and*
- (v) All other requirements as indicated in the technical specifications of the bid.*

The bid will then be analyzed, using the information in the technical brochures, to determine compliance with technical specifications for the works/items as indicated in the tender document. Bidders not complying with **any** of the technical specifications shall be adjudged to be technically non-responsive while those meeting all the technical specifications shall be adjudged to be technically responsive.

The tenderer shall also fill in the Technical Schedule as specified in the tender document for Equipment and Items indicating the Country of Origin, Model/Make/Manufacturer and catalogue numbers of the

## **PART 1. GENERAL SPECIFICATIONS OF WORKS**

### **1.1 GENERAL**

This specification is to be read in conjunction with the drawings which are issued with it. Bills of quantities shall be the basis of all additions and omissions during the progress of the works.

### **1.2 STANDARD OF MATERIALS**

Where the material and equipment are specifically described and named in the Specification followed by approved equal, they are so named or described for the purpose of establishing a standard to which the sub-contractor shall adhere.

Should the Sub-contractor install any material not specified herein before receiving approval from the proper authorities, the Engineer shall direct the Sub-contractor to remove the material in question immediately. The fact that this material has been installed shall have no bearing or influence on the decision by the Engineer.

All materials condemned by the Engineer as not approved for use, are to be removed from the premises and suitable materials delivered and installed in their place at the expense of the Sub-contractor. All materials required for the works shall be new and the best of the respective kind and shall be of a uniform pattern.

### **1.3 WORKMANSHIP**

The workmanship and method of installation shall conform to the best standard practice. All work shall be performed by a skilled tradesman and to the satisfaction of the Engineer. Helpers shall have qualified supervision.

Any work that does not in the opinion of the Engineer conform to the best standard practice will be removed and reinstated at the Sub-contractors expense.

Permits, Certificates or Licenses must be held by all tradesmen for the type of work; in which they are involved where such permits, certificates or licenses exist under Government legislation.

### **1.4 PROCUREMENT OF MATERIALS**

The sub-contractor is advised that no assistance can be given in the procurement or allotment of any materials or products to be used in and necessary for the construction and completion of the work.

Sub-contractors are warned that they must make their own arrangements for the supply of materials and/or products specified or required.

### **1.5 SHOP DRAWINGS**

Before manufacture or Fabrication is commenced the sub-contractor shall submit Two copies of detailed drawings of all control pillars, meter cubicles, medium voltage switchboards including their components showing all pertinent information including sizes, capacities, construction details, etc, as may be required to determine the suitability of the equipment for the approval of the Engineer.

Approval of the detailed drawings shall not relieve the sub-contractor of the full responsibility of errors or the necessity of checking the drawings himself or of furnishing the materials and equipment and performing the work required by the plans and specifications.

## **1.6 RECORD DRAWINGS**

These diagrams and drawings shall show the completed installation including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

## **1.7 REGULATIONS AND STANDARDS**

All work executed by the Sub-contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

## **1.8 SETTING OUT WORK**

The sub-contractor at his own expenses; is to set out works and take all measurements and dimensions required for the erection of his materials on site; making any modifications in details as may be found necessary during the progress of the works, submitting any such modifications or alterations in detail to the Engineer before proceeding and must allow in his Tender for all such modifications and for the provision of any such sketches or drawings related thereto.

## **SPECIFICATIONS**

## GENERAL DESCRIPTION OF MATERIALS AND WORKMANSHIP

The following apply to all sections hereafter

### QUALITY, SAMPLES, TESTING AND APPROVAL

#### A. **Materials**

Materials, commodities, components and equipment are to be new and unused unless otherwise specified. Handle, store, fix and protect all commodities with care to ensure that they are in perfect condition when incorporated into the work and handed over on completion.

#### B. **Manufacturer's Recommendations**

Handle, store and fix every commodity strictly in accordance with the printed or written recommendations of the manufacturer and/or supplier. Supply the Architect with copies of manufacturers' recommendations. Inform the Architect if manufacturers' recommendations conflict with any other specified requirements and obtain his instructions before proceeding.

#### C. **Standards.**

Where commodities or workmanship are specified by reference to British Standards (B.S.) or Codes of Practice (C.P) or International (I.S.O.) or other standards, such standards are deemed to be the last published at the time of tendering. The Contractor will be deemed to have read and understood the standards specified, and no claim for want of knowledge will be allowed. The substitution of commodities or standards of workmanship complying with other standards may be allowed at the discretion of the Architect, but application for permission for such substitution must be made in writing in sufficient time to allow adequate investigation. Obtain Certificates of Compliance with standards and supply to the Architect on request.

#### D. **Local Conditions**

All materials, commodities, components and equipment must be suitable for use in tropical climates

#### E. **Samples**

Where samples of commodities or specimens of finished work are specified, submit samples or specimens to the Architect and obtain his approval before confirming orders or carrying out the work. Retain approved samples and specimens on Site for comparison with the finished work. Finished work must conform in all respects with the samples or specimens approved. Remove samples and specimens when no longer required. The cost of supplying samples and specimens must be borne by the Contractor, but specimens may form part of the finished work where approved by the Architect.

## **SPECIFICATIONS**

### **EXCAVATIONS AND EARTHWORKS**

#### **A. Examine the Site**

The Contractor is assumed to have examined the site carefully and ascertain for himself its nature and the kinds of materials to be excavated.

#### **B. Excavations**

Excavations shall be to the widths and depths indicated on the Drawings or to such lesser or greater depths as the Engineer may deem necessary and so instruct the Contractor in order to obtain satisfactory foundations.

Any difference in the quantity of work actually executed under such instructions and that shown on the drawings shall be measured and valued by the Engineer as a Variation under the relevant Conditions of Contract and priced in accordance with the Schedule of Rates.

If, however, the Contractor excavates to any greater depths or widths than are shown on the Drawings or directed, then the Contractor shall, at his own expense, satisfactorily fill in such extra depth and width with concrete similar to that described for foundations.

#### **C. Formation Level**

Formation level on embankments and in cuttings shall be the surface level of the ground obtained after completion of the earthworks, i.e. the underside of the sub-base, or where no sub-base is specified, the underside of the base. Any excess depth unnecessarily excavated below formation level shall be backfilled with material acceptable for construction and compacted as directed by the Engineer and no payment shall be made for the excess excavation or for the filling and compacting. The levels and tolerance of irregularity of the surface of the course shall be within the limits specified in Clause 6.17 for sub-grade.

#### **D. Surface Soil**

Unless otherwise directed by the Engineer all surface soil shall be removed from the area to be used for cuttings and embankments and stockpiled for re-use and for any purpose such as the soiling of slopes of cuttings and embankments, herms, verges, central reserve and the preparation of beds for the cultivation of trees and shrubs.

Surface soil shall be regarded as soil which on visual examination can be seen to have been broken down by agricultural cultivation and/or is seen to be capable of supporting vegetable growth.

Surface soil shall be removed to an average depth as shown on the Drawings or specified in the Bills of Quantities.

## **SPECIFICATIONS**

4/2

<b>EXCAVATIONS AND EARTHWORKS (Ctd.)</b>	
<b>A.</b>	<b>Surface Soil (Ctd).</b>
	<p>The Contractor shall make his own arrangements for temporary storage sites for heaps of surface soil either inside or outside the Site of the Works to suit his convenience. The cost of all operations needed in excavating, loading, carting, depositing and stacking, together with arranging for the storage sites, the hire or purchase of land therefore and all necessary access roads for this purpose is to be included in the item in the Bills of Quantities for stripping surface soil and is to be quoted whatever the nature of the underlying sub-soil.</p> <p>All unsuitable soil comprising or underlying surface soil shall be excavated and run to spoil in accordance with Clause 2.7.</p>
<b>B.</b>	<b>Bottoms of Excavations to Receive Foundations</b>
	<p>The Contractor shall report to the Engineer when secure bottoms to the excavations have been obtained. Any concrete or 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.</p> <p>The surface of the bottoms to excavations to receive foundations shall be levelled or graded to falls as required.</p>
<b>C.</b>	<b>Soiling of Side Slopes and Verges</b>
	<p>Soiling and compacting of the side slopes of cuttings and embankments shall be carried out to an even surface with a thickness within the range 100mm – 200mm, or in the case of verges as stated in the Bills of Quantities with surface soil as previously stockpiled or from an approved source.</p> <p>Grass planting shall be carried out in accordance with Clause 7.19.</p>
<b>D.</b>	<b>Rock</b>
	<p>Excavation in rock shall exclude all materials which can be removed by hand and does not necessarily require the use of compressors or other mechanical equipment, although the Contractor may use such equipment to loosen the material for ease of its removal. All topsoil, black cotton and other clay soils, murrum, stone and other fill and all similar materials will NOT be classified as rock.</p>

## **SPECIFICATIONS**

### **E X C A V A T I O N S AND EARTHWORKS (Ctd.)**

#### **A. Definition and Classification of Excavated Material**

Excavation in solid rock in the Bills of Quantities will be itemised in three Classes: -

(i) **Class I:**

Soft rock of the type known locally as “tuff” or “magadi” which in the opinion of the Engineer cannot be considered as hard rock but which considerably increases the amount of labour needed for its removal shall be known as Class I rock. Murram and Kunker is specifically excluded and will be reckoned as common excavation.

(ii) **Class II:**

Very weathered blacktrap or lava containing many fissures and faults shall be known as Class II rock. This type of rock contains stones and boulders of unweathered or incompletely weathered blacktrap or lava. A boulder or outcrop of harder rock 13.5 cu. Metre or less, and first quality Nairobi blue, grey or green building stone in a formation which is massive and geologically homogenous, will be deemed to be Class II rock.

(iii) **Class III:**

Blacktrap in a formation which is massive and geologically homogenous shall be known as Class III rock.

**NOTE: The opinion of the Engineer in classifying rock shall be final and binding.**

Common excavation shall mean excavation in any material which are not solid rock as defined in this Clause.

All excavation shall be classified either as unsuitable materials or as suitable material. Unsuitable material shall comprise: -

- (i) Material from swamps or marshes, silt, perishable material, slurry or mud; or
- (ii) Any material: -
  - (a) Which is highly organic clay or silt;
  - (b) Which is clay having a liquid limit exceeding 8. and/or a plasticity index exceeding 55;
  - (c) Which is outside the limits of moisture content specified in the earthworks series of Clauses either when excavated or thereafter;
  - (d) Which is susceptible to spontaneous combustion;

## **SPECIFICATIONS**

### **E X C A V A T I O N S AND EARTHWORKS (Ctd.)**

#### **A. Definition and Classification of Excavated Material (ctd). (iii) Class III: (Ctd).**

- (e) Consisting of such domestic refuse which by virtue of its physical or chemical composition or moisture content will not compact to form a stable fill.

Suitable material shall comprise all that which is acceptable in accordance with the requirements of the Specification for use in the Works, whether obtained from within or without the Site. Any reference in this and other Clauses of the Specification to suitable material and unsuitable material shall have the meanings defined above.

For the purpose of selection for use in earthworks all common excavation shall be classified as either plastic or non-plastic. Non-plastic materials shall be defined as those on which it is impossible to carry out a plasticity index test and shall include "coarse-grained, non-cohesive materials" included in Table 1 of British Standard Code of Practice CP 2.1:

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

#### **B. Storage and Handling of Explosives and Blasting**

The removal of hard materials by use of explosives will normally be permitted subject to compliance by the Contractor in all respects with the Explosive Laws of Kenya.

In the Bills of Quantities rock may be sub-classified into rock where blasting will be permitted subject to this Clause and rock where blasting will not be permitted.

The Contractor shall provide proper buildings or magazine in suitable positions for the storage of explosives in manner and quantities to be approved; he shall also be responsible for the prevention of any unauthorised issue or improper use of any explosives brought on the Works and shall employ only experienced and responsible men to handle explosives for the purpose of the Works.

The shots shall be properly loaded and tamped and, where necessary, the Contractor shall use heavy mesh blasting nets. Blasting shall be restricted to such periods and such parts of the Works as the Engineer may prescribe. If, in the opinion of the Engineer, blasting would be dangerous to persons or property or any finished work or is being carried on in a reckless manner, he may prohibit it, and order the rock to be excavated in other means and payment will be made at the rate for rock excavation where blasting is permitted. The use of explosives by the Contractor in large blasts, as in seams, drifts, shafts, pits, or large holes, is prohibited unless authorised in writing by the Engineer. In the event of wasting of rock through any such blasting, the Contractor shall, if required by the Engineer, furnish an equivalent amount of approved materials for embankments, 1 cu. Metre of rock insitu being taken to equal 2.5 cu. Metre of material in embankment.

## **E X C A V A T I O N S AND EARTHWORKS (Ctd.)**

### **A. Excavation of Cuttings**

The Contractor shall carry out the excavation of cuttings in accordance with the Drawings and shall adhere to the slopes, levels, depths and heights shown thereon.

The sloping sides of all cuttings shall be cleared of all rock fragments which move when prised with a crowbar and are therefore liable to cause injury or damage through falling.

NB: No blasting will be permitted without the prior approval of Local Authorities and Engineer.

### **B. Cart Away**

All surplus excavated material shall be removed to spoil, within the site as directed by the Engineer.

### **C. Filling Obtained from the Excavations**

Filling obtained from surplus excavated materials will only be incorporated if suitable material arises and is to be free from all weeds, roots, vegetable soil or other unstable materials and is to be filled in layers each of not more than 225 mm finished thickness. Each layer to be well wetted and consolidated as described. Filling obtained from surplus excavated materials will only be incorporated if suitable material arises and is to be free from all weeds, roots, vegetable soil or other unstable materials and is to be filled in layers each of not more than 225 mm finished thickness.

### **D. Back Filling**

Filling under floors, etc., shall be good hard stone ballast or quarry waste (or crusher run) or soft rock to the approval of the Engineer, 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. The fill material shall be free from all weeds, roots, vegetable soil, clay, black cotton soil or other unstable materials. It shall be well graded with smaller stones and fine materials to give a dense compact mass after consolidation. Sufficient fine materials shall be added to each layer to give gradation of material as necessary to obtain a solid compact mass after rolling. The fill material is to be laid in layers each of a consolidated thickness not exceeding 225mm. Each layer shall be compacted to at least a dry density of 95% MDD, to achieve this allow for at least a 10 tonne (static weight) vibrating roller. Sufficient water ie 80% to 105% of Optimum Moisture Content unless stated otherwise by the Engineer is to be added to obtain the stated minimum compaction.

## **E X C A V A T I O N S AND EARTHWORKS (Ctd)**

### **A. Back Filling (Ctd).**

The Contractor will be required perform sufficient numbers compaction tests in accordance with BS 1377:1975 on each layer and provide results to the Engineer for approval. In case of any doubt the Engineer may direct the contractor for further tests.

The top surface of the filling shall be leveled or graded to falls as required, and shall then be blinded with a layer of similar material broken to 25mm gauge and surfaced with a 25mm layer of stone dust, watered and consolidated by an 8 to 10 tonne smooth-wheeled roller. The surface so obtained shall be to the Engineer's approval.

### **B. Materials Found in Excavations**

No sand, aggregate, murrum or other material found in the excavations is to be used in the Works without the written permission of the Engineer.

### **C. Polythene Sheeting**

Polythene sheeting shall be 1000 gauge and as approved. Joints in sheeting shall be treble folded with 150mm fold and taped at 300mm intervals with 50mm wide approved black plastic adhesive tape. The sheeting shall not be stretched but shall be laid loose with sufficient wrinkles to permit shrinkage up to 15%.

### **D. Cut Down Trees**

The Contractor must consult the Engineer before cutting down or pruning any trees or shrubs encountered on the Site.

### **E. Notes Concerning Pricing and Measurement**

The rates for excavation, including excavation in rock, MUST INCLUDE for trimming and preparing bottoms and all faces to receive concrete, and for any extra excavation required for planking and strutting.

Prices shall include for excavating in any material encountered unless specifically otherwise described, handling of extra bulk after excavating, or before consolidating, grubbing up any old drains, roots, etc., that may be encountered, trimming excavation or filling to embankments and batters, and carting away to spoil.

The Contractor shall allow and make provision for keeping the whole of the excavations thoroughly drained and clear of water below the lowest level of any part of the excavation for as long as may be required. The Contractor shall provide petrol or hand pumps or other mechanical appliances, pipes, chutes, dams, manholes, sumps, diversions or any other means necessary for that purpose. Water pumped from the trenches shall not 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.

## **CONCRETE WORK**

### **A. Bending Schedules**

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

### **B. Code of Practice**

All workmanship, materials, tests and performance in connection with the reinforced concrete work are to be in conformity with the latest edition of the British Standard (BS) Code of Practice (C.P) 8110 "The Structural Use of Concrete" where not inconsistent with this Specification.

### **C. Supervision & Inspection**

A competent person approved by the Engineer shall be employed by the Contractor whose duty will be to supervise all stages in the preparation and placing of the concrete. All cubes shall be made and site tests carried out under his direct supervision in consultation with the Engineer.

The contractor shall give the Engineer at least 48hr notice to inspect any part of the work, this time shall be doubled if the site is more than 100 km from the nearest permanent office of the Engineer.

### **D. Contractor's Plant, Equipment and Construction Procedures**

Not less than 30 days prior to the installation of the Contractor's plant and equipment for processing, handling, transporting, storing and proportioning ingredients, and for mixing, transporting and placing concrete, the Contractor shall submit drawings for approval by the Engineer, showing the proposed general plant arrangements together with a general description of the equipment he proposes to use.

After completion of installation, the operation of the plant and equipment shall be subject to the approval of the Engineer.

Where this Specification or the Drawings require specific procedures to be followed, such requirements are not to be construed as prohibiting use by the Contractor of alternative procedures if it can be demonstrated to the satisfaction of the Engineer that equal results will be obtained by the use of such alternatives.

Approval of plant and equipment or their operation, or of any construction procedure, shall not operate to waive or modify any provision or requirements contained in this Specification governing the quality of the materials or the finished work.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Tolerances**

On all setting out dimensions of 5 metres and over a maximum non-accumulative tolerance of plus or minus 5 millimetres will be allowed. On all setting out dimensions under 5 metres a maximum non-accumulative tolerance of plus or minus 3 millimetres will be allowed. On the cross-sectional dimensions of structural members, unless otherwise required by the Drawings, a maximum tolerance of plus or minus 3 millimetres will be permitted.

The top surface of concrete floor slabs and beams shall be within 6 millimetres of the normal level and line shown on the Drawings. Columns shall be truly plumb and non-accumulative tolerance of 3 millimetres in each storey and not more than 15 millimetres out of plumb in their full height will be permitted. The Contractor shall be responsible for the cost of all corrective measures required by the Engineer to rectify work which is not constructed with the tolerances set out above.

#### **B. Materials Generally**

All materials which have been damaged, contaminated or have deteriorated or do not comply in any way with the requirements of this Specification shall be rejected and shall be removed immediately from the Site at the Contractor's expense. No materials shall be stored or stacked on floors without the Engineer's prior approval.

The sources of supply for all materials used for all concrete work shall be approved by the Engineer before these materials are delivered on the Site. All materials shall comply with the requirements of the latest appropriate British Standard unless otherwise agreed with the Engineer, whose approval shall be obtained in writing.

The suppliers of materials shall give the Engineer access to their premises when directed for the purpose of obtaining samples of the materials for testing.

#### **C. Samples and Testing**

Samples of materials shall be submitted as soon as possible after the Contract is let. No deliveries in bulk shall be made until the samples are approved by the Engineer. All condemned material shall be removed from the Site within 24 hours.

Every facility shall be provided to enable the Engineer to obtain samples and carry out tests on the materials and construction. If these tests show that any of the materials or construction do not comply with the requirements of this Specification, the Contractor will be responsible for the costs of the tests and the replacement of defective materials and/or construction.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Cement**

Cement, unless otherwise specified, shall be Portland cement of a brand approved by the Engineer and shall comply with the requirements of B.S. 12 with the exceptions that it may contain reactive volcanic ash (of not more than 10% of the total weight) and the quantity of insoluble residue permitted in B.S. 12 may be exceeded. A Manufacturer's Certificate of Test in accordance with B.S. 12 shall be supplied for each consignment delivered to the Site.

Cement may be delivered to the Site either in bags or in bulk.

If delivered in bags, each bag shall be properly sealed and marked with the manufacturer's name and on the Site it is to be stored in a weather-proof shed of adequate dimensions with a raised floor. Each consignment shall be kept separate and marked so that it may be used in the sequence in which it is received. Any bag found to contain cement which has set or partly set, shall be completely discarded and not used in the Works. Bags shall not be stored more than 1,500mm in height.

If delivered in bulk the cement shall be stored in a weather-proof silo either provided by the cement supplier or by the Contractor but in either case the silo shall be to the approval of the Engineer.

#### **B. Aggregates**

Aggregates shall conform with the requirements of B.S. EN 1260 and the sources and types of all aggregates are to be approved in all respects by the Engineer before work commences.

The grading of aggregates shall be one within the limits set out in B.S. EN 1260 and as later specified and the grading, once approved, shall be adhered to throughout the Works and not varied without the approval of the Engineer. Fine aggregate shall be clean, coarse, siliceous sand of good, sharp, hard quality and shall be free from lumps of stone, earth, loam, dust, salt, organic matter and any other deleterious substances. It shall be graded within the limits of Zone 1 or 2 of Table 2 of B.S. 882.

Coarse aggregate shall be good, hard, clean approved blacktrap or similar stone, free from dust, decomposed stone, clay, earthy matter, foreign substances or friable, thin, elongated or laminated pieces. It shall be graded within the limits of Table 1 of B.S. EN 1260 for its respective nominal size.

If in the opinion of the Engineer the aggregate meets the above requirements but is dirty or adulterated in any manner it shall be screened and/or washed with clean water if he so directs, at the Contractor's expense.

Aggregates shall be delivered to the Site in their prescribed sizes or gradings and shall be stockpiled on paved areas or boarded platforms in separate units to avoid intermixing. On no account shall aggregates be stockpiled on the ground. \_

#### **C. Water**

The water used for mixing concrete shall be from an approved source, clean, fresh and free from harmful matter, and comply with the requirements of B.S. EN 1008

**SPECIFICATIONS**

**CONCRETE WORK (Ctd).**

**A. Ready-Mixed Concrete**

Ready-mixed concrete may only be used with the prior permission of the Engineer. Such permission will impose conditions and controls additional to this Specification to ensure that the quality of the concrete is to the specified standards.

**B. Expansion Joints**

Expansion joint filler shall be as manufactured by an approved manufacturer

**C. Joint Sealer**

Sealers shall be either hot or cold applied. Hot applied sealers shall comply with B.S. EN 14188. Cold mastic shall be applied by gun and where more than 12mm deep shall include filling with loose packing yarn to within 2mm from the outer face. All joint sealers are to be approved by the Engineer prior to their use.

**D. Concrete Strengths**

Concrete mixes shall have the following minimum strengths as given by Works Cube Tests:-

Minimum Crushing Strength:

	7 days N/mm <sup>2</sup> -----	28 days N/mm <sup>2</sup> -----
Class 40	27	40
Class 35	24	35
Class 30	20	30
Class 25	17	25

The average strength obtained from cube tests shall be 10% higher than the minimum strengths shown above and shall otherwise conform to the requirements of BS 8110.

Works cube tests will not be required for Class 15 blinding concrete which shall comprise 1:3:6 nominal mix concrete by volume containing 0.10 cu. metres of fine aggregate and 0.20 cu. metres of coarse aggregate per 50 kg. bag of cement with 40mm maximum gauge of coarse aggregate.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Measured Proportions of Concrete**

##### **(a) Cement**

The quantity of cement shall be measured by weight. Where delivered in bags, each batch of concrete is to use one or more whole bags of cement.

##### **(b) Aggregates**

For Class 40 to 25, concrete aggregates shall be measured by weight in a weigh-batching machine, as described hereafter.

For Class 15 concrete, aggregates may be measured by weight or by volume. Where by volume, approved gauge boxes of such a size as will give the correct proportions shall be used.

#### **B. Weight-Batching Machines**

Weigh-batching machines shall be of an approved type and shall be properly maintained and checked for accuracy at regular intervals.

#### **C. Concrete Classes 40 to 25**

The weights of fine and coarse aggregate to be used in concrete Class 40 to 25 shall be limited in accordance with the table below. The proportions of fine to coarse aggregate and cement which the contractor proposes to use for each of the mixes specified shall first be approved by the Engineer. The Contractor will then be required to prepare Preliminary Test Cubes and have these cubes tested as described for Works Cube Tests. The test results shall be submitted to the Engineer in sufficient time for further tests to be carried out should they prove unsatisfactory. Cube strengths in the preliminary tests must show crushing strengths at least 25% higher than the strengths specified for Works Cube Tests. If the Contractor is unable to produce specified cube strengths, he will be required at his own cost to increase the cement content of the mix until satisfactory results are produced.

The Engineer may require at any time during the contract the proportions of fine to coarse aggregate to be altered in order to produce a mix of greater strength or improved workability and providing that the total proportions of aggregate to cement remain unchanged, no claim for additional cost will be considered.

#### **D. Minimum Cement Content**

## **Minimum Cement Content by weight to combined Concrete Class total weight of aggregate**

Class 40	1 to 4.5
Class 35	1 to 5.0
Class 30	1 to 6.0
Class 25	1 to 7.0

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Waterproof Concrete**

Where waterproof concrete is specified, an approved water proofing additive and plastisizer are to be added to the mixing water strictly in accordance with the manufacturer's instructions unless otherwise approved by the Engineer.

#### **B. Waterbar**

Waterbar shall be P.V.C. waterbar of an approved type and shall be provided in the positions indicated on the Drawings.

Joints shall be heat welded in accordance with the manufacturer's instructions and where the waterbar is to be fixed vertically, metal clips as manufactured by the supplier of the waterbar or of other approved design shall be provided to suspend the waterbar from the reinforcement at the spacing recommended by the manufacturer or as instructed by the Engineer.

Where waterproof concrete is used the Contractor shall adhere strictly to the position and type of construction joints as detailed on the Drawings. Any deviation from this procedure or the provision of additional construction joints will require the prior approval of the Engineer and any additional waterbar so required will be at the Contractor's expense.

Formwork shall be designed with sufficient timber formers and blocking pieces to support the waterbar and to ensure that it is not displaced during concreting. In the case of horizontal joints in vertical walling and similar members the formwork shall be so constructed as to permit the starter or up stand of concrete surrounding the lower half of the waterbar to be poured in the same operation as the slab or other concrete from which it springs. Formwork to walls or similar members where the waterbar is positioned at the base of the lift shall have sufficient openings not less than 300mm square at approximately 200mm above the level of the waterbar to permit checking that the waterbar is correctly positioned and not displaced during concreting.

No concreting will be permitted to portions where up stand starters form an integral part until the formwork to the starter has been fixed and approved.

#### **C. Testing Equipment**

The Contractor shall provide the following equipment for carrying out control tests on the Site:-

- (a) Straight edges 3 metres and 1 metre long for testing the accuracy of the finished concrete;
- (b) A glass graduated cylinder for use in the silt test for organic impurities in the sand;
- (c) Slump test apparatus;
- (d) Six 150mm steel cube moulds with base plates and tamping rods to B.S. 1881-24
- (e) An additional set of six cube moulds will be required at the site where pre-cast concrete is manufactured.

### **SPECIFICATIONS**

## **CONCRETE WORK (Ctd).**

### **A. Works Cube Tests**

Works cubes are to be made at intervals as required by the Engineer in accordance with BS 8110 and the test results shall provide a continuous record of the concrete work. The cubes shall be made in approved 150mm moulds in strict accordance with the Code of Practice. Three cubes shall be made on each occasion.

Each cube shall be marked with a distinguishing number (numbers) to run consecutively and the date, and a record shall be kept on site giving the following particulars:-

- (a) Cube No.
- (b) Date made
- (c) Location in Work
- (d) 7-day Test

Date

Strength

- (e) 28-day Test

Date

Strength

Cubes shall be forwarded, carriage paid, to an approved Testing Authority, in time to be tested, two at 7 days and the remaining one at the discretion of the Engineer. No cube shall be dispatched within 3 days of casting.

Copies of all Works Cube Tests shall be sent direct to the Engineer by the Testing Authority and one copy shall be retained on the Site.

If the strengths specified are not attained and maintained throughout the carrying out of the Contract, the Contractor will be required to increase the proportion of cement and/or substitute better aggregates so as to give concrete which does comply with the requirements of the Contract. The Contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by Works Cube Tests.

## **B. Mixing and Placing of Concrete**

The concrete shall be mixed only in approved power-driven mixers of a type and capacity suitable for the work, and in any event not smaller than 0.40/0.28 cu. metres capacity.

### **SPECIFICATIONS**

**A. Mixing and Placing of Concrete (Ctd).**

The mixer shall be equipped with an accurate water measuring device. All materials shall be thoroughly mixed dry before the water is added and the mixing of each batch shall continue for a period of not less than two minutes after the water has been added and until there is uniform distribution of the materials and the mass is uniform in colour.

The entire contents of the mixed drum shall be discharged before recharging. The volume of mixed materials shall not exceed the rated capacity of the mixer. Whenever the mixer is started, 10% extra cement shall be added to the first batch and no extra payment will be made on this account.

The entire contents of the mixed drum shall be discharged before recharging. The volume of mixed materials shall not exceed the rated capacity of the mixer. Whenever the mixer is started, 10% extra cement shall be added to the first batch and no extra payment will be made on this account.

As a check on concrete consistency slump tests may be carried out and shall be in accordance with B.S. 1881-24. The Contractor shall provide the necessary apparatus and carry out such tests as are required. The slump of the concrete made with the specified water content, using dry materials, shall be determined and the water to be added under wet conditions shall be so reduced as to give approximately the same slump.

The concrete shall be mixed as near to the place where it is required as is practicable, and only as much as is required for a specified section of the work shall be mixed at one time, such section being commenced and finished in one operation without delay. All concrete must be efficiently handled and used in the Works within twenty (20) minutes of mixing. It shall be discharged from the mixer direct either into receptacles or barrows and shall be distributed by approved means which do not cause separation or otherwise impair the quality of the concrete. Approved mechanical means of handling will be encouraged, but the use of chutes for placing concrete is subject to the prior approval of the Engineer.

Concrete shall be placed from a height not exceeding 1,500 mm directly into its permanent position and shall not be worked along the shutters to that position. Unless otherwise approved, concrete shall be placed in a single operation to the full thickness of slabs, beams and similar members, and shall be placed in horizontal layers not exceeding 1,500mm deep in walls and similar members.

Concrete in columns may be placed to a height of 4 metres with careful placing and vibration and satisfactory results. Where the height of the column exceeds four metres suitable openings must be left in the shutters so that this maximum lift is not exceeded.

Concrete shall be placed continuously until completion of the part of the work between construction joints as specified hereinafter or of a part of approved extent. At the completion of a specified or approved part of construction joints of the form and in the positions hereinafter specified shall be made. If stopping of concreting be unavoidable elsewhere, a construction joint shall be made where the work is stopped. A record of all such joints must be made by the Contractor and a copy supplied to the Engineer.

Any accumulation of set concrete on the reinforcement shall be removed by wire brushing before further concrete is placed.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Mixing and Placing of Concrete (Ctd).**

The Contractor shall provide runways for concreting to the satisfaction of the Engineer. Under no circumstances will runways be allowed to rest on the reinforcement.

Care shall be taken that the concrete is not disturbed or subjected to vibrations and shocks during the setting period.

Mixing machines, platforms and barrows shall be clean before commencing mixing and be cleaned on every cessation of work.

Where concrete is laid on hardcore or other absorbent materials, the base shall be suitably and sufficiently wetted before the concrete is deposited.

#### **B. Compaction**

At all times during which concrete is being placed the Contractor shall provide adequate trained and experienced labour to ensure that the concrete is compacted in the forms to the satisfaction of the Engineer.

Concrete shall not be placed at a rate greater than will permit satisfactory compaction nor to a depth greater than 400 mm before it is compacted.

During and immediately after placing, the concrete shall be thoroughly compacted by means of continuously tamping, spading, slicing and mechanical vibration. Vibration is required for all concrete of Classes 40, 35, 30 and 25.

Care shall be taken to fill every part of the forms, to work the concrete under and around the reinforcement without displacing it and to avoid disturbing recently placed concrete which has begun to set.

Any water accumulating on the surface of newly placed concrete shall be removed and no further concrete shall be placed thereon until such water is removed.

Internal vibrators shall be of a frequency of not less than 7,000 cycles per minute and shall have a rotating eccentric weight of at least 0.50 kg., with an eccentricity of not more than 12 mm. Such vibrators shall visibly affect the concrete within a radius of 250 mm from the vibrator.

Internal vibrators shall not be inserted between layers of reinforcement less than one and one half times the diameter of the vibrators apart. Contact between vibrators and reinforcement and vibrators and formwork shall be avoided. Internal vibrators shall be inserted vertically into the concrete wherever possible at not more than 500 mm spacing and shall constantly be moved from place to place. No internal vibrator shall be permitted to remain in any one position for more than ten seconds and it shall be withdrawn very slowly from the concrete.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Compaction (Ctd).**

In consolidating each layer of concrete, the vibrating head shall be allowed to penetrate and re-vibrate the concrete in the upper portion of the underlying layer. In the area where newly placed concrete in each layer joins previously placed concrete more than usual vibration shall be performed, the vibrator penetrating deeply at close intervals along these contacts. Layers of concrete shall not be placed until layers previously placed have been vibrated thoroughly as specified.

Vibrators shall not be used to move concrete from place to place in the formwork.

At least one internal vibrator shall be operated for every 1.5 cubic metres of concrete placed per hour and at least one spare vibrator shall be maintained on Site in case of breakdown during concreting operations.

External formwork vibrators shall be of the high frequency low amplitude type applied with the principal direction of vibration in the horizontal plane. They shall be attached directly to the forms at not more than 1,200 mm centres.

In addition to internal and external vibration the upper surface of suspended floor slabs shall be levelled by tamping or vibrating to receive finishes. Vibrating elements shall be of the low frequency high amplitude type operating at a speed of not less than 3,000 r.p.m.

#### **B. Construction Joints**

Construction joints shall be permitted only at the positions pre-determined on the Drawings or as instructed on the Site by the Engineer. In general they shall be perpendicular to the lines of principal stress and shall be located at points of minimum shear, viz., vertically at, or near, mid-spans of slabs, ribs and beams.

Suspended concrete slabs are generally to be cast using alternate bay construction in bays not exceeding 10 metres in length. No two adjacent bays are to be cast within a minimum period of 48 hours of each other. The joints between adjacent bays are to be in positions agreed with the Engineer.

'Shrinkage' bays, extending for the full width of the building at intervals of not less than 20 metres in the length of the building, are not to be cast until 7 days or more after casting the main adjoining floor areas.

Under no circumstances shall concrete be allowed to tail off, but it shall be deposited against stopping-off boards. Where specified the 25mm deep by 3mm wide PVC/hardwood strip shall be held on the inside face of the stopping-off boards by means of 18g binding wire at 300mm centres such that when the stopping-off board's removed the strip remains bound to concrete.

Before placing new concrete against concrete already hardened, the face of the old concrete shall be thoroughly hacked, roughened and cleaned and laitance and loose material removed therefrom, and immediately before placing the new concrete the surface shall be saturated with water. Where the top surface of the concrete is the final finished surface eg power float every care shall be taken that the surface is not damaged while roughening the sides.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Curing and Protection**

Care must be taken that no concrete is allowed to become prematurely dry and the fresh concrete must be carefully protected within two hours of placing from rain, sun and wind by means of hessian sacking, polythene sheeting, or other approved means.

This protective layer and the concrete itself must be kept continuously wet for at least seven days after the concrete has been placed. The Contractor will be required to provide complete coverage of all fresh concrete for a period of 7 days. Hessian or polythene sheeting shall be in the maximum width obtainable and shall be secured against wind. The Contractor will not be permitted to use old cement bags, hessian or other material in small pieces.

Concrete in foundations and other underground work shall be protected from admixture with falling earth during and after placing.

Traffic or loading must not be allowed on the concrete until the concrete is sufficiently matured, and in no case shall traffic or loading be of such magnitude as to cause deflection or other movement in the formwork or damage to the concrete members. Where directed by the Engineer props may be required to be left in position under slabs and other members for greater periods than those specified hereafter.

#### **B. Faulty Concrete**

Any concrete which fails to comply with this Specification, or which shows signs of setting before it is placed, shall be taken out and removed from the Site. Where concrete is found to be defective after it has set, the concrete shall be cut out and replaced in accordance with the Engineer's instructions. On no account shall any faulty, honeycombed or otherwise defective concrete be repaired or patched until the Engineer has made an inspection and issued instructions for the repair. The whole of the cost whatsoever, which may be occasioned by the need to remove faulty concrete, shall be borne by the Contractor.

#### **C. Rod Reinforcement**

The steel reinforcement shall comply with the latest requirements of the following British Standards:-

Hot rolled bars for the reinforcement of concrete to B.S. 4449 (Metric units)

Cold worked steel for the reinforcement of concrete to B.S. 4461 (Metric units)

The Contractor will be required to submit a test certificate of the rollings. Reinforcement shall be stored on racks above ground level. All reinforcement shall be free from loose mill scale or rust, grease, paint or other substances likely to reduce the bond between the steel and concrete.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Fabric Reinforcement**

To be electrically cross-welded steel wire mesh reinforcement to B.S. 4483 and of the size and weight specified.

#### **B. Fixing Rod Reinforcement**

Reinforcement shall be accurately bent to the shapes and dimensions shown on the Drawings and Schedules and in accordance with B.S. 8666. Reinforcement must be cut and bent cold and no welded joints will be permitted unless so detailed.

Reinforcement shall be accurately placed in position as shown on the Drawings, and before and during concreting shall be secured against displacement by using No. 18 S.W.G. annealed binding wire or suitable clips at intersections, and shall be supported by concrete or metal supports, spacers or metal hangers to ensure the correct position and cover.

No concreting shall be commenced until the Engineer has inspected the reinforcement in position and until his approval has been obtained and the Contractor shall give two clear days notice of his intention to concrete.

The Contractor is responsible for maintaining the reinforcement in its correct position, according to the Drawings, before and during concreting. During concreting a competent steel fixer must be in attendance to adjust and correct the position of any reinforcement which may be displaced. The vibrators are not to come into contact with the reinforcement.

#### **C. Position and Correctness of Reinforcement**

Irrespective of whether any inspection and/or approval of the fixing of the reinforcement has been carried out as above, it shall be the Contractor's sole responsibility to ensure that the reinforcement complies with the details on the Drawings or Schedules and is fixed exactly in the positions shown therein and in the positions to give the prescribed cover. The Contractor will be held entirely responsible for any failure or defect in any portion of the reinforced concrete structure and including any consequent delay, claims, third party claims, etc., where it is shown that the reinforcement has not been correctly positioned or is incorrect in size or quantity with respect to the detailed Drawings or Schedules.

#### **D. Spacer Blocks**

Spacer blocks of approved size and shape made of concrete similar to that used in the surrounding construction and fixed to the reinforcement or formwork by No. 18 S.W.G. wires set into the spacer blocks or other approved means shall be provided where necessary to ensure that the requisite cover is obtained.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Concrete Cover to Reinforcement**

Unless otherwise directed the concrete cover to rod reinforcement over main bars in any face shall be:-

Foundations against earth face 75 mm

Foundations against blinding 50 mm

Columns 40 mm

Beams 25 mm

Slabs 15 mm

#### **B. Fixing Fabric Reinforcement**

The fabric shall be free from scale, rust, grease or other substances likely to reduce the bond between the steel and the concrete and shall be laid with minimum 300mm laps and bound with No. 18 S.W.G. annealed iron wire.

#### **C. Projecting Reinforcement**

Where reinforcement projects from a concreted section of the structure and this reinforcement is expected to remain exposed for some time, it is to be coated with a cement grout to prevent rust staining on the finished concrete. This grout is to be brushed off the reinforcement prior to the continuation of concreting.

#### **D. Fixtures**

No openings, chases, holes or other voids shall be formed in the concrete without the prior approval of the Engineer. Details of any fixtures to be permanently built into the concrete including the proposed position shall be submitted to the Engineer for his approval before being placed all electrical conduits 25mm and over in diameter.

#### **E. Chases, Holes, etc., in Concrete**

The Contractor shall be responsible for the co-ordination with the Sub-Contractors for incorporating various items e.g. structural steel plates/bolts, electrical conduit, pipes, fixing blocks, chases, holes, and the like in concrete members as required and must ensure that adequate notice is given to such Sub-Contractors informing them when concrete members incorporating the above are to be poured. The Contractor shall submit full details of these items to the Engineer for approval before the work is put in hand. All fixing blocks, chases, holes, etc., to be left in the concrete shall be accurately set out and cast with the concrete. **Note the setting out of such items will be carried out by the sub-contractor and the main contractor shall be responsible for ensuring that the item remains in position while concreting.**

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Position of Electrical Conduits**

Unless otherwise instructed by the Engineer all electrical conduits to be positioned within the reinforced concrete shall be fixed inside the steel cages of beams and columns and between the top and bottom steel layers in slabs and similar members.

The proposed position of all electrical conduits 25mm and over in diameter which are to be enclosed in the concrete shall be shown accurately on a plan to be submitted to the Engineer, whose approval shall be obtained before any such conduit is placed.

#### **B. Formwork**

The method and system of formwork which the Contractor proposes to use shall be approved by the Engineer before construction commences. Formwork shall be substantially and rigidly constructed of timber or steel or precast concrete or other approved material.

All timber for formwork shall be good, sound, clean, sawn, well-seasoned timber, free from warps and loose knots and of scantlings sufficiently strong for their purpose to the approval of the Engineer.

#### **C. Construction of Formwork**

All formwork shall be of sufficient thickness and with joints close enough to prevent undue leakage of liquid from the concrete and fixed to proper alignment, level and plumb and supported on sufficiently strong bearers, shores, braces, plates, etc., properly held together by bolts or other fastenings to prevent displacement, vibration or movement by the weight of materials, men and plant on same and so wedged and clamped as to permit of easing and removal of the formwork without jarring the concrete. Where formwork is supported on previously constructed portions of the reinforced concrete structural frame, the Contractor shall, by consultation with the Engineer, ensure that the supporting concrete structure is capable of carrying the load and/or sufficiently propped from lower floors or portions of the frame to permit the load to be temporarily carried during construction. Soffits shall be erected with an upward camber of 5 mm for each 5 metres of horizontal span or as directed by the Engineer.

Great care shall be taken to make and maintain all joints in the formwork as tight as possible to prevent the leakage of grout during vibration. All faulty joints shall be caulked to the Engineer's approval before concreting.

The formwork shall be sufficiently rigid to ensure that distortion or bulging occurs under the effects of vibration. If at any time the formwork is insufficiently rigid or in any way defective the Contractor shall strengthen or improve such formwork as the Engineer may direct.

All surfaces which will be in contact with concrete shall be oiled or greased to prevent adhesion of mortar. Oil or grease shall be of a non-staining mineral type applied as a thin film before the reinforcement is placed. Surplus moisture shall be removed from the forms prior to placing of the concrete.

## **SPECIFICATIONS**

-

### **CONCRETE WORK (Ctd).**

#### **A. Construction of Formwork (Ctd)**

Temporary openings shall be provided at the base of columns, wall and beam forms and at any other points where necessary to facilitate cleaning and inspection immediately before the pouring of concrete. Before the concrete is placed the shuttering shall be trued-up and any water accumulated therein shall be removed. All sawdust, chips, nails and other debris shall be washed out or otherwise removed from within the formwork. The reinforcement shall then be inspected for accuracy of fixing. Immediately before placing the concrete the formwork shall be well wetted and inspection openings shall be closed. The erection, easing, striking and removing of all formwork must be done under the personal supervision of a competent foreman, and any damage occurring through faulty formwork or its incorrect removal shall be made good by the Contractor at his own expense.

After removal of formwork, all projections, fins, etc., on the concrete surface shall be chipped off, and made good to the requirements of the Engineer. Any voids or honeycombing shall be treated as described in "Faulty Concrete".

#### **B. Stripping Formwork**

All formwork shall be removed without undue vibration or shock and without damage to the concrete. No formwork shall be removed without the prior consent of the Engineer and the minimum periods that shall elapse between the placing of the concrete and the striking of the formwork will be as follows:-

Beam sides, walls and columns (unloaded)                      3 days

Slab soffits (props left under)                                      7 days

Beam soffits (props left under)                                      9 days

Removal of props (partly subject to concrete cube strength being satisfactory) to:

Slabs    21 days

Beams    21 days

If the Contractor wishes to take advantage of the shorter stripping times permitted for beam and slab soffits when props are left in place, he must so design his formwork that sufficient props as agreed with the Engineer can remain in their original positions without being moved in any way until expire of the minimum time for removal of props. Stripping and re-propping will not be permitted.

The above times may be reduced in certain circumstances, at the discretion of the Engineer, provided an approved method is adopted at the Contractor's expense to ensure that the required concrete strength is attained before the forms are stripped.

## **SPECIFICATIONS**

-

### **CONCRETE WORK (Ctd).**

#### **A. Supporting Props to Wall and Beam Soffits**

Where directed by the Engineer supporting props to slab and beam soffits are to be left in position until completion of the whole of the reinforced concrete structure.

The props are to be the approval of the Engineer and the Contractor must submit the suggested method of propping to the Engineer prior to removal of formwork to the relevant surfaces.

#### **B. Exposed Concrete Finishes**

##### **(a) General**

The Contractor will be required, at an early stage in the Contract, to prepare samples for the approval of the Engineer of the various concrete finishes specified hereafter. Samples are to be prepared using the same materials and the same methods of construction, compaction, curing, etc., as the Contractor proposes to use for executing the full quantity of the work.

A record of the mix, water content, method of compaction, any additives used, etc., is to be kept for each sample prepared. When the Engineer has approved a sample it will be kept on Site in approved location. The finishes in construction will be expected to be up to a standard equal to the approved sample. The Contractor is to include for all costs in preparing samples in his rates for the respective finish.

Consistency in cement and colour, grading and quality of aggregates must be maintained in all finished concrete work.

##### **(b) Tamped Finish**

Areas so specified shall be finished at the time of casing with a tamped finish to the Engineer's approval, produced by an edge board. Board marks are to be made to a true pattern and will generally be at right angles to the traffic flow. Haphazard or diagonal tamping will not be accepted.

##### **(c) Chamfers and Rebates to Exposed Concrete**

Where concrete surfaces are to remain exposed and otherwise where specified or shown on the Drawings, rebates and chamfers are to be provided at junctions, corners, and changes in direction of concrete members.

Rebates will also be required to surrounds to chisel-dressed, brushed, or similar concrete finishes.

Rebates and chamfers are to have a fair face finish.

Unless otherwise instructed, concrete pours to columns and to other members where applicable are to terminate only at the pre-determined rebate positions.

## **SPECIFICATIONS**

-

### **CONCRETE WORK (Ctd).**

#### **A. Exposed Concrete Finishes (Ctd)**

##### **(d) Fair Face**

Fair face surfaces shall be clean, smooth, even, true to form, line and level, and free from all board marks, joint marks, honeycombing, pitting, and other blemishes. Forms are to be provided with a smooth lining of plywood, steel, or other approved material which will achieve the required finish without any general rubbing down. Rubbing down will only be permitted to remove any projecting fins at corners or joints.

##### **(e) Chisel Dressed Finish**

Chisel-dressed finish may be carried out on any grade of concrete but not until it is at least 30 days old.

The surfaces are to be fully chisel-dressed to remove a maximum of 15mm (average 9mm) of the surface by shearing and exposing the aggregate without excessive cracking of the surrounding matrix.

Arises of columns, beams, etc., are pre-formed fair face with timber set in the formwork and care must be taken in working up to these to preserve a clean line.

For vertical walls and columns particular care must be taken to remove all sharp projections. For beam soffits this requirement is not necessary.

All surfaces requiring this treatment are to have the margins chisel-dressed by hand for a minimum width of 75mm commencing from the fillet edge. Thereafter mechanical chisel-dressing may be used but the Contractor must ensure that a uniform texture and even plane surface is achieved.

The use of sharply pointed steel tools for both hand and mechanical chisel-dressing is essential. Upon completion the surfaces are to be thoroughly wire brushed and washed down.

#### **B. Protection of Finishes**

Wherever possible, in-situ exposed concrete finishes should be commenced at the highest level and worked progressively down the building.

Precautions shall be taken to avoid staining or discolouring of previously finished concrete faces by leakage of grout from newly placed concrete. The Contractor shall during all stages of construction adequately protect all concrete finishes from damage by leaking grout, knocking, paint stains, falling plaster, etc. In cases of balustrade walls to staircases and members where damage is otherwise likely, concrete finishes shall be protected by cladding with timber, softboard, or other approved sheeting. All Sub-Contractors shall be informed accordingly on the precautions to be taken.

**SPECIFICATIONS**

-

	<b>CONCRETE WORK (Ctd).</b>
<b>A.</b>	<b>Joggle Joints</b>
	<p>Construction joints in basement walls and where specified elsewhere are to be joggle joints to the dimensions shown on the Drawings, unless directed otherwise by the Engineer.</p> <p>Before pouring concrete to the adjoining areas beyond the joint, the flat surfaces on each side of the recess are to be thoroughly hacked to remove all laitance and loose concrete and washed with water. Before formwork on the second side is placed, a layer of bitumen Type 7, 30 to 40 mm thick is to be applied by trowel to the faces of the recess. This bitumen layer is to be protected by a covering strip of 1000 gauge polythene which is to be removed immediately before pouring concrete. At horizontal joints a layer of cement/sand grout 50 mm thick and of the same proportion as the cement and sand in the surrounding concrete is to be applied to the joint surface immediately before pouring concrete.</p>
<b>B.</b>	<b>Precast Concrete</b>

	<p>All materials (including fixings), workmanship, production, transport, storage, handling, erection methods and protection from damage shall comply with B.S. C.P. 110, except where inconsistent with this Specification.</p> <p>Should the Contractor wish to make greater use of precast concrete construction either in the main structural frame or in cladding units than the present design permits, he may propose alternative forms of construction which will be given due consideration by the Engineer.</p> <p>Finishes generally shall be as already described.</p> <p>Where production of precast concrete units is to be carried out elsewhere than the main building site, the precasting yard shall be considered as part of the main building site in as far as this Specification is concerned.</p> <p>The maximum size of coarse aggregate in precast concrete shall not exceed 20mm except for thicknesses less than 75 mm where it shall not exceed 10mm.</p> <p>The compacting of precast concrete shall conform with requirements given elsewhere in this Specification except for thin slabs where use of immersion type vibrators is not practicable. The concrete in these slabs may be consolidated on a vibrating table or by any other methods approved by the Engineer.</p> <p>Steam curing of precast concrete will be permitted. The procedure for steam curing shall be subject to the approval of the Engineer.</p>

---

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Precast Concrete (Ctd).**

The precast 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 material 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.

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

Repair of damage to the precast 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 precast work is described as "fair face" the moulds shall be made of suitably strong sawn timber true in form to the shapes required. Unless otherwise described faces are to be left rough from the sawn moulds.

Where precast 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 all shutter marks, holes, pitting, etc.

The precast units shall be installed to the lines, gradients and dimensions shown on the Drawings or as directed by the Engineer.

## **SPECIFICATIONS**

### **CONCRETE WORK (Ctd).**

#### **A. Concrete Surface Beds**

The concrete shall be placed as soon as possible after being mixed. In transporting the concrete adequate precautions shall be taken to avoid damage to the prepared base. The concrete shall be spread to such a thickness that when compacted it shall have the finished thickness as specified or shown on the Drawings. A layer of concrete 50 mm (or as specified on the drawing) less than the finished thickness shall first be spread and struck off at the correct level to receive the top fabric reinforcement. The top layer shall then be added. Not more than 30 minutes shall elapse between spreading the bottom layer and the start of compaction of the top layer.

The Contractor must ensure that the reinforcement is held rigidly in position to provide the required cover shown on the drawings. A system of stools/chairs formed with 12mm ms rod placed on a grid of 1m x 1m on leveled concrete pads shall be acceptable to hold the reinforcement in place.

The compacting and finishing of the concrete shall be effected by immersion vibrators and a hand or mechanical tamper weighing not less than 10 kg. per linear metre and having a tamping edge with a steel strip 75 mm wide fixed to the tamper by countersunk screws. Immersion vibrators with "spade" attachments will be permitted. Compaction shall be continued until a dense, scaled surface finish is achieved. Over-compaction causing an excessive amount of fines to be brought to the surface shall be avoided.

The surfaces of the concrete shall be finished to a wood float finish or as otherwise directed to the levels, falls and cross falls as directed or shown on the Drawings and shall be subject to the following tolerances:-

1. The level shall be within + or - 6 mm of the levels directed.
2. The falls shall be within 10% of the falls directed.
3. The smoothness shall be such that departures from a 3 metre straight edge laid in any direction shall not exceed 3mm.

Minor irregularities shall be made good by the use of a steel float but in no circumstances shall mortar be used to make good the surface.

Where specified, before the concrete has finally set and after completion of the floating the concrete shall be brushed with a strong headed broom to produce a grooved finish in parallel lines to the satisfaction of the Engineer. As soon as the surface has been finished it shall be protected against too-rapid drying by means of damp hessian, polythene sheeting or other approved means placed carefully on the surface and kept damp and in position for 7 days and the concrete shall be kept wet for a further 21 days. The most critical period is the first 24 hours after placing and the curing during that time shall be very thorough. The Contractor is to obtain the Engineer's approval to the material and method he proposes to use for curing and no concreting will be permitted until sufficient such material is on Site.

## **SPECIFICATIONS**

-

### **CONCRETE WORK (Ctd).**

#### **A. Concrete Surface Beds (Ctd).**

Forms shall not be removed from freshly placed concrete until it is at least 24 hours old. Care shall be taken that in their removal no damage is done to the concrete, but should any damage occur the Contractor shall be responsible for making it good.

Where the surface bed is specified to be cast in panels, these shall in NO circumstances exceed 36 sq. metres in area and no dimension shall exceed 6 metres. The slabs shall be cast in chequer-board fashion.

Slabs for vehicular traffic, finished "off the beam" shall be solidly laid and tamped with a beam 50 mm wide with the lines of the beam to the top surface of slab diagonal to any fall.

Brushed concrete surface, where specified, shall be achieved by the following operation. While still green, the concrete is to have dry cement and sand (1:3) sprinkled on and the surface dragged with a coarse broom adding water as necessary and as directed by the Engineer. All rates must include this type of finish.

#### **B. 50 mm Thick Topping in Concrete Slab**

The topping concrete which shall not be less than 50mm thick shall consist of the following mix:

1 x 50kg bag Ordinary Portland Cement

75kg washed river sand, complying with B.S. EN 12620.

150kg washed 12mm (1/2") maximum size aggregate of approved grading and of spherical shape. \_\_

Application of plasticiser to be carried out in accordance with the manufacturers specifications and to the Engineers approval. The dosage of the additive shall be to the Engineer's approval

20 litres of clean water to be adjusted as necessary by the Engineer to allow for the water content in the aggregates, but to be the minimum necessary to achieve workability.

The surface should be further treated with a hardener and approved dust proofing agent to manufacturers specification where specified to the Engineers approval. The dosage of the hardener shall be to the Engineer's approval

The screed shall be compacted by tamping and the surface finish shall be formed with a steel float to give a smooth even level surface. Trowelling shall be the absolute minimum to achieve this and any overworking of the surface shall be avoided.

At joints the top 12mm of hardboard including the timber fillets shall be out after 21 days from the pouring, and the groove filled with "mastic" sealant or an alternative approved by the Engineer. The level of the top of the sealer shall be proud of the concrete surface by approximately 3mm.

### **SPECIFICATIONS**

-

4/28

### **CONCRETE WORK (Ctd).**

#### **A. Power Float Concreting**

The procedure is as described under **item 2.52** above except use mechanical/power operated steel float instead of wood or hand steel float to manufacturer's specification and to the approval of the Engineer.

#### **B. Saw Cuts in the Topping**

Where saw cuts are specified to form construction joints these shall be carried out within 3-days (or as directed by the Engineer) of pouring concrete. The saw cuts shall be formed using power disc saw at locations shown on the drawings and the distance between the saw-cuts shall not be more 6.0m in either direction. The cuts shall be minimum 25mm deep and filled with approved industrial grade mastic sealant.

#### **C. Notes Concerning Pricing**

The Contractor must allow for all costs incurred during the progress of the Contract for complying with the provisions concerning the preparation and use of graded mixes.

Prices for plain or reinforced concrete shall include for mixing, hoisting, depositing, compacting, curing and protection at the various levels required throughout the building, and shall also include for forming or hacking a satisfactory key for all faces receiving asphalt and plaster work. Prices for slabs shall include for forming construction joints at bay edges, including all necessary temporary formwork and supplying records of such joints to the Engineer.

Prices for steel rod reinforcement shall include for cutting to lengths and all labour in bending and cranking, forming hooked ends, handling, hoisting and fixing in position and for providing all necessary tying wire, spacer blocks and supports. Prices for fabric reinforcement shall include for all straight cutting and waste, handling hoisting and fixing in position, providing all necessary tying wire, and supports and all extra material in laps. The prices for formwork shall include for extra material at joints, extra labour and waste for narrow widths, small quantities, overlaps, passings at angles, straight cutting and waste, splayed edges, notchings, etc., and for fixing at the various levels including battens, struts, and supports and for bolting, wedging, easing, striking and removal. Prices for linear items such as boxings shall include for angles and ends.

Prices of all precast concrete shall include for all moulds, finishings, as described, handling, reinforcement, hoisting and fixing at the required levels and for casting or cutting to the exact lengths required and any waste resulting from such cutting.

Prices for expansion joints shall include for cutting to size and all temporary supports and prices for expansion joint sealers shall include for all temporary battens or fillets required to form the necessary grooves.

The price for wrought formwork shall include for fair face finish either by rubbing down or by smooth lining, all as described in this Specification.

## **SPECIFICATIONS**

-

### **W A L L I N G**

#### **A. Setting Out**

The Contractor shall provide all necessary equipment and materials to accurately set out and shown the proper positions and levels of all openings, apertures, sills and lintels and shall build the various foundations, piers, walls, etc., to the correct thickness, widths, heights and other dimensions shown on the Drawings. Accurate setting out to approved methods will also apply in respect of other sundry works. The Contractor should include for all setting out and building to correct dimensions as shown on the Drawings or otherwise instructed by the Engineer in his rates quoted for building and other sundry work items.

#### **B. Cement**

The cement shall be as described in "Concrete Work"

#### **C. Sand**

The sand for mortars shall conform to B.S. EN 13139.

D. **Lime**

The lime shall be as described under "Plasterwork"

E. **Mortars**

Cement mortar shall consist of one part of cement to four parts of sand by volume.

Cement/lime mortar shall consist of one part of cement, one part of lime and six parts of sand by volume.

The ingredients of mortar shall be measured in proper gauge boxes on a boarded platform, the ingredients being thoroughly mixed dry, and again whilst adding water. In the case of cement/lime mortar, the sand and lime shall be mixed first and then the cement added. All mortar is to be thoroughly mixed to a uniform consistency with only sufficient water to obtain a plastic condition suitable for trowelling. No mortar that has commenced to set is to be used or remixed for use.

F. **Concrete Blockwork**

Concrete blocks shall be hollow or solid complying with B.S. EN 771-3 Type 'A', of minimum crushing strength 3.5 N/mm<sup>2</sup>, unless shown otherwise, and must be obtained from an approved manufacturer, equal to samples deposited with and approved by the Engineer.

All concrete blocks must be cured for a minimum period of four weeks before use and all testing of blocks is to be carried out by an approved Materials Testing Laboratory or other approved laboratory and shall be at the Contractor's expense.

**SPECIFICATIONS**

-

**W A L L I N G (Ctd)**

A. **Concrete Blockwork**

All blocks shall be handled and stacked with care. The blocks shall be stacked protected from rain by a cover and in such a way that air circulates around them. No broken block or block of improper quality shall be used.

All blockwork shall be bonded, pointed and uniformly bedded in true horizontal course in cement mortar and built true to line and profile. Blockwork shall be carried up evenly and in regular stages and no part shall be raised more than 1 metre above any other part of the work at any time. All blocks shall be well soaked before use and the top of unfinished walls wetted and raked back before work is recommenced. All blockwork shall be built with vertical joints staggered such that no joint in any one course shall be within 112 mm of a similar joint in the course immediately above or below.

All perpend, reveals, quoins and other angles and joints of the walls etc., shall be built strictly true and square.

Blockwork which is not to be rendered shall be finished with a fair face and the blocks shall be selected for even texture and unmarked faces, regular shape and square, unbroken arises. The blockwork shall be pointed as the work proceeds with a neat joint as required by the Engineer's Representative. Where blockwork is to be rendered the joint shall be raked out 12 mm deep as the work proceeds to form an adequate key. Blockwork shall be bonded to concrete columns and walls including portal frame legs by approved galvanised metal ties cast into the concrete, spaced at alternate courses and extending not less than 150 mm into the block joints.

Chases shall be cut as necessary for services but no excessive cutting will be permitted. Chases shall be made good after the erection of services by building in pieces of block or mortar.

**B. Stone Walling**

Stone for walling, piers, stacks, etc., throughout shall be obtained from a quarry approved by the Engineer and shall be free of soft or decomposed matter, fractures and other defects. It shall be laid on its natural bed, properly lapped and bonded. All stone work shall be thoroughly wetted before laying and walling shall be thoroughly wetted after laying for at least 3 (three) days.

**C. Wall Reinforcement**

70, 90 and 140 mm Stone and concrete block walls are to be reinforced with long lengths of 20 mm wide hoop iron x 20 gauge which is to be lapped and hooked at joints, one strand to alternate courses. In the event that hoop iron is not available, then 8 gauge high strain fencing wire may be used, one strand to 70 and 90 mm walls and 2 strands to 140 mm walls.

**D. Damp-proof Courses**

Damp-proof courses shall be bituminous felt to B.S. 8215 weighting 3.85 kg. per square meter, free from tears and holes and be laid with 150 mm minimum laps on and including a leveling screed of cement mortar.

**SPECIFICATIONS**

-

**W A L L I N G (Ctd)**

**A. Water Proofing Membrane**

Water proofing membrane where specified shall be applied as per the Manufacturers specification. The Contractor shall be required to provide a certificate of compliance to the specification necessary and guarantee from the manufacturers or approved dealers.

**B. Prices to Include**

The prices for walling shall include for all reinforcement, straight cutting, bonding, plumbing angles, forming reveals, pinning up to under side of concrete soffits and cutting up to sides columns and pinning ends of lintels and sills.

**SPECIFICATIONS**

-

**ASPHALT WORK**

**A. APP ROOFING MEMBRANE**

**.01 Generally**

The Contractor's attention is drawn to section J of the standard method of measurement.

All work relating to APP roofing membrane shall be executed by a Specialist firm to be approved by the Architect.

The Contractor shall obtain from the approved Sub-Contractor a written guarantee and undertaking that during a period of Ten (10) Years from the date of Practical Completion as certified, the Sub-Contractor shall make good at his own cost any defects that appear in the roofing works and are due to poor workmanship or inappropriate materials. The certificate of guarantee must be duly registered as a binding legal document at the Contractors own expense.

The Attactic Poly-Propylene (APP) roofing membrane shall be supplied in strict compliance with the manufacturer's printed instructions.

**.02 Application of Roofing Membrane**

.01 A site survey before application is recommended to determine the general conditions to the deck and necessary preliminary work to be carried out.

.02 All angles and corners should be rounded off, bumps possibly flattened and holes filled and levelled, blisters, if any, should be cross cut and patched.

.03 Remove all nails, stones and any other object, then sweep off all dust, debris and dirt from the deck.

.04 Brush the primer all over the surface with particular care around the perimeter and the base of all raised elements, then let the primer dry well.

- .05 Align rolls with 100mm (4") side overlap, starting from the drain towards the roof centre.
- .06 Re-roll and then torch apply with a 150mm (6") overlap and make sure each sheet is carefully bonded for 1m at both ends. This also applies in off-set spot bond or loose laid system to avoid any possible unpredictable of the polyester mat.

## **SPECIFICATIONS**

### **ROOFING**

#### **A. Generally**

Tiles shall be supplied by an approved firm. Samples of tiles must be submitted and the Architect's written approval obtained before work is commenced.

#### **B. Roofing Sheets and Accessories**

Roofing sheets shall be 24 gauge roof sheets or other equal and approved. The roof sheets shall comply with the relevant Kenya Bureau of Standards (KBS) code for roof sheets. The accessories (ridge/hip caps, flashings etc) shall all match the roof sheets in thickness, colour, profiles etc. The sheets and accessories shall all be fixed in accordance with the Manufacturer's printed instructions and Architect's satisfaction.

#### **C. Tiling Battens**

Tiling battens shall be of the timber as specified for carpentry treated with wood preservative and complying with B.S. 5534.

#### **D. Workmanship**

Tiles shall be properly stacked on wood strips and straw on level ground. Tiling shall be close joined with the horizontal and vertical joints ranging perfectly straight. Each course shall be laid flat on the previous course and properly bonded.

#### **E. Staining**

Staining of the roof when fixing ridges and hips or by other operation under the Contract must be avoided. Allow for protecting the roof with tarpaulins and polythene sheeting as necessary and for removing such stains or replacing affected work as directed on completion.

## **SPECIFICATIONS**

## CARPENTRY

### A. All Timber

All timber shall be in accordance with the latest approved Grading Rules issued by the Government of the Republic of Kenya. Timber for Carpentry shall be SECOND (OR SELECT) GRADE and timber for joinery shall be FIRST (OR PRIME) GRADE.

### B. Generally

All timber as it arrives on the Site shall be inspected by the Contractor and any timber brought on the Site and not complying with the Specification or not approved, must be removed forthwith from the Site and only timber as approved shall be used in the Works.

The Contractor shall upon signing the Contract purchase sufficient supplies of specified softwoods to avoid possible shortages at a later date.

### C. Species of Timber

The following timber shall be used as later described

<u>Standard Common Name</u>	<u>Botanical Name</u>
Cypress - from plantation forests (preferably Forest Standard-ship Certificate (FSI))	Cypressus

### D. Tolerances in Thickness

Shall conform with the following extracts of Government of Kenya Grading Rules: -

#### (1) Hardwood Grading (First and Second Grades)

The following tolerances in thickness will be admitted: -

- (a) 1.5mm oversize on pieces up to 25mm in thickness
- (b) 3mm oversize on pieces over 25mm and up to 50mm in thickness.
- (c) 6mm oversize on pieces over 50mm in thickness.

Undersize timber will not be permitted.

## SPECIFICATIONS

### CARPENTRY (Ctd)

**A. Tolerances in Thickness (Ctd).**

(2) Softwood Grading: Strength Grades (for Carpentry)

First and Second Grades.

Undersize not allowed.

Oversize: All timber to be sawn oversize by 1.5mm per 25mm of thickness and width to a maximum of 3mm in thickness and 6mm in width.

(3) Softwood Grading: Appearance Grades (for Joinery)

First and Second Grades.

All as for Strength Grades above.

**B. Insect Damage**

All timber shall be free from live borer beetles or other insect attack when brought upon the Site. The Contractor shall be responsible up to the end of the maintenance period for executing at his own cost all work necessary to eradicate insect attack to timber which becomes evident, including the replacement of timber attacked or suspected of being attacked, notwithstanding that the timber concerned may have already been inspected and passed as fit for use.

**C. Seasoning of Timber**

All timber shall be seasoned to a moisture content of not more than 22% for Carpentry and 15% for Joinery.

**D. Pressure Impregnation Treatment**

All Carpentry timbers, sawn joinery and timber grounds for fixing joinery shall be treated with pressure impregnated treatment solution with a minimum nett retention of 0.35 lbs. of dry salt per cubic foot. If so required "charge sheets" issued after treatment shall be submitted by the Contractor to the Architect for his retention. All cut ends and any other cut faces of timbers sawn after treatment shall be treated before fixing with treatment solution brushed on.

The Contractor's prices for such timber hereinafter must allow for the above treatment.

**SPECIFICATIONS**

**CARPENTRY (Ctd).**

**A. Inspection and Testing**

The Architect shall be given facilities for inspection of all works in progress whether in workshop or on Site. The Contractor is to allow for testing of prototypes of special construction units and the Architect shall be at liberty to select any samples he may require for the purpose of testing, i.e. for moisture content, or identification, species, strength, etc.; such tests will be carried out by an approved Testing Laboratory.

**B. Clearing Up**

The Contractor is to clear out and destroy or remove all cut ends, shavings and other wood waste from all parts of the building and the Site generally, as the work progresses and at the conclusion of the work.

This is to prevent accidental borer infestation and to discourage termites and decay.

**C. Workmanship**

All Carpenter's work shall be accurately set out in strict accordance with the Drawings and shall be framed together and securely fixed in the best possible manner with properly made joints; all brads, nails and screws, etc., shall be provided as necessary, directed and approved, and the Contractor's prices shall allow for all the foregoing.

All workmanship shall be of the best quality.

All Carpenter's work shall be left with sawn surfaces except where particularly specified to be wrought.

**D. Dimensions**

Dimensions of timber for Carpentry left with sawn faces shall comply with the previous Clause specifying tolerances in thickness. Dimensions for wrought members shall be as described in "Joinery".

**E. Jointing**

All timber shall be as long as possible and practicable to eliminate joints. Where joints are unavoidable surfaces shall be in contact over the whole area of the joint before fastenings are applied.

No nails, screws, or bolts are to be fixed in any split end. If splitting is likely, or is encountered in the course of any work, holes for nails are to be prebored at diameters not exceeding  $\frac{4}{5}$ <sup>th</sup> of the diameter of the nails. Clenched nails must be bent at right angles to the grain.

Lead holes are to be bored for all screws. When the use of bolts is specified the holes are to be bored from both sides of the timber and are to be of the diameter  $D/16$ , where D is the diameter of the bolt. Nuts must be brought up tight but care is to be taken to avoid crushing of the timber under the washers.

**SPECIFICATIONS**

**JOINERY**

**A. All Timber**

All timber shall be FIRST (OR PRIME) Grade. Species of timber and tolerance shall be defined under "Carpentry".

## **B. Generally**

All joiner's work shall be accurately set out on boards to full size for the information and guidance of the artisans before commencing the respective works, with all joints, iron work and other works connected therewith fully delineated. Such setting out must be submitted to the Architect and approved before such respective works are commenced.

All joiner's work shall be cut out and framed together as soon after the commencement of the building as is practicable, but not to be wedged up or glued until the building is ready for fixing same. Any portions that warp, wind or develop shekes or other defects within six months after completion of the works shall be removed and new fixed in their place together with all other work which may be affected thereby, all at the Contractor's own expense.

All work shall be properly mortised, tenoned, housed, shouldered, dovetailed, notched, pinned, braded, etc. as directed and to the satisfaction of the Architect and all properly glued up with the best quality glue.

Joints in joinery must be as specified or detailed, and so designed and secured as to resist or compensate for any stresses to which they may be subjected. All nails, springs, etc., are to be punched and puttied. Loose joints are to be made where provision must be made for shrinkage, glued joints where shrinkage need not be considered and where sealed joints are required. Glued for load bearing joints or where conditions may be guaranteed casein or organic glues may be used.

All exposed surfaces of joinery work shall be wrought and all arrises "eased off" by planing and sand-papering to an approved finish suitable to the specified treatment.

## **C. Insect Damage**

All timber shall be free of insect damage as defined under "Carpentry".

## **Seasoning of Timber**

All timber shall be seasoned to a moisture content of not more than 15%

## **Dimensions**

3mm Reduction off specified sizes will be allowed to each wrought face except where described as finished sizes in which joinery shall hold up to the full dimensions.

## **JOINERY (Ctd.)**

### **Dimensions (Ctd.)**

The Contractor is to note that all joinery timber sizes are normal unless otherwise stated as finished sizes. These nominal sizes have been calculated in accordance with Standard Method of Measurement of Building Works, January 1987 2nd Edition Metric and no regard has been taken of metric sizes of timber at present being sold.

A. **Fixing Joinery**

All beads, fillets and small members shall be fixed with round or oval brads or nails well punched in and stopped. All larger members shall be fixed with screws. Brass screws shall be used for fixing of all timber, the heads let in and pelleted over with wood pellets to match the grain.

B. **Bedding Frames etc.**

The Contractor's rates must include for bedding frames, sills etc., in mortar or dressing surfaces of walls, etc., in lieu.

C. **Plugging Concrete and Walls**

Round wood plugs shall not be used. All work described as plugged shall be fixed with screws to plugs formed by drilling concrete walls etc. With a proper tool of suitable size at 750mm spacing and filling the holes completely with approved rawl plastic or Rawplugs in accordance with the Manufacturer's instructions. Alternatively and where so agreed by the Architect hardwood dovetailed fixing slips, dipped in approved treatment solution and cut and pinned or bedded in cement mortar (1:3) may be used.

D. **Fibreboard:** Shall be 12mm termite-proofed softboard cut to panels with V-edges.

E. **Plywood:** Shall comply with B.S. 6566 (First Quality "interior type" unless otherwise specified).

F. **Blockboard:** Shall be laminated board faced both sides with 4mm plywood. Exposed edges shall be lipped with 20mm softwood and rates shall include for lipping.

G. **Plastic Sheeting:** Shall be "Formica" sheeting 1/16" thick and securely fixed with approved type waterproof adhesive and in the colours approved by the Architect.

### JOINERY (Ctd.)

A. **Chipboard:** Shall be resin bonded and shall comply with B.S. EN 312.

**B. Protect Joinery**

Any fixed joinery which in the opinion of the Architect is liable to become bruised or damaged in any way, shall be completely cased and protected by the Contractor until the completion of the Works.

**C. Flush Doors**

All flush doors shall be manufactured to the thickness specified and consist of 100mm wide framing all round with horizontal core battens at not more than 75mm centres pressure impregnated as described and bored with 12mm diameter ventilation holes at 300mm centres. Doors shall have two lock blocks and be faced both sides with approved veneer and have 25mm softwood rebated lipping all round and otherwise be equal to an approved sample. External flush doors shall be as described above but faced both sides with "exterior" quality plywood. Doors should also receive stiffening/blocking for UNON-PACT Access Control System Electronic Locking System.

**D. Prices to Include**

Prices of items hereafter shall include for the foregoing labours etc., and in addition all prices for linear items are to include all internal and external angles, either mitred or tongued all fair, fitted, stopped, notched or returned ends all similar incidental labours and all short lengths.

**E. Bottom Edges**

Bottom edges of doors shall be painted with one coat of approved primer before fixing.

**Ironmongery**

All locks and ironmongery shall be fixed with screws etc. to match. Before the woodwork is painted, handles shall be removed carefully stored and re-fixed after completion of painting and locks oiled and left in perfect working order. All keys shall be labelled with the door reference marked on labels before handing to the Architect on completion.

UNON-PACT Access Control Locking & Electronic Card Readers shall be fixed by UNON Specialist Contractor to conduited & cabled outlets provided under this Contract to Specialist Contractor's layout and requirements. Provide attendance on specialist installers.

**SPECIFICATIONS**

**METAL WORK**

**A. All Materials**

Shall be of the best quality, free from defects. The materials in all stages of transportation, handling and piling shall be kept clean and injury from breaking, bending and distortion prevented.

**B. Nails, Screws and Bolts**

Shall be of the best quality mild steel of lengths and weights approved by the Architect. Nails shall be to B.S. 1202-1 and bolts to B.S. 916.

**C. Workmanship**

All work shall be carried out in the most workmanlike manner and strictly as directed by the Architect.

Welding shall be neatly cleaned off and units shall be prefabricated in the workshop wherever possible, the minimum of site welding being employed.

All screwed work shall have full internal and external threads and holes shall have been cleaned off. Counter sinkings must be concentric.

**D. Rainwater Goods**

Prices shall include for building in, casting in or cutting mortices for fastenings, all making good, jointing, short lengths and all extra joints in the case of fittings.

**E. Louvre Clips**

Shall be approved of steel, aluminium-lacquered, single control type, unless otherwise described, carefully screwed into timber sub-frames or plugged and screwed to walling.

Prices shall include for oiling and adjusting and leaving clean and undamaged on completion.

**F. Fixing Metal Windows**

The Contractor's prices for fixing metal windows, doors etc. shall include for assembling and fixing, cutting mortices for lugs in concrete or walling and running with cement mortar (1:4), bedding frames in similar mortar and pointing in mastic, bedding cills, transomes and mullions in mastic, making good plaster around frames both sides and fixing, oiling and adjusting all fittings.

**G. Mild Steel**

For balustrades etc. shall comply with B.S. 15 No work shall be fabricated until site dimensions have been checked and no additional claim will be accepted should final dimensions differ from those on the drawings.

**SPECIFICATIONS**

**METAL WORK (Ctd.)**

**Mild Steel (Ctd.)**

All welds shall be ground smooth and the Contractor shall ensure that the metalwork is prepared for painting as described in painting and decorating.

The Contractor is to ensure that all work is erected plumb and true and be so maintained until properly secured by permanent fixings.

### **Structural Hollow Sections**

All hollow sections are to be connected by electric welding.

For butt welds the fusion surfaces of each member must be properly aligned and prepared.

### **J. Electronic Welding**

All welding is to be in accordance with the requirements of B.S. 499-1 and the electrodes shall comply with B.S. EN 60974-6

Fusion faces shall be free from irregularities which could interfere with the welding material. Those faces also be free from any deleterious matter such as rust, grease and paint.

All welds shall be prepared by planning or machine flame cutting.

During welding all parts will be maintained in their correct position.

Welds shall be carried out with each run closely following the one prior with sufficient time between to allow for removal of slag.

Each run of weld is to be inspected and the Sub-Contractor shall ensure that unsatisfactory welds are cut out or remade to the required standard.

The minimum size of fillet weld shall be 6mm.

All completed welds shall have a regular and smooth surface. The weld material shall be solid complete fusion throughout the weld and to the forecut metals.

Any defects shall be cut out or made good to approval.

External faces of butt welds to be ground smooth.

### **K. Painting**

All steel is to be wire brushed and any loose scale, dirt or grease shall be removed before any painting is commenced. One coat of red oxide primer type A B.S. 2523 shall be applied at the shop.

Any damaged to priming paint shall be made good to the Architect's satisfaction.

## **SPECIFICATIONS**

## A. **Quality of Materials and Workmanship**

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

**BS. 4 (Pt.1)** - Hot Rolled Sections

**BS. EN 10210-2** - Hot Rolled Hollow Sections

**BS. 5950-1** - The use of Structural Steel in Building

**BS. EN 60974-1** - Arc welding plant, equipment and accessories

**BS. EN 60974-6** - Covered Electrodes for the manual Arc Welding of Mild steel and medium tensile steel

**BS. 916** - Black bolts, screws and nuts.

**BS.1449-1 (Pt. 1)** - Steel plate, sheet and strip.

**BS. 6323-1** - Steel tubes for Mechanical, Structural and General Engineering purposes.

**BS. En 10162** - Cold Rolled Steel Sections.

**BS.4190** - ISO metric black hexagon bolts, screws and nuts.

**BS.4320** - Metal washers for general engineering purposes

**BS. EN 10210-1** - Weldable structural steel.

**BS. EN 10210-2** - Hot rolled structural steel sections.

**BS. 4872-1** - Approval testing of welders when welding procedure approval is not required

**BS. EN 1011-2** - General requirements for the Metal Arc Welding of structural steel.

**BS.5493** - Protection of iron and steel structures from corrosion.

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

## B. **Fabrication**

### (a) **Cutting and Bending**

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

## **SPECIFICATIONS**

-

## **STRUCTURAL STEELWORK (Ctd)**

## A. Fabrication (Ctd)

### (b) Punching and Drilling

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

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

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

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

## B. Fastening

### Bolting & Screwing

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

Black bolts, nuts and washers, shall comply with the requirements of BS.916 or alternatively BS.4190 ISO metric black hexagonal bolts screws and nuts.

*Self Drilling Screw* ; All self drilling screws used shall be of such length that at least one full thread is exposed beyond the purlin. The self drilling screws should be correctly driven (not under or over driven) such that the rubber seal should be in line with the underside with the hexagonal head.

All self drilling screws must have a corrosion resistance tested to a requirement of at least 1000 hours as per AS 3566 clause 3 or equivalent British Standard.

High tensile bolts, nuts and washers, friction grip bolts.

All high tensile steel bolts, nuts and washers used in joints shall comply with the requirements of BS.4882 and shall be used in accordance with BS.4882

## SPECIFICATIONS

### STRUCTURAL STEELWORK (Ctd)

A. **Bolting Screws (Ctd)**

Pressed steel purlins

Pressed or cold rolled steel purlins and girts shall be to the sizes indicated on the drawings and shall be formed from approved steel strip with a minimum yield strength of 185N/sq.mm.

The sections shall be manufacture straight and free from twist, the tolerance away from straightness shall not be greater than 2mm for every 1.500mm in length along any folded edge.

B. **Electric Welding**

All welding shall be carried out in strict accordance with the requirements of BS.499-1 and electrodes shall comply with BS. EN 60974-6.

Fusion faces shall be free from irregularities such as tears, fins etc., which would interfere with the deposition of weld metal.

Fusion faces shall be smooth and uniform and shall be free from loose scale, slag, rust, grease, paint and/or other deleterious material.

All welds shall be of acceptable types, shall be of the finished sizes specified, and shall be carried out in such sequence that minimum distortion of the parts welded results.

Preparation of edges for welding shall be carried out by planing or machine flame cutting. Manual flame cutting may be permitted in certain circumstances.

Parts to be welded shall be maintained in their correct relative positions during welding, preferably by jigs.

Multiple run welds shall be carried out with each run closely following the previous run but allowing sufficient time for the proper removal of slag.

The Sub-contractor shall ensure that each run is inspected and unsatisfactorily weld cut out and remade to approval.

Welds in material 25mm or greater in thickness shall be made by the Argon Arc or similar approved process, and special precautions shall be taken to prevent weld cracking.

Unless otherwise shown, the minimum size of fillet shall be 6mm.

On completion, welds shall present a smooth and regular finish. Weld metal should be solid throughout with complete fusion between weld metal and parent metal and between successive runs throughout the joint.

Defects shall be cut out and made good to approval in sound weld metal.

The external faces of butt welds are to be ground smooth on completion and to be to the approval of the Engineer.

**SPECIFICATIONS**

A. **Shops and Field Connections**

**Rolled Sections**

All shop connections shall be electric welded or bolted with high tensile friction grip bolts.

No bolts used shall be less than 12mm diameter and no weld less than 40mm in length. At least two bolts shall be used in connections transmitting loads unless indicated by the Engineer.

No weld of length less than four times the nominal fillet size shall be deemed capable of carrying a load.

Beam to column connections not detailed shall be on "standard" top and bottom cleat connections with the load carried on the bottom cleat. "Standard web connections shall be used for connecting beams to beams.

Field connections shall be as detailed, i.e bolted with high tensile or black bolts in drilled holes. Black bolts in punched holes will only be permitted for connections carrying a designed load for or for connections to timber members.

B. **Structural Hollow sections – Circular and Rectangular**

Hollow sections shall be connected by electric welding unless shown otherwise.

The design of welds shall be in accordance with Clause and 54 and Appendix C of BS.449.

C. **Trusses and Portal Frames**

Trusses shall be carefully set out to the dimensions shown on the drawings.

Where it is required that trusses be cambered, such camber shall be provided by bending the bottom chord to the arc of a circle.

Notwithstanding any dimensioned spacing of purlin cleats, the Sub-contractor shall ensure that purlin cleat spacing is satisfactorily for the available stock lengths of roof sheeting. However, the Engineer's approval must first be obtained before any alteration is made in purlin spacing or sheeting sizes.

Splices in portal and other frames shall be made where shown on the details.

D. **Boxed Members**

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

**SPECIFICATIONS**

## STRUCTURAL STEELWORK (Ctd)

### A. **Shop Assembly**

Such assembly of units in the shop as is specified or necessary before transporting to the site will be inspected by the Engineer before painting. The work will be laid out in the shop area yard so that all parts are accessible for inspection and testing of the work.

The Sub-contractor shall furnish all facilities for inspection and testing of the work and he must notify the Engineer on each occasion when the material is ready for inspection.

### B. **Marking**

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

### C. **Erection**

#### **Site Dimensions**

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

#### **General Setting Out-Tolerances**

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

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

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

a) Setting out on plan at S.G.F.L.

All setting out dimensions with respect to each datum line (i.e P.D from "x" and " y" plane axes) +/-10mm per 30 meters.

## **SPECIFICATIONS**

### **STRUCTURAL STEELWORK (Ctd)**

#### **A. Erection (Ctd)**

##### **General Setting Out-Tolerances (Ctd)**

b) Transfer of T.B.M to Structural first floor, Intermediate floors and roof levels.

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

First Floor Level +/-5mm

Intermediate Floor Levels +/-10mm

Roof Level +/-15mm

c) Setting out on plan of upper floors with respect to the Transferred T.B.M.

All setting out of dimensions with respect of each datum line +/- 10mm per 30 meters.

1120111 relevant T.B.M of the upper or lower surface of any truss or element, taking into account specified chambers. +/-10mm.

f) The plumb vertical members +/-10mm per storey.

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

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

The subcontractor shall be held responsible for all damage caused to the structure, workmen or buildings erection.

#### **B. Storing and Handling**

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

## **SPECIFICATIONS**

## STRUCTURAL STEELWORK (Ctd)

### A. Erection Details

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

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

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

Immediately after erection, each truss shall be made secure by purlins, bracing or guys to approval.

Bracing shall be placed in position as soon as dependent work will permit.

### B. Field Connections

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

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

### C. Tightening and Testing High Tensile Friction Grip Bolts

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

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

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

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

### D. Grouting

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

## **SPECIFICATIONS**

### **STRUCTURAL STEELWORK (Ctd)**

#### **A. Grouting (Ctd)**

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

The Portland Cement and sand shall be thoroughly mixed to approval in equal proportion by volume with only sufficient water to procedure a mixture of "damp earth" consistency and shall be used within twenty minutes of mixing. The Caulking mixture shall be packed to approval into the space between baseplate and foundation and protected from damage until set.

#### **B. Painting**

##### **Paints**

All paints are to be supplied by supplier approved in writing by the Engineer.

Paints are to be delivered to the site or the Structural Contractor's works in the original containers as supplied by the manufacturers with seals unbroken and are to be used in strict accordance with the manufacturer's instructions. Manufacturer's representatives are to be free to visit the site and inspect materials and workmanship, and if necessary take samples of materials for laboratory analysis.

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

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

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

##### **Painting**

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

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

## **SPECIFICATIONS**

4/50

### **STRUCTURAL STEELWORK (Ctd)**

#### **A. Painting (Ctd)**

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

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

1st coat - Red Oxide Zinc Chromate Primer

2nd coat - An approved Aluminium paint

The interiors of mild steel gutters shall be prepared as previously described for Structural Steelwork.

#### **B. Prices, Measures and Payment**

Prices quoted by the Contractor shall be based on the calculated weights of steel and shall include for manufacture, painting and supply all as specified and as shown on the drawings, including the cost of delivery to the site or other agreed place or places and the supply of all bolts, rivets, plugs, gussets, cleats, stiffeners etc to complete the erection of the works. **Note where member overall size is specified and thickness or weight per unit length is not specified or clear take the minimum size specified in relevant British Standard for sections (refer pg 1) but shall not have less than 3mm wall, flange or web thickness.**

Prices shall include for erection (all labour, scaffolding, and other erection equipment necessary) and cover the cost or additional prime coat painting as previously specified. The prices shall also include for lining up, levelling and plumbing, but not for grouting up of the bases.

The basis for payment for steelwork shall be the calculated steel weights of the structure. Any variation from the original design on which the quotation was made, which results in either an increase or decrease in calculated weight of the structure as completed, shall result in the appropriate additions or deductions to the agreed quotation.

Any written instructions from the Engineer which may result in additional work over and above that for which the Contractor quoted will be considered as extras and shall be paid for on the basis of calculated additional steel weights.

-

**C. Roof Sheeting**

Roof sheeting and wall cladding shall comply with BS CP 143 and shall be capable of spanning 1.425m under a load of its own weight and an applied load of 0.25kN/m<sup>2</sup>. Defective sheets shall not be used.

-

**SPECIFICATIONS**

4/51

**STRUCTURAL STEELWORK (Ctd)**

**A. Rain Water Goods**

Rain water goods shall be in accordance with BS.460. It shall be as per the details shown in the drawings and as per the direction of the Engineer. Rain water gutter and pipes shall be made out of steel sheets of the required thickness.

**B. Fixing**

Sheeting and Rain water goods shall be fixed in accordance with BS.494-1. IT4 sheets, ridges, flashing sheets shall be fixed by skilled men as per standard procedure with sufficient number of bolts, washers and laid out properly on the roof so that there shall be no leakage of water during rains. Rain water gutter, pipes etc. shall be fixed properly with necessary accessories to avoid any leakage of rainwater.

-

**C. Translucent Sheets**

Translucent sheets shall be from standard manufacturer approved by the Engineer. These sheets shall have profile to match the rest of pre painted steel sheets on the roof. Skilled men shall be employed for fixing the sheets. Proper fixing of the edges of translucent sheets with the edges of steel sheet should ensure no leakage during rains. Defective sheet shall not be used and if formed after laying, such sheets should be replaced by goods sheets.

**D. Composite IT4/LT5 Sheets with Insulation**

Shall be formed with 2 Nos. IT4/LT5 sheets kept 50mm apart by 20-gauge (or as specified on the drawings) Galvanised Iron (girth =150mm) spacer cold formed into channel. The spacers are at the same centres as the purlins i.e. 1.425m centres unless stated otherwise by the Engineer. The insulation shall be mineral fibre 50mm thick packed and sealed in 1000g polythene bags of size convenient to handle and laid over the lower sheet. The connection between the sheet and ms purlin and with GI spacer shall be with J Bolts or self drilling roof screws.

-

#### E. **Inspection & Approvals**

The Contractor shall submit to the Engineer shop/fabrication drawings (showing general arrangements, connection details i.e plates, welds, bolts, bolt holes, sleeves, etc ) for approval and shall not commence any fabrication before the shop drawings are approved. The Contractor shall give the Engineer 5 (five) working days to comment /approve the drawings. The contractor shall give the Engineer at least 48hr notice to inspect any part of the work either in the yard or on site, this time shall be doubled if the site is more than 100 km from the nearest permanent office of the Engineer.

### **SPECIFICATIONS**

4/52

## **PLASTERWORK AND OTHER FINISHES**

#### A. **Cement**

The cement shall be previously described in "Concrete Work".

#### B. **Sand**

The sand shall be as described for fine aggregate but that for plastering shall be light in colour and well graded to a suitable fineness in accordance with the nature of the work in order to obtain the finish directed.

#### C. **Lime**

The lime for plastering shall comply with B.S. EN 459-1 Class "A" for non-hydraulic lime and shall be as rich as obtained and to approval. It must be freshly burnt and shall be slaked at least on month before being used by drenching with water, well broken up and mixed and the wet mixture shall be passed through a sieve of two meshes per square millimetre. Lime putty shall consist of freshly slaked lime as above described, saturated with water until semi-fluid and passed through a fine sieve; it shall then be allowed to stand until superfluous water has evaporated and it has become of the consistency of thick paste, in no case for a shorter period than one month before being used during which it must be kept damp and clean and no portion of it allowed to become dry.

Alternatively, hydrated lime with 70% average calcium oxide content may be used and it must be protected from damp until required for use. It shall be soaked to putty at least 24 hours before use.

**D. Composition of Plasters, etc.**

A mix referred to, as 1:4 shall mean 40 Kg. of cement and 0.10 cubic metres of sand. All other mixes shall be construed in a like manner.

**E. Hacking, etc.**

The prices for all pavings and plastering, etc. shall include for hacking concrete surfaces and for raking out joints of walls 12mm deep and for cross-scoring undercoats to form a proper key.

Plastering on walls generally shall be taken to include flush faces of lintels, beams etc. in same.

**SPECIFICATIONS**

4/53

**PLASTERWORK AND OTHER FINISHES (Ctd.)**

**A. Surfaces**

All surfaces to be paved or plastered must be brushed clean and well wetted before each coat is applied. All cement pavings and plaster shall be kept continually damp in the interval between application of coats and for seven days after the application of the final coat.

**B. Dubbing Out**

Where required shall be composed of one part cement to six parts of sand.

**C. Partially Set Mixes**

Partially or wholly set materials will not be allowed to be used or re-mixed. The plaster etc mixes must be used within two hours of being combined with water.

**D. Samples**

The Contractor shall prepare samples of the screeds, pavings and plastering as directed until the quality, texture and finish required is obtained and approved by the Architect, after which all work executed shall confirm with the respective approved samples.

**E. Finish Generally**

All screeds, pavings etc. shall be finished smooth even and truly level unless otherwise specified by the whatever method the Contractor thinks fit excepting screeds, pavings etc. to receive vinyl tiles which shall be steel trowelled.

Rendering and plastering shall be finished plumb, square, smooth, hard and even and junctions between surfaces shall be perfectly true, straight and square.

All work shall be to approval and any not complying with the above shall be hacked away and replaced at the Contractor's expense.

**F. Arrises and Angles**

All arrises and angles shall be clean and sharp or slightly rounded or thumb covered as directed, including neatly forming mitres.

**SPECIFICATIONS**

4/54

**PLASTERWORK AND OTHER FINISHES (Ctd.)**

**A. Making Good**

All making good shall be cut out to a rectangular shape, the edges undercut to form dovetail key and finished flush with face of surrounding paving or plaster. Cut out and make good all cracks blisters and other defects and leave the whole of the work perfect on completion.

**B. Prices to Include**

In addition to the foregoing prices of superficial items are to include for work in narrow widths all linear labours angles and arrises all fair edges for making good up to or stopping a line at the required level at top of skirtings or dados where directed and for making good up to windows, door frames and similar.

The prices for all linear items unless otherwise measured are to include for all short lengths, angles and arrises, mitres and ends of every description.

**C. Prices for Paving**

Prices for pavings, screeds etc. are to include for adequate covering and protection during the progress of the Works to ensure that the floors are handed over in perfect condition on completion.

**D. Floor Screeds**

Floor screed shall be composed of green or red-coloured cement and sand (1:2) and shall not be laid in areas exceeding ten square metres during any period of 24 hours. As bays are formed steel edge strips must be used to retain the exposed edge of the screed.

**E. Two-Coat Lime Plastering**

Lime plastering shall consist of a first coat in cement, lime and sand (1:2:9) and a finishing coat of lime putty skim with 10% cement added. The two coats shall have total finished thickness of not less than 15mm on walls and on 10mm total thickness on concrete soffits, beams, edges etc.

The first coat shall be trowelled to a perfectly true and even surface and finished with a wood float, the surface being sprinkled with water from a brush during the process and before it has set thoroughly scratched to form a key. The finishing coat shall not be less than 1.5mm thick, thoroughly worked with a steel trowel sprinkled with water as before and be brought to a uniform smooth and hard surface.

**SPECIFICATIONS**

4/55

**PLASTERWORK AND OTHER FINISHES (Ctd.)**

**A. White Glazed Wall Tiles**

White glazed wall tiles shall be of local manufacture size 150 x 150 x 6mm thick, with associated fittings all to B.S. EN 14411. Tiles shall be well soaked in water, laid with straight horizontal and vertical joints on and including cement and sand (1:4) screed 10mm thick bedded in cement mortar (1:3) pointed in white cement and cleaned down on completion, all to approval.

Rates for linear items shall include for all special fittings and cutting at angles and intersections.

**B. Granolithic Paving**

The granolithic shall consist of one part cement (by volume) to two and a half parts (by volume) of local granite chippings graded from 6mm down to 3mm with not more than 15% to pass a No. 50 B.S. sieve.

Granolithic shall be spread and given only sufficient trowelling to produce a perfectly level surface immediately after laying. When the granolithic has stiffened sufficiently so that a hard surface can be obtained without laitance then the surface shall be polished with a steel float to a perfectly even and smooth surface. On no account will dusting with neat cement to the surface be permitted.

**C. Polished Terrazzo**

Polished terrazzo shall consist of a screed or backing coat and a finishing coat of "Snowcrete" and marble chippings (1:2) mixed with "Cementone No. 1" colouring compound in accordance with manufacturer's instructions. Overall thickness are to be as later specified.

The finishing coat shall be a minimum of 12mm thick for paving and 9mm thick for wall finishes, trowelled to a smooth and even finish and well rubbed and polished with carborundum. The finished texture and colour shall be similar to a sample approved by the Architect.

**SPECIFICATIONS**

4/56

**PLASTERWORK AND OTHER FINISHES (Ctd.)**

**A. Plasterboard Ceilings**

Plasterboard Ceiling linings shall be of an approved plasterboard ceiling lining. The boards shall be of the thickness stated in the Bills of Quantities and shall consist of an aerated or formed gypsum core encased in and firmly bonded to specially prepared durable paper.

The plasterboard shall be fixed to galvanized mild steel metal studs of at least 0.5mm minimum thickness and from approved Manufacturer. All accessories including fibre tapes, finishing compounds corner beads etc. shall be provided.

The plasterboards, metal studs and suspension system shall all be fixed in accordance with the Manufacturer's printed instructions.

**B. Decorative Plaster**

External rendered surfaces shall generally be finished in factory manufactured decorative plaster to thickness stated in the Bills of Quantities. The materials and method of application shall all be specified in the Manufacturer's printed specifications and catalogues all as specified in the schedule of finishes.

The address for the supplier is to be provided by the Tenderer

**C. Porcelain Floor Tiles**

Porcelain floor tiles shall be from an approved European Manufacturer. The tiles shall be of regular pattern and thickness. The tiles shall be laid with approved adhesives.

**D. Floor Tile Adhesive Application and Tile Laying**

1. Substrates must be sound, free from oil, grease and sufficiently dry. Cementitious substrates must be cured.
2. Wipe the back side of tiles with water if dusty.
3. Mix adhesive according to manufacturers specifications.
4. Allow to stand for 5-10 minutes to mature. After remixing, the paste is ready for application.
5. To ensure good adhesion first apply a thin coat on the substrate with the flat side of the trowel, then notch with the toothed side of the trowel.
6. Spread the adhesive mortar onto the substrate with a notched trowel, using a handing angle of 45-60 degrees, to a maximum surface area of 2 sm. Ensure trowel notch size is appropriate for the tile dimension. (see table below).

4/57

**PLASTERWORK AND OTHER FINISHES (Ctd.)**

**Floor Tile Adhesive Application and Tile Laying (Ctd.)**

7. When laying tiles of over 400 x400, the bed mortar is applied with a notched trowel as usual. In addition, just before laying the tiles, a thin layer of mortar is applied to the backside of the tiles.
8. The tiles are then laid by pressing and making small rotation movements to ensure that the glue gets in total contact with both surfaces.
9. Additionally, the tiles should be fixed with the help of a rubber hammer in order to increase the holding power and spread of the mortar under the tile being leveled.
10. Observe construction joints (expansion, contraction, fraction, perimeter and corner joints) and the joints between concrete slab pours.
11. Joints should be a minimum of 3mm, and grouting should take place after a minimum of 48 hours.
12. On floor areas of over 30 sm, leave partition joints to be filled with flexible material, like grey silicone. These should be a maximum of 6 metres apart.
13. Always allow a free perimeter expansion joint of a minimum of 3mm between the floor and the wall or column, hidden by a skirting.

## KALEKIM 1052 RECOMMENDED NOTCHED TROWEL SIZES

Up to 100 x100 tiles	U4 (4x4)
Up to 200 x200 tiles	U6(6x6)
Up to 400 x400 tiles	U8 (8x8)
Greater than 400 x400 tiles	U10 (10x10)

## PEGACOL RECOMMENDED NOTCHED TROWEL SIZES

Up to 100 x100 tiles	U4 (4x4)
Up to 450 x450 tiles	U6(6x6)
Up to 900 x900 tiles	U6(6x6) or U9 (9x9)
Greater than 900 x900 tiles	U9 (9x9)

### E. Protection

The Contractor's rates for all finishings shall allow for adequate protection against damage by all following trades or any other cause to the satisfaction of the Architect.

## SPECIFICATIONS

4/58

## PAINTING AND DECORATING

### A. Approved Specialist

All work under this trade must be executed by an approved Specialist unless the Architect agrees otherwise.

### B. Generally

The Contractor shall also arrange his programme of work that all other trades are complete and away from the area to be painted when painting begins. Before painting the Contractor must remove all concrete mortar dropping and the like from all work to be decorated and remove all stains from and obtain uniform colour to work to be oiled and polished.

All plaster, metal, wood or other surfaces which are to receive finishes or paint, stain, polish, distemper or paint work or any description are to be carefully inspected by the Contractor before he allows any of his painters to commence work. The Contractor will be held solely responsible for all defective work condemned as a result of his Painter's failure to insist on receiving from the other trades surfaces in proper condition to allow first class finishes of the various kinds specified being applied to them.

## C. **Painting Generally**<sub>1</sub>

All materials are to be of the best quality and to Architect's approval.

All materials to be applied externally shall be of exterior quality and/or recommended by the Manufacturers for external use.

All materials shall be delivered on Site intact in the original sealed drums or tins and shall be mixed and applied strictly in accordance with Manufacturer's instructions and to the approval of the Architect.

Unless specially instructed or approved by the Architect no paints distemper, etc. are to be thinned or otherwise adulterated but are to be used as supplied by the Manufacturers and direct from the tins.

If required by the Architect the Contractor is to provide at his own expense samples of paints etc. with containers and cases to be forwarded carriage paid by the Contractor for analysis to a laboratory.

## **SPECIFICATIONS**

4/59

### **PAINTING AND DECORATING (Ctd.)**

#### **Painting Generally (Ctd.)**

The priming undercoats and finishing coats shall each be of differing tints and the priming and undercoat shall be the correct brands and tints to suit the respective finishing coats in accordance with the Manufacturer's instructions. All finishing coats shall be of colours and tints selected by the Architect. Each coat must be approved by the Architect before the next coat is applied.

Each coat shall be properly dry and in the case of oil or enamel paints shall be well rubbed down with fine glass paper before the next coat is applied. The paintwork shall be finished smooth and free from brush marks.

Colour cards of all paints etc. shall be submitted to and samples prepared for approval of the Architect before laying on, and such samples when approved shall become the standard for work.

All paints, emulsion paints and distempers shall be applied by means of a brush or spray gun or rollers of an approved type where so agreed by the Architect.

No painting is to be done in wet weather or on surfaces which are not thoroughly dry.

Prices of paint, distemper, etc. shall include for preparation of surfaces rubbing down between each coat, stooping, knotting, etc., and all other work in connection and as described and as necessary to obtain a first class and proper finish to approval.

Emulsion paint on ceiling and all undercoats of emulsion paint and complete oil painting on walls shall be completed before flooring are laid. Final coats of emulsion paints on walls shall be applied after such flooring has been laid complete.

**A. Samples**

The Contractor shall furnish at the earliest possible opportunity before work commences and at his own cost samples of painting for the Architect's approval and any further samples in the case of rejection until such samples are approved by the Architect and such samples when approved shall be a minimum standard for the work to which they apply.

The Architect may reject any materials or workmanship not in his opinion up to the approval sample and these must be removed from the site without delay.

**SPECIFICATIONS**

4/60

**PAINTING AND DECORATING (Ctd.)**

**A. Preparation and Priming of plaster etc., surfaces**

Plaster surfaces shall be perfectly smooth free from defects and ready for decoration. All such surfaces shall be allowed to dry for a minimum period of six weeks, stopped with approved plaster stooping compound and rubbed down flush as necessary and then be thoroughly brushed down and left free from all efflorescence, dirt and dust immediately prior to decorating.

Plaster surfaces which are to be finished with emulsion oil or enamel paint shall be primed with an approved primer and applied in accordance with the Manufacturer's instructions.

**B. Preparation and Priming of Fibreboard**

Fibreboard or similar surfaces shall be lightly brushed down to remove all dirt, dust and loose particles and have all nail holes or other defects stopped with an approved plaster stopping compound rubbed down flush and left with a texture to match surrounding material and shall receive one coat primer at last.

**C. Preparation and Priming of Metalwork**

All surfaces shall be thoroughly brushed down with wire brushes and scraped where necessary to remove all scale rust etc., immediately prior to decorating and given one coat of red oxide primer. Where severe rust exists and if approved by the Architect a proprietary de-rusting solution may be used in accordance with the Manufacturer's instructions.

Galvanized surfaces shall be treated before painting with a solution of calcium plumbate, applied in strict accordance with the Manufacturer's printed instructions or with an approved calcium plumbate primer.

Coated surfaces already treated with bituminous solution shall be scraped to remove soft parts and then receive two isolating coats of aluminium primer or other approved anti-tar primer.

**D. Preparation and Priming Woodwork**

All woodwork shall be rubbed down, all knots covered with a thick coat of good shellac or aluminium knotting primed with one coat of approved ready-mixed proprietary wood primer and all cracks, nail holes, defects and uneven surfaces etc. stopped and faced up with hard stopping rubbed down flush. Plywood shall be brushed filled over the entire surface.

Woodwork to receive finishes other than paint shall have all stains removed, be well rubbed down and have all defects levelled with hard stopping of a colour to match the adjoining surface.

**SPECIFICATIONS**

**PAINTING AND DECORATING (Ctd.)**

**A. Existing Painted and Decorated Surfaces**

In addition to the preparation described above existing painted plaster, metal or wood etc., surfaces shall be rubbed down to expose the material beneath and old paint burnt off with blow torches if necessary in the Architect's opinion.

**B. Wood Preservative**

All woodwork in contact with walling or plaster shall be treated after cutting and preparation but before assembly or fixing with one coat of approved wood preservative to Architect's approval.

**C. Wax Polish**

Wax polish shall be furniture polish of an approved brand and wood surfaces shall be clean, smooth, and free from oil or grease or any other blemishes. A minimum of two coats shall be applied to Architect's approval.

D. **Cement\_Paint**

Shall be to Architect's approval. Two coats shall be applied after preparation as specified above.

E. **Emulsion\_Paint**

Emulsion paint shall be to Architects approved. After preparation as specified above a minimum of three coats shall be applied using a thinning medium of water only if and as recommended by the Manufacturer.

An approval plaster primer tinted to match may be submitted for the first coat.

F. **Enamel Paint on Metalwork and Woodwork**

Enamel paint shall be to Architect's approval. Apply one undercoat and two finishing coats, after preparation and priming as specified above.

G. **Ironmongery**

Where instructed, all ironmongery shall be removed from joinery, steel windows and louvres before painting is commenced, and shall be cleaned and renovated if necessary and refixed after completion of painting.

H. **Painting Items**

Painting items are billed hereafter shall include for preparing and priming surfaces as above described.

I. **Cover Up**

Cover up all floors, fittings etc. with dustsheets when executing all painting and decorating work.

J. **Clean and Touch Up**

Paint splashes, spots and stains shall be removed from floors, woodwork etc. any damaged surfaces touched up and the whole of the work left clean and perfect upon completion.

**SPECIFICATIONS**

**GLAZING**

A. **Glass**

All glass shall comply with B.S. 952-2 free from flaws, bubbles, specks and other imperfections. All glass shall be delivered in proper container with maker's name guarantee, type of glass and thickness or weight of glass attached to the outside of the containers.

Glass panes shall be cut to sizes to fit the openings with not more than 1.50mm play all round and where puttied shall be sprigged to wood or clipped to metal frames.

Clear sheet glass shall be ordinary glazing (O.Q.) quality. Polished plated glass shall be G.G. quality.

Obscured glass shall be roughcast plain rolled glass 4mm thick.

Wired glass shall be polished Georgian wired glass 6mm thick.

#### **B. Beads and Washleather**

The glass to doors and screens and other places where vibration may occur shall be bedded in washleather with beads and fixed with brass cups and screws.

The timber rebates shall be cleaned, primed and painted with one coat of oil paint.

#### **C. Bedding Strips**

Shall be of plastic or washleather approved by the Architect and shall be cut to fit exactly the line of frame and beads.

#### **D. On Completion**

Remove all broken, scratched or cracked panes and replace with new to the satisfaction of the Architect. Clean inside and out with an approved cleaner. On no account shall windows be cleaned by scraping with glass.

#### **E. Mirrors**

Mirrors are to be selected quality clear plate of float glass to B.S. 952-2 with plain polished edges unless otherwise specified. The mirrors shall be tropicalised to the approval of the Architect. All mirrors shall be pre-drilled for fixing screws and shall be free from all flaws and imperfections.

### **SPECIFICATIONS**

## **MECHANICAL ENGINEERING INSTALLATIONS**

Mechanical Engineering Installations shall be carried out in accordance with the appended Specifications for Mechanical Engineering Services prepared by the Mechanical Engineer and shall be carried out by approved Domestic Sub-Contractors. The Works generally includes plumbing, drainage and fire fighting installations, air conditioning and mechanical ventilation installation.

The Main Contractor shall arrange and monitor programme for the work of the Sub-Contractor and for all other Sub-Contracts affected by them including the Electrical Installations Sub-Contract. The Main Contractor shall ensure that all work and Builder's Work in connection is carried out in a sequence which will allow under-floor drains, piping in ducts, chases and the like leading to or from all sanitary fittings, hot or cold water tanks, gulley traps, vent pipes and the nearest manholes to be installed in their correct positions in order to minimise the amount of cutting of holes, chases, floor ducts, etc as much as possible.

The Main Contractor shall carry out the builder's work in connection with the Sub-contract including cutting or forming holes and chases and later making good.

## **SPECIFICATIONS**

### **ELECTRICAL INSTALLATIONS**

*The Electrical Installation work shall be executed by an approved Domestic Sub-Contractor in accordance with appended Sub-Contract Specification prepared by the Electrical Engineers.*

*The Builder's Work in connection with electrical installation shall be carried out by the Main Contractor.*

*All necessary pipe ducts and the like shall be build in as directly by the Architect in readiness for the Electrical Sub-Contractor.*

*All conduits, junction boxes and other requirements shall be built into the concrete floor and roofing slabs where required and adequate notice shall be given to the Electrical Sub-Contractor and the Architect to enable these to be positioned before concreting.*

## **SPECIFICATIONS**

### **ROADWORKS**

#### **MATERIALS**

##### **A. Quality**

Before any materials are incorporated in the work the Contractor shall provide test certificate which confirm that the materials comply with the requirements of this specification.

Any materials deemed to be defective shall be removed from site.

**B. Cement**

Cement used in the works shall be ordinary Portland Cement complying with the requirements of BS 12, unless otherwise specified or permitted by the Engineer.

The Contractor shall provide a copy of the test certificates to show that the cement has been tested, analysed and conforms with the requirements of BS 12 or the applicable standard where cement is not ordinary Portland Cement.

All cement shall be stored in a water proof shed or purpose built silo. Cement shall be stored on a raised floor at least 150mm above the surrounding ground. Each consignment of cement shall be stored separately and cement shall be used in the order of delivery. Any cement considered by the Engineer to be unsatisfactory shall be removed from site.

**C. Hand Packed Stone Base Course**

The rock from which the stones and screenings are to be produced shall comply with the following: -

- .01 Aggregate Crushing Value – not greater than 40%
- .02 Los Angles Value – not greater than 60%
- .03 Sodium Sulphate Soundness Test – loss on 5 cycles to be not more than 12%

**D. Granular Sub-base**

These shall comprise natural lateritic gravels, quartzite gravels or weathered rock.

**SPECIFICATIONS**

**ROADWORKS (Ctd).**

**MATERIALS (Ctd).**

**A. Granular Sub-base (Ctd).**

**Grading**

The material on sieve analysis after compaction shall follow a smooth curve within the following range:-

Sieve mm	Percentage by Weight Passing
50 (2"9)	95-100
40 (1.5")	80-100
28 (1")	60-100
20 (3/4")	35-90
10 (3/8")	25-80
6.3 (1/4")	12-50
2.0	10-40
1.0	7-33
0.425 (36)	4-20
0.075 (200)	

Fraction passing No. 200 sieve shall not be greater than 67% of the fraction passing No. 36.

Fraction passing No. 36 sieve shall have a Liquid Limit not greater than 25% and a Plasticity Index not greater than 15%.

C.B.R. Strength at 95% M.D.D. after 4 days soak to be not less than 30%.

Nodule Hardness shall be such that the nodules shall not crumble between the fingers.

#### B. **Crusher Run Base Course**

The materials shall be stone complying with the following requirements: -

- .01 Aggregate Crushing value: Not greater than 32%
- .02 Los Angeles Abrasion value: Not greater than 45%
- .03 Sodium Sulphate Soundness Test: Loss on 5 cycles to be more than 12%

### **SPECIFICATIONS**

#### **ROADWORKS (Ctd).**

#### **MATERIALS (Ctd).**

#### A. **Crusher Run Base Course (Ctd).**

The aggregate shall consist of crushed stone which is tough and durable, roughly cubical in shape and free from excess or flat and/or elongated particles clay, top soil or other deleterious matter and shall be to the approval of the Engineer. In respect of grading the crusher-run material shall conform to the grading requirements given in the following table: -

B.S. Sieve	Percentage Passing by Weight
2"	100
1"	75-95
3/8"	40-70
3/16"	30-60
No. 7	20-45
No. 36	15-30
No. 200	5-15

Where the crusher-run materials is deficient in fine aggregate and in the opinion of the Engineer, the Contractor has made every reasonable effort to produce the required grading, the Engineer will allow admixing of crusher fines, or soil binder to the approval of the Engineer. No extra payment will be made for providing the mixing in of such fines.

The Crusher fines or soil binder shall have a liquid limit not greater than 20 and plasticity index not greater than 6.

The percentage of fine aggregate to be added to the crusher-run material will be decided by the Engineer.

**B. Premix (Asphaltic Concrete) Wearing Course**

The materials shall be stone complying with the following requirements: -

- .01 The term "Premix" or "Asphaltic Concrete" shall mean mixture of dried, hot aggregate of pre-determined grading and hot straight run bitumen in pre-determined quality to give adequate strength and stability and shall apply both to the mix and the compacted layer on the road.
- .02 The actual quantity of binder and the aggregate used in various proportions shall be determined by Laboratory tests and trial mixes.

**SPECIFICATIONS**

**ROADWORKS (Ctd).**

**MATERIALS (Ctd).**

**A. Premix (Asphaltic Concrete) Wearing Course (Ctd).**

The Contractor shall be responsible for the design of the mix and shall provide the design information to the Engineer together with sample sections on the site based on the designed proportions of the aggregate and binder to the Engineer's approval.

Once the design mix has been approved it shall not be varied by the Contractor without written authority of the Engineer.

Notwithstanding the Engineer's approval the Contractor shall be responsible for compliance with the provisions of the Specification.

The material used shall comply with the following requirements: -

.01 Bitumen grade 60/70

.02 Course aggregate: -

.01 Los Angeles Abrasion – Max. 35

.02 Aggregate Crushing Value – Max. 28

.03 Sodium Sulphate Soundness – Max. 12

.03 Fine aggregate: -

.01 Sand equivalent min. 40

.02 Sodium Sulphate Soundness – Max. 12

.04 Mineral Fillers: -

.01 Shall be cement, lime, limestone or other mineral matter and shall be NON-PLASTIC

.05 Grading: -

.01 Passing 0.425mm 100%

.02 Passing 0.075mm 75%

## **SPECIFICATIONS**

**ROADWORKS (Ctd).**

**MATERIALS (Ctd).**

A. **Premix (Asphaltic Concrete) Wearing Course (Ctd).**

.06 Grading: -

The mix grading shall comply with the table below: -

Sieve Size	Percentage by Weight Passing
14	100
10	90-100
6.3	62-90
4	50-80
2	35-65
1	25-50
0.425	14-33
0.300	11-27
0.150	6-27
0.075	3-8

.07 Asphalt Mix: -

The mix shall comply with the following table: -

TEST	RESULT REQUIRED
.01 Crushing Ratio	60 – 100%
.02 Marshall Stability (N) (Test) (ASTM. 1559)	5000 – 9000
.03 Flow (mm)	3 – 5
.04 Voids in total mix (%)	3 - 5

**SPECIFICATIONS**

## ROADWORKS (Ctd).

### MATERIALS (Ctd).

#### A. Premix (Asphaltic Concrete) Wearing Course (Ctd).

.08 Mixing shall be carried out in an approved stationary plant at controlled temperatures as follows: -

The materials shall be mixed in such a manner that on discharge from the mixer the mixture is uniform in composition and all particles of the aggregate are completely coated. The mixing time shall be the minimum to ensure such coating and shall not exceed 90 secs. from the addition of the bitumen.

.09 When permitted by the Engineer, soil binder material may be added to screenings or used in lieu of screening, provided it complies with the following requirements: -

.01 The fraction passing BS sieve No. 200 shall be less than half that passing No. 36 sieve.

.02 The plastic index shall be not greater than 8 and preferably not greater than 5.

#### B. Surface Dressing Chippings

All chippings shall consist of tough durable crushed stone, approximately cubical in shape and free from visible stone dust, clay, lime matter and other deleterious matter. The rock from which the chippings are to be produced shall comply with the following: -

.01 Aggregate Crushing Value – not greater than 26%

.02 Los Angeles Abrasion Value – not greater than 35%

.03 Sodium Sulphate Soundness Test – loss on 5 cycles to be not greater than 12%.

#### C. Hardcore Fillings

Where the Engineer directs that an improved subgrade layer of hardcore is required, the hardcore shall be good hard stone ballast or quarry waste to the approval of the Engineer. All materials shall be broken down to pass through a 150mm diameter ring. The hardcore shall be free from all weeds, roots, vegetation, top soil, clay or other unsuitable materials. It shall be well graded with smaller stones and fine materials to give a stable, dense mass after laying. For each layer of hardcore to be compacted, sand shall be added during compaction to obtain a solid compact mass.

### SPECIFICATIONS

## ROADWORKS (Ctd).

### MATERIALS (Ctd).

#### A. Bitumen and Bitumen Emulsion

Before any bitumen or bitumen emulsion is delivered to the site, the Contractor shall provide the Engineer with a certificate from the Manufacturer that the material to be supplied complies in all respects to the relevant specification given or referred to hereunder: -

Any bitumen or bitumen delivered in leaking containers or deteriorated containers may be rejected. The types of bitumen binders required will normally be as follows: -

- .01 Price coat
  - On stone base course (R.C. 70 or MC 70)
  - On stabilized base course (Alternatively R.C. 1 or MC 1)
  
- .02 Surface dressing
  - Above 2000m altitude 180/200 Penetration
  - Below 2000m altitude 80/100 Penetration

#### B. Pipe Culverts

Concrete for culverts shall be 25N/mm sq. and the maximum size of aggregate shall be 12mm for pipes whose whole thickness is less than 60mm.

Pipes shall have either spigot and socket or ogee joints and the wall thickness shall be in accordance with the table below: -

PIPE DIA. (INT.) mm	MIN. WALL THK. mm	SOCKET LENGTH mm
600	60	75
750	75	90
900	90	90

All pipes shall be cured for at least 7 days and protected from sun and drying winds for at least 14 days after casting. No pipe shall be used in the work until it is 21 days old.

All pipes shall be capable of supporting a test load of 2000kgs. Per metre run for 1 minute without sign of failure. This test shall be applied in accordance with B.S. 5911. A minimum of 10% of the pipes from the initial batch shall be tested and thereafter the frequency of testing shall be reduced if the Engineer is satisfied with the quality of the pipes.

## **SPECIFICATIONS**

### **ROADWORKS (Ctd).**

#### **WORKMANSHIP**

##### **A. Site Clearance**

The Contractor shall remove only those trees specifically noted for removal. Care shall be taken to protect all trees which are not to be removed.

Where trees or shrubs are to be removed, the roots shall be completely removed and the holes left by the roots backfilled with approved material. The backfill shall be compacted to BS 1377-4 upto the ground level or sub-grade level.

##### **B. Setting out of the Roadworks**

The Contractor shall be responsible for setting out the whole of the works and shall advise the Engineer when the works are ready for checking and the Architect will approve the setting out within 48 hours. The setting out shall comply with the following tolerances:-

Levels – +10mm or 10mm in any 50mm

Angles – + 0 degrees 20'

Alignment – +10mm or 10mm in any 50mm

##### **C. Removal of Top Soil and Black Cotton Soil**

The surface of the formation within the limits of the excavation required for the roadworks shown on the drawings or where instructed by the Engineer and of land from which material is to be excavated for fill or for any other purpose shall be stripped of top soil to a depth below the average surface level as the Engineer may require or approve.

##### **D. Compaction Standard**

The standard of compaction throughout the work shall be described as in the relevant sections of BS. 1377-4, Part 4 and tested for compliance with the requirements of BS. 1377-4. Wherever the expression “%BS Compaction’ is used it shall mean the standard compaction is such that the dry density of the compacted material is the required percentage of the maximum dry density ascertained from BS. 1377-4.

##### **E. Excavation to Formation Level**

All excavations shall be formed and completed to the correct lines and levels shown on the drawings. The Contractor shall take every care in excavating not to remove material below the required formation level unless directed by the Engineer. Any such unauthorized excavation shall be made good to the required level with approved material at the Contractor's expense. Such filling shall be laid in layers not exceeding 150mm in loose thickness and be watered and to 100% BS compaction.

## **SPECIFICATIONS**

### **ROADWORKS (Ctd).**

#### **WORKMANSHIP (Ctd).**

##### **A. Unsuitable Material in Sub-Grade**

Where in the opinion of the Engineer any unsuitable material occurs in cutting the Contractor shall excavate it in depths and widths directed and replace it with approved compacted fill material.

##### **B. Construction of Embankments and Fills**

All embankment and fills shall be formed and completed to the correct lines, slopes, widths and levels shown on the drawings and with the sub-grade parallel to and at the correct depth below the profile, cambers, crossfall or super elevation shown for the finished level unless otherwise directed by the Engineer.

Where shown upon the drawings or directed by the Engineer, shoulders shall be constructed as part of the earthwork operations and paid as such.

Embankments and fills shall be construction only of material approved by the Engineer and obtained from the excavation of cutting, drains or borrow pits. Materials with very high swelling characteristics such as black cotton soil shall not be used without approval by the Engineer.

The Engineer may direct that certain soils be excluded from the sub-grade layer and other soils set apart and used only for this layer in which case the Contractor shall comply and allow in his rates for such selection of materials.

Where the slope of the existing ground is greater than 1 in 3, or where directed by the Engineer, horizontal terraces in steps not less than 3m wide shall be cut into the existing ground, before laying imported fill material.

##### **C. Spreading and Compaction of Fills and Embankments**

Embankments and fills shall be constructed in layers not exceeding 200mm in depth before compaction, parallel to the formation level and compacted throughout to a minimum density of 95% BS Compaction.

While the material is being spread and compacted it shall be graded to level and thickness with a motor grade weighing not less than 10Mg. Where water needs to be added, it shall be applied in an even manner. The rate of application shall be such that no transverse or longitudinal flow occurs.

Where directed by the Engineer that rock shall be used as filling to embankments, the rock shall be placed in the bottom of the embankment or as directed by the Engineer. The largest portions of the rock shall be placed in layers, the maximum depth of which shall be 0.5m, the interstices filled with the finer materials and spalls, and the whole layer compacted by an approved method. More fine materials and spalls shall be added and the layer again compacted until the voids are completely filled.

## **SPECIFICATIONS**

### **ROADWORKS (Ctd).**

#### **WORKMANSHIP (Ctd).**

##### **A. Spreading and Compaction of Fills and Embankments (Ctd).**

Where shoulders are constructed as part of the earthwork, grips shall be put through at intervals to prevent water standing upon the sub-grade.

Should water accumulate on any part of the earthwork due to the Contractor's method of working and particularly in ruts caused by construction traffic the Engineer may order the Contractor to remove any material which has become saturated or cannot then be compacted to the required density and to replace it at his own expense.

All drains shall be maintained throughout the contract and maintenance period in proper working order.

##### **B. Compaction of Sub-Grade Layer**

Unless detailed to the contrary on the drawings or otherwise directed by the Engineer the upper 150mm of the sub-grade layer in both cuttings and embankments shall be compacted to a minimum density of 100% BS Compaction.

The maximum compacted thickness which shall be processed at one time shall be 150mm and if in cuttings, a greater depth is required to the top layer of materials and shall be bladed off and temporarily stock-piled while the lower layer is compacted. If layer of depth greater than 150mm is required the top layer shall not be brought on until the lower layer is compacted. No additional payment will be made for delay in bringing on the top layer.

The layer shall be scarified and water sprayed in or the material allowed to dry out until a uniform moisture content 5% below the optimum Moisture Content for BS Compaction is achieved. The layer shall then be immediately compacted to at least 100% BS Compaction by a roller of a type and weight approved by the Engineer.

During this process the final surface shall be graded to level parallel to the crossfall, camber or profile shown upon the drawings or directed by the Engineer.

All services shall be laid prior to the road construction unless otherwise agreed in writing and all trenches adequately backfilled and compacted to the satisfaction of the Engineer.

**C. Laying Granular Sub-Base**

The prepared formwork shall be cleared of all foreign and loose material and any pot holes, ruts, undulations, depressions or other defects shall be corrected. If the correction work required is extensive the Engineer may require the surface to be compacted, graded and finished off true to cross section line before murrum is placed. The prepared formation shall be checked and approved by the Engineer before any material is spread.

**SPECIFICATIONS**

**ROADWORKS (Ctd).**

**WORKMANSHIP (Ctd).**

**A. Laying Granular Sub-Base (Ctd).**

The material shall be spread uniformly to a specified thickness by a motor grader or by any other method approved by the Engineer. The material shall be thoroughly mixed to a uniform consistency. Large stones or boulders which cannot be broken down shall be removed to a spoil heap. The layer shall be of uniform grading without areas of segregation and with no pockets of fine materials. Vehicles shall not be allowed to pass over the spread layer before it has been rolled and compacted effectively for the approval of the Engineer. Immediately following the spreading of the sub-base or base material it shall be consolidated to the full width by rolling with a power roller weight at least 10 tonnes or with a vibrating roller of equivalent capacity. Controlled water spraying will be applied on the layer in order to achieve good compaction. The moisture content shall be adjusted so as to give the required density and the layer shall be compacted to 100% BS Compaction.

Rolling shall progress gradually from the sides to the centre and from one side towards previously placed material by lapping uniformly each proceeding rear-wheel track by one half the width of such track and shall continue until the entire area of the course has been rolled by the rear wheels.

Along places inaccessible to the granular sub-base shall be tamped thoroughly with mechanical or hand tampers. The level of the sub-base shall be continually checked with straight edges and camber boards.

When rolling develops irregularities greater than 10mm when measured with a 3 metre straight edge laid parallel to the reference line of the road or which exceeds 10mm when measured from a lumber board laid transverse to the reference line, or when the average compacted thickness of layer is less than surface shall be loosened and additional material of the same quality added and layer respread and compacted. In no circumstances shall screenings be used to make good depressions. When correcting irregularities in the surface, the layer shall be scarified to a depth of at least 75mm and recompacted.

**B. Stock Piling of Crusher Run Material**

The site of stock pile shall be levelled, graded and drained, all vegetable removed and, if necessary, the area shall be surfaced with murrum or other material, all as directed by the Engineer. At least the 0.1m bottom layer shall be left behind.

After use, the stockpile area shall be cleared and left neat and tidy.

**C. Mixing and Spreading of Crusher Run Material**

Every reasonable effort shall be made to prevent segregation after mixing and during dumping and spreading operation.

Where the addition of fine material is necessary, it shall be thoroughly mixed in with the crusher-run aggregate before the introduction of any water that might be required.

**SPECIFICATIONS**

**ROADWORKS (Ctd).**

**WORKMANSHIP (Ctd).**

**A. Mixing and Spreading of Crusher Run Material (Ctd).**

Water shall be added as necessary so that compaction of the spread material is carried out within the range of 2% to +1% of the optimum moisture content determined by compaction trials or by the Vibrating Hammer Method Test in BS 1377-4.

The proportioning of materials, and their subsequent mixing, shall be carried out using such methods and machines as may be approved by the Engineer.

The mixer shall have an adequate output of either the batch or continuous – mix type.

Upon completion of mixing the materials shall without delay be transported to the road and spread by a mechanical paver.

The paver shall be to the approval of the Engineer and be capable of spreading the crusher-run material in an even manner – without segregation, to a thickness sufficient to provide a compacted layer of at least 200mm over widths between 2.5 to 3.5m.

No crusher-run layer of greater compacted thickness than 200mm shall be laid and where a greater depth is required, the material shall be laid in two or more layers.

### C. **Compaction and Slushing of Crusher-Run**

As soon as possible after spreading of the pavement layer compaction shall be carried out. During compaction, care shall be taken to maintain the moisture content evenly at the required amount. The main compaction shall be carried out with a pneumatic tyred roller weighing not less than 15Mg and/or a vibrator roller approved by the Engineer.

Compaction shall continue until:

- .01 The specified number of passes of the compaction plant, as determined by compaction trials, or as specified by the Engineer, has been made or
- .02 The compacted pavement layer contains not more than 5% air voids.

All rolling shall be longitudinal and shall commence at the outer edges of the road and progress towards the centre of the road except that on super elevated curves, rolling may progress from the lower to the higher edge.

The irregularities that may show up during rolling shall be corrected by loosening the surface and removing or adding material as may be required.

### **SPECIFICATIONS**

#### **ROADWORKS (Ctd).**

#### **WORKMANSHIP (Ctd).**

#### **A. Compaction and Slushing of Crusher-Run (Ctd).**

After the main rolling the layer shall be saturated with water, slushed and compacted with smooth steel wheeled roller weighing not less than 12Mg and/or approved vibrator roller and rolling shall continue until at excess fines have been brought to the surface and the surface shows a tightly bound mosaic of stones. Any patches of voids shall be filled loosening up the layer and grouting with screenings approved by the Engineer.

**B. Drainage of Crusher Run Base**

So that water passing through the layer can be allowed to drain from the sub-grade, it is essential that the grips cut through the shoulders be in full working order. Any soft spots in the sub-grade, which subsequently might appear, shall be removed together with any over-laying pavement layers and replaced with re required standard at the Contractor's expense.

**C. Hand Packed Stone Base Laying and Compacting**

The stones shall be laid to the approval of the Engineer to an even depth which, after compaction, will produce the specified thickness of layer. After preliminary shaping with two passes of a 21/2 tonne roller or by other approved means, each layer shall be covered with a 25mm thick layer of dry crushed stone well graded from 5mm down to dust and approved by the Engineer. This fine material shall then be vibrated approved vibrating plate compactor or other approved vibratory plant. Should hungry patches develop during compaction additional fine material as above shall be applied and compaction of the whole surface continued until no more can be taken in. Once this stage of compaction is reached the layer shall be rolled with a B – 10 tonne roller until movement of the surface ceases.

An excess fine material shall be removed on completion of compacting and before the next layer of material is placed. The final layer of stone shall in addition be compacted so as to provide a smooth and even surface free from irregularities or loose material and true to cross-section, line and level.

**D. Preparation of Surface for Priming**

The type of bituminous binder and the rate of application shall be as directed by the Engineer.

Before priming, any surplus fines shall be brushed off to expose a closely knit, compact mosaic of stone and any foreign material shall be removed well clear of the edges.

The finished surface of the base course shall not be primed before 24 hours after final compaction, but shall be priced within 10 days, unless the Engineer's instructions to the contrary.

Made surface of layer shall be checked for line, camber and level and the surface corrected and made good for the approval of the Engineer before the layer is primed.

**SPECIFICATIONS**

4/78

**ROADWORKS (Ctd).**

**WORKMANSHIP (Ctd).**

**A. Preparation of Surface for Priming (Ctd).**

The prepared surface of base shall be lightly watered if necessary to ensure the surface is damp where the prime coat is applied, but care must be taken that the base is not saturated and that no pools of water remain on the surface.

#### **B. Spraying of Prime Coat**

Immediately after the area to be primed has been prepared and approved by the Engineer the primer shall be applied on to it.

The rate of spray will depend on the texture and density of the surface but will normally be in the range of 0.81/m sq. to 1.10/m sq. The quantity used must give complete coverage of the surface with a slight trace of run off in places. Should the Contractor find that when using the rate of spray directed by the Engineer the covering is inadequate, or there is too much run-off, he shall immediately inform the Engineer and amend the spray rates as directed by the latter.

#### **C. Method of Spraying Prime Coat**

The edge of the area shall be marked out with a line of string or wire; pegged down at intervals not exceeding 15 metres on straights or 75 metres on curves.

Bitumen shall be sprayed from a pressure distributor or an approved hand sprayed in small areas. Testing shall not take place on the road and any bitumen split on the ground shall be cleaned off.

When commencing and stopping, sheets of metal at least 2 metres long shall be spread across the full widths to be sprayed to give a clean sharp edge.

The metal sheets or troughs used for testing and the metal sheets used for stopping and starting work shall be cleaned at the end of each day's work.

During spraying all kerbs, road furniture, culverts headwalls, tree bowls and the like which are liable to be disfigured by splashing of bitumen shall be protected, and any such feature which is accidentally marred by bitumen shall be cleaned off with suitable solvent or made good at the Contractor's expense.

When, during spraying, a nozzle becomes blocked or develops a defect, the spraying shall be made good with a hand spray and the machine repaired before further spraying is commenced.

### **SPECIFICATIONS**

**ROADWORKS (Ctd).**

**WORKMANSHIP (Ctd).**

**A. Cutting of Prime Coat**

The prime coat shall be allowed to dry out before anything is allowed to pass over the surface. Where the primer puddles, the surplus shall be blinded with sand or quarry dust until the free bitumen is absorbed. Forty eight hours after priming the Engineer may permit pneumatic tyred vehicles to run over it, provided the surface is lightly sanded or dusted where necessary to prevent adhesion of bitumen to tyres. Such use of the surface is to be discouraged and may only be undertaken on the expense written instructions of the Engineer.

Any re-priming or other reinstatement that becomes necessary as a result of the Contractor allowing traffic to run over the primed surface shall be carried out at the Contractor's expense.

**B. Rate of Application of Binder**

Immediately prior to commencement spraying of bitumen the existing surface shall be thoroughly brushed to remove loose particles and dust.

The type of binder and the rate of spray shall be as directed by the Engineer. The quantity of binder required will depend upon the shape and size of chippings the volume and weight of traffic and the nature and absorbency of the existing surface, the rates given upon the drawings or in the Bills of Quantities shall be regarded as provisional.

The rate of spray will generally be between 1.01m sq. and 1.71m sq. The Engineer may, from time to time direct the Contractor to vary the rates of application and the Contractor shall allow in his price for bitumen for such variations in applications.

**C. Tolerance**

The following shall apply to water bound and hand-packed stone base course; crusher run base course and sub-base as the case may be:

Type of Base	VARIATION PERMITTED		
	mm Thick	mm 3M Straight Edge	mm Variation in Half Width
Stone base course	-0mm +10	+6mm -6mm	+150mm -0mm
Sub-base	+25mm -25mm	+20mm	-50mm

**SPECIFICATIONS**

## **ROADWORKS (Ctd).**

### **WORKMANSHIP (Ctd).**

#### **A. Transport of Premix (Asphalt Concrete)**

The premix shall be kept free of contamination during transportation. Each load shall be covered to protect it from the weather and from dust.

#### **B. Spreading of Premix (Asphalt Concrete)**

Immediately after the tack coat is applied, the mixture shall be spread by mechanical paver, without segregation and without dragging.

The wearing course mixture shall be placed in widths of two per normal carriageway unless otherwise approved by the Engineer. The second layer to be in wearing course shall be placed in widths to provide a minimum of 0.3m overlap to the longitudinal joint of the first layer of the wearing course and similarly all traverse joints of the wearing course shall have a minimum overlap of 0.3m. The overlap shall be tapered.

Where the Engineer directs that the use of mechanical spreading and finishing equipment is impractical, the mixture may be spread by hand.

At joints with existing compacted bituminous surfacing, whether it be new or old work, the edge of the existing surfacing along the joint shall be neatly cut away in straight lines over a sufficient width to ensure the full specified thickness of new surfacing being placed and the vertical face so informed shall be painted with bitumen immediately in advance of placing the new work.

#### **C. Compaction of Premix (Asphalt Concrete)**

Immediately after spreading the mixture shall be compacted to a min. of 96% of the laboratory design Marshall density. Any area of Asphalt surfacing which does not comply with this Specification shall be removed and replaced to the full depths of the concerned, at the Contractor's own expense.

#### **D. Thickness to be Laid**

The maximum un-compacted thickness to be spread in a single operation shall not exceed 70mm and the minimum thickness to be spread in a single operation shall not be less than 35mm. Thickness in excess of 70mm shall be spread in two layers as two separate operations and the upper layer shall have a compacted thickness of 40mm.

### **SPECIFICATIONS**

## ROADWORKS (Ctd).

### WORKMANSHIP (Ctd).

#### A. Fines

Fines, whether from the heating plant extractor, or other sources, for addition to the mix shall be separately stored and separately proportioned to the mixing unit.

The surface of the roadbase to be sprayed shall be thoroughly swept to remove any soil and loose and foreign material. Any defects of the surface shall be made good as directed by the Engineer, and no prime coat shall be applied until the surface has been approved by the Engineer.

Immediately after the surface has been prepared and approved by the Engineer the prime coat of M.C. 30 cut back bitumen shall be sprayed at the rate specified.

#### B. Sand Seal Surface

Immediately after the application of prime coat, stone dust within the following grading envelope, shall be spread over the prime coat in a thin layer and area shall be allowed to cure for at least 24-48 hours and no traffic shall be allowed over the prime during this period.

Sieve Size (mm)	%age by Weight Passing
63	100
51	95-100
4	90-100
2	50-95
1	20-80
0.6	10-50
1.425	3-25
0.3	0-15
0.15	0-8
0.075	0-5

#### C. Tack Coat

Before the application of tack coat surface to be premixed shall be swept clean of any loose and foreign material and any damaged areas shall be made good.

After the application of tack coat at the specified rates the laying of the premix shall follow immediately.

### **SPECIFICATIONS**

## **ROADWORKS (Ctd).**

### **WORKMANSHIP (Ctd).**

#### **A. Laying of Precast Concrete Kerbs**

Precast concrete kerbs to be incorporated in the works shall comply with BS 1340.

All mortar used to joint the kerb shall be mixed to match the colour of the kerbs and the vertical joints between kerbs shall not exceed 13mm in width. Where kerbs are laid to a radius less than 12 metres, they shall be precast to the correct radius. The kerb shall be screened to prevent coating during bitumen spraying and adequately protected from damage the whole period of the work. All damaged kerbs shall be replaced to the satisfaction of the Engineer during the period of the Contract.

Kerbs shall be laid true to line and level on a foundation of Class 20(20) concrete bed, haunched to a height of 75mm from the top and bedded, jointed and pointed in cement mortar. The formwork to the Class 20(20) concrete bed shall be thoroughly compacted and cured.

The rates entered by the Tenderer in Bills of Quantities for the provision and placing of precast concrete kerbs shall include for all necessary concrete bedding and haunching and all necessary shuttering all in accordance with the specification and the drawings.

#### **B. Excavation in Trench for Pipe Culverts, Headwalls and Wingwalls**

Trenches for culverts, headwalls, wingwalls shall be excavated to line and depths shown on the drawings or as directed by the Engineer and shall be of sufficient width to give working clearance in the trench but for the purpose of measurement and payment, the width of the trench shall be taken as 1.5D where D is the outside measurement of the pipe. Backfilling of trenches around culverts shall be done to a density of 100% BS Compaction. Excavation for inlet and outfall drains, catch-water drains and trench or sub-soil drains shall be to the dimensions ordered by the Engineer.

#### **C. Laying and Jointing Pipes**

Where pipes are to be laid on 'normal' or imported materials, the floor of the trench shall be compacted and shaped so that the barrel rests over a width of at least one third of its diameter and throughout its length of the barrel along the floor.

The under side of the barrel and socket shall then be packed hard with earth or gravel fill material as directed by the Engineer and of maximum particle size not exceeding 25mm diameter and rammed solid.

Where pipes are laid on concrete bed, the pipes shall be bedded on 1:3 cement: sand mortar at least 15mm thick, 150mm wide and extending the full length of the barrel. The underside of the barrel and socket shall be packed hard with Class 15 Concrete.

No pipes shall be laid until the floor of the trenches has been approved by the Engineer. All pipes shall be saturated with water before jointing. All pipes shall be scraped, cleaned inside and the joint flushed up with 1:2 cement: sand mortar (Ogee pipe joints shall be 37mm thick and 150mm wide).

## **SPECIFICATIONS**

### **ROADWORKS (Ctd).**

#### **WORKMANSHIP (Ctd).**

##### **A. Laying and Jointing Pipes (Ctd).**

All joints shall be protected from the wind, sun and rain by a covering approved by the Engineer and shall be kept constantly damp for a period of at least 3 days.

##### **B. Concrete Beds Haunches and Surrounds to Pipes**

The floor of the trench shall be cleaned, trimmed and compacted before any concrete bed is laid. The concrete bed shall be thoroughly cleaned before any surround, haunch is laid. No concreting shall commence until the previous work has been approved by the Engineer.

All concrete for beds, surrounds and haunches shall be Class 20 concrete and shall be formed to dimensions directed by the Engineer.

Unless otherwise directed by the Engineer, a 150mm concrete surround shall be provided to concrete pipe in the following circumstances: -

- .01 Concrete pipes up to and including 0.6m diameter with less than 0.6m cover or more than 3.0m cover.
- .02 Concrete pipes over 0.6m diameter and not exceeding 1.0m diameter with less than 1.0m or more than 3.0m cover.
- .03 Concrete pipes over 1.0m diameter at any depth.

The unit of measurement for concrete beds, surrounds and haunches shall be the meter and the rate shall include for the provision of transporting and placing of concrete, all strutting and formwork, protection and curing and all labours, tools, plant, supervision, overheads and profit.

##### **C. Grouted Stone Pitching**

The stones used for the grouted pitching shall be hard angular rock, roughly cubical in shape and of dimensions such that they can be laid with a minimum thickness equal to that specified.

The interstices of the grouted pitching shall not be filled with fill material, but may be chocked with large rock spalls. The pitching shall be thoroughly soaked with water and a grout of 1:4 cement: sand mortar shall be rammed into the interstices and smoothed off flush with the pitched face.

Grouted pitching to embankments and around structures shall be constructed as soon as possible after embankments have been built. The surface of the filling to receive the pitching shall be compacted and trimmed to slope and the stone hand laid interlocked and rammed.

**ELECTRICAL INSTALLATIONS  
SPECIFICATIONS**

## ELECRICAL WORKS

### PART 2. GENERAL SPECIFICATIONS OF ELECTRICAL WORKS

#### 2.1 POSITIONS OF ELECTRICAL PLANT AND APPARATUS

The routes of cables and approximate positions of switchboards etc, as shown on the drawings shall be assumed to be correct for purpose of Tendering, but exact positions of all electrical Equipment and routes of cables must be agreed on site with the Engineer before any work is carried out.

#### 2.2 MCB DISTRIBUTION PANELS AND CONSUMER UNITS

All cases of MCB Panels and consumer units shall be constructed in heavy gauge sheet with hinged covers.

Removable undrilled gland plates shall be provided on the top and bottom of the cases. Miniature circuit breakers shall be enclosed in moulded plastic with the tripping mechanism and arc chambers separated and sealed from the cable terminals.

The operating dolly shall be trip free with a positive movement in both make and break position. Clear indication of the position of the handle shall be incorporated.

The tripping mechanism shall be on inverse characteristic to prevent tripping in temporary overloads and shall not be affected by normal variation in ambient temperature.

A locking plate shall be provided for each size of breaker; A complete list of circuit details on typed cartridge paper glued to stiff cardboards and covered with a sheet of perspex, and held in position with four suitable fixings, shall be fitted to the inner face of the lids of each distribution panel. The appropriate MCB ratings shall be stated on the circuit chart against each circuit in use: Ivory labels shall be secured to the insulation barriers in such a manner as to indicate the number of the circuits shown on the circuit chart.

Insulated barriers shall be fitted between phases, and neutrals in all boards, and to shroud live parts.

Neutral cables shall be connected to the neutral bar in the same sequence as the phase cables are connected to the MCB's. This shall also apply to earth bars when installed.

#### 2.3 FUSED SWITCHGEAR AND ISOLATORS

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182: 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183: 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the 'ON' position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with the door in the open position for test purposes. The 'ON' and 'OFF' positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

## 2.4 CONDUITS AND CONDUIT RUNS

Conduit systems are to be installed so as to allow the loop-in system of wiring:

All conduits shall be black rigid super high impact heavy gauge class 'A' PVC in accordance with KS 04 – 179: 1988 and IEE Regulations. No conduit less than 20mm in diameter shall be used anywhere in this installation.

Conduit shall be installed buried in plaster work and floor screed except when run on wooden or metal surface when they will be installed surface supported with saddles every 600mm. Conduit run in chases shall be firmly held in position by means of substantial pipe hooks driven into wooden plugs.

The Sub-contractor's attention is drawn to the necessity of keeping all conduits entirely separate from other piping services such as water and no circuit connections will be permitted between conduits and such pipes.

All conduits systems shall be arranged wherever possible to be self-draining to switch boxes and conduit outlet points for fittings:

The systems, when installed and before wiring shall be kept plugged with well fitting plugs and when short conduit pieces are used as plugs, they shall be doubled over and tied firmly together with steel wire; before wiring all conduit systems shall be carried out until the particular section of the conduit installation is complete in every respect.

The sets and bends in conduit runs are to be formed on site using appropriate size bending springs and all radii of bends must not be less than 2.5 times the outside diameter of the conduit. No solid or inspection bends, tees or elbows will be used.

Conduit connections shall either be by a demountable (screwed up) assembly or adhesive fixed and water tight by solution. The tube and fittings must be clean and free of all grease before applying the adhesive. When connections are made between the conduit and switch boxes, circular or non- screwed boxes, care shall be taken that no rough edges of conduit stick out into the boxes.

Runs between draw in boxes are not to have more than two right angle bends or their equivalent. The sub-contractor may be required to demonstrate to the Engineers that wiring in any particular run is easily withdrawable and the sub-contractor may, at no extra cost to the contract; be required to install additional draw-in boxes required. If conduit is installed in straight runs in excess of 6000mm, expansion couplings as manufactured by Egatube shall be used at intervals of 6000mm.

Where conduit runs are to be concealed in pillars and beams, the approval of the Structural Engineer, shall be obtained. The sub-contractor shall be responsible for marking the accurate position of all holes chases etc., on site, or if the Engineer so directs, shall provide the Main Contractor with dimensional drawings to enable him to mark out and form all holes and chases. Should the sub- contractor fail to inform the main contractor of any inaccuracies in this respect they shall be rectified at the sub-contractors expense.

It will be the Sub-contractors responsibility to ascertain from site, the details of reinforced concrete or structural steelwork and check from the builder's drawings the positions of walls, structural concrete and finishes. No reinforced concrete or steelwork may be drilled without first obtaining the written permission of the Structural Engineer.

The drawings provided with these specifications indicate the appropriate positions only of points and switches, and it shall be the Sub-Contractors responsibility to mark out and centre on site the accurate positions where necessary in consultation with the Architect and the Engineer. The sub-contractor alone shall be responsible for the accuracy of the final position.

## 2.5 CONDUIT BOXES AND ACCESSORIES

All conduit outlets and junction boxes are to be either malleable iron and of standard circular pattern of the appropriate type to suit saddles being used or super high impact PVC manufactured to KS 04 – 179 : 1983.

Small circular pattern boxes are to be used with conduits up to and including 25mm outside diameter. Rectangular pattern adaptable boxes are to be used for conduits of 32mm outside diameter and larger. For drawing in of cables in exposed runs of conduit, standard pattern through boxes are to be used:

Boxes are to be not less than 50mm deep and of such dimensions as will enable the largest appropriate number of cables for the conduit sizes to be drawn in without excessive bending.

Outlet boxes for lighting fittings are to be of the loop-in type where conduit installation is concealed and the sub-contractor shall allow one such box per fitting, except where fluorescent fittings are specified when two such boxes per fitting shall be fitted flush with ceiling and if necessary fitted with break joint rings. Pattresses shall be fitted where required to outlets on surface conduit runs.

Adaptable boxes are to be of PVC or mild steel (of not less than 12swg) and black enamelled or galvanised finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

## 2.6 LABELS

Labels fitted to switches and fuse boards; -

- (i) Shall be Ivory engraved black on white.
- (ii) Shall be secured by R.H brass screws of same manufacturing throughout.
- (iii) Shall be indicated on switches: -
  - a) Reference number of switches
  - b) Special current rating
  - c) Item of equipment controlled
- (iv) Shall indicate on MCB panels

- d) Reference number
- e) Type of board, i.e., lighting, sockets, etc.,
- f) Size of cable supplying panel
- g) where to isolate feeder cable

(v) Shall be generally not less than 75mm x 50mm.

## 2.7 EARTHING

The earthing of the installation shall comply with the following requirements:-

- (i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.
- (ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross-sectional area Copper tape shall be provided and all equipment including the

lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.

- (iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross-sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).
- (iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided
- (v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.
- (vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the sub-main cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the I.E.E Regulations.
- (vii) Where an earth rod is specified (see Sub-clause (iii) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground to a minimum depth of 3.6M. It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.
- (viii) Earth plates will not be permitted
- (ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Sub-Contractor in the presence of the Engineer and the Sub-Contractor shall be responsible for the supply of all test equipment.
- (x) Where copper tape is fixed to the building structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings, shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.
- (xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.
- (xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.
- (xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.
- (xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

## 2.8 CABLES AND FLEXIBLE CORDS

All cables used in this Sub-Contract shall be manufactured in accordance with the current appropriate Kenya standard Specification which are as follows: -

P.V.C. Insulated Cables and Flexible Cords	---	Ks 04-192:1988
P.V.C Insulated Armoured Cables	---	Ks 04-194:1990
Armouring of Electric cables	---	Ks 04-290:1987

The successful Sub-Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.

P.V.C. insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm<sup>2</sup> shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform to the details stated in the "Cable Braid and insulation Colours" Clause.

## 2.9 ARMOURED P.V.C. INSULATED AND SHEATHED CABLES:

Shall be 600/1000-volt grade manufactured to Ks 04-194:1988 and Ks 04-187/188 with copper stranded conductors.

The wire armour of the cable shall be used wholly as an earth continuity conductor and the resistance of the wire armour shall have a resistance not more than twice of the largest current carrying conductor of the cable.

P.V.C./S.W.A./P.V.C. cables shall be terminated using "Telecom" "B" type or approved equal or approved equal glands and a P.V.C. tapered sleeve shall be provided to shroud each gland.

## 2.10 CABLE SUPPORTS, MARKERS AND TILES

All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cast cable hooks or clamps, of appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and galvanized mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or backstraps described above which shall in turn be secured to walls or ceilings of ducts by rawbolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the Sub- contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and blackstraps shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this Sub-contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the Sub-contractor shall work in close liaison with other services Sub-contractors.

The Sub-Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this Sub-contract.

All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Sub-Contractor, unless otherwise stated.

### 2.11 PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000 volt grade cables, or equal approved.

PVC cables shall conform to the details of the "Cables and Flexible cords" and "Cable Braid and Insulation Colours" clauses.

### 2.12 HEAT RESISTING CABLES

Final connections to cookers, water heaters, etc., shall be made using butyl rubber insulated cable as CMA reference 610 butyl (Single core 600/1000 Volt).

This type of cable shall be used in all instances where a temperature exceeding 100°F, but not exceeding 150°F is likely to be experienced. Final connections to all lighting fittings (and other equipment where a temperature in excess of 150°C likely to be experienced) shall be made using silicon rubber insulated cable or equal and approved.

### 2.13 FLEXIBLE CORDS

Shall be in accordance with the "Cable and Flexible Cords" clause. No cord shall be less than 24/0.2mm in size unless otherwise specified.

Circular white twin TRS flex shall be used for plain pendant fittings up to 100 watts. For all other types of lighting fittings the flexible cable shall be silicone rubber insulated.

No polythene insulated flexible cable shall be used in any lighting fitting or other appliance (see "Heat Resisting Cables" Clause 30).

## 2.14 CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc., shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers.

The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the "Cable Insulation Colours" clause. Black cable with black end markers shall only be used for neutral cables.

## 2.15 CABLE INSULATION COLOURS

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

<u>SYSTEM</u>	<u>INSULATION COLOUR</u>	<u>CABLE END MARKER</u>
<b>1) Main and Sub-Main</b>		
a) Phase	Red	Red
b) Neutral	Black	Black
<b>2) Sub-Circuits Single Phase</b>		
a) Phase	Red	Red
b) Neutral	Black	Black

## 2.16 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the "looping in" system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P.V.C. cable.

- (i) 1.5mm<sup>2</sup> for all lighting circuits indicated on the drawing.

Power circuits P.V.C cable (minimum sizes).

- (i) 2.5mm<sup>2</sup> for one, two or three 5Amp sockets wired in parallel.
- (ii) 2.5mm<sup>2</sup> for one 15Amp socket.
- (iii) 2.5mm<sup>2</sup> for maximum of ten switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

### 2.17 SPACE FACTOR

The maximum number of cables that may be accommodated in a given size of conduit or trunking or duct is not to exceed the number in Tables B.5 and B.6 or as stated in Regulation B.91, B.117 and B.118 of the I.E.E Regulations whichever is appropriate.

### 2.18 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Sub-contractor before the installations are handed over.

A report of all tests shall be furnished by the Sub-Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

### 2.19 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes and shall be of the gangs' ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247: 1988

### 2.20 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched and as manufactured by "M.K. Electrical Co. Ltd.", or other approved equal to KS 04 – 246: 1987

### 2.21 FUSED SPUR BOXES

These shall be flush, D.P switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by "M. K. Electrical Company Ltd", or other approved equal. KS 04 – 247: 1988

### 2.22 COOKER OUTLETS

These shall be flush mounted with 13-A switched socket outlet and neon indicator Lamps.

The cooker control units shall be as manufactured by "M.K. Electrical Company Ltd", or other approved equal KS 04 – 247: 1988

## 2.23 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

## 2.24 LAMPHOLDERS

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C., E.S., or G.E.S as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.

Where lampholders are supported by flexible cable, the holders shall have "cord grip" arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

The Sub-Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

## 2.25 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Sub-Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 – 112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982

**LED lamps shall be used in all fittings unless otherwise specified. The minimum luminous flux allowed is 95 lumens per Watt, minimum life time of 50,000hrs, minimum power factor of 0.9, voltage range of 100-240V, THD <15% amongst others.**

## 2.26 LIGHTING FITTINGS AND STREET LIGHTING LANTERNS

This Sub-Contract shall include for the provision, handling charges, taking the delivery, safe storage, wiring (including internal wiring) assembling and erecting of all lighting fittings shown on the drawings.

All fittings and pendants shall be fixed to the conduit boxes with brass R/H screws. These to be in line with metal finish of fittings. The lighting fittings are detailed for the purpose of establishing a high standard of finish and under no circumstances will substitute fittings be permitted.

In case of rectangular shaped ceiling fittings, the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the Sub-Contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. In the case of ball and/or knuckle joints short lengths of flexible cable shall be provided, bonded to the metal work on either side of the joints. If the above provisions are not made by the manufacturers -, the Sub-contractor shall include cost of additional work necessary in his tender. See "Flexible Cords" clause for details of internal wiring of lighting fittings.

Minimum size of internal wiring shall be 20/0.20mm (23/0067). Each lighting fitting shall be provided with number type and size of lamps as detailed on the drawings. It is to be noted that some fittings are suspended as shown on the drawings.

Where two or more points are shown adjacent to each other on the drawings, e.g socket outlet and telephone outlet, they shall be lined up vertically or horizontally on the centre lines of the units concerned.

Normally, the units shall be lined up on vertical centre lines, but where it is necessary to mount units at low level they shall be lined up horizontally.

#### 2.27 POSITIONS OF POINTS AND SWITCHES

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Sub-contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The Sub-contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Sub- Contractor shall be responsible for all alterations made necessary by the non-compliance with the clause.

#### 2.28 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains.

The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

When switches are arranged in their formation all necessary horizontal and vertical barriers shall be provided to ensure segregation from adjacent units. Means of locking the switch in the "OFF" position shall be provided.

#### 2.29 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class "B" welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enamelled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanised. Conduit fittings, accessories or equipment used in conjunction with galvanised conduits shall also be galvanised or otherwise as approved by the service engineer.

Metal trunking shall be fabricated from mild steel of not less than 18 swg. All sections of trunking shall be rigidly fixed together and attached to the framework or fabric or the building at intervals of not less than 1.2m. Joint trunking shall not overhang fixing points by more than 0.5m.

All trunking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trunking is galvanised, the links shall be made by galvanised flat iron strips.

All trunking fittings (i.e. Bends, tees, etc) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm<sup>2</sup> are employed.

Where trunking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trunking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trunking is used to connect switchgear of fuseboards, such connections shall be made by trunking fittings manufactured for this purpose and not by multiple conduit couplings.

Where vertical sections of trunking are used which exceed 4.5m in length, staggered tie off points shall be provided at 4.5m intervals to support the weight of cables.

Unless otherwise stated, all trunking systems shall be painted as for conduit.

Where a wiring system incorporates galvanised conduit and trunking, the trunking shall be deemed to be galvanised unless specified otherwise.

The number of cables to be installed in trunking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstances be such that a space factor of 45% is exceeded.

Conduit and trunking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects.

Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enameled tubing and galvanizing paint for galvanised tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit.

The inner radius of the bend shall not be less than four (4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15m. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

Conduit shall be swabbed out prior to drawing in cables, and they shall be laid so as to drain of all condensed moisture without injury to end connections.

Conduits and trunking shall be run at least 150mm clear of hot water and steam pipes, and at least 75mm clear of cold water and other services unless otherwise approved by the services engineer.

All boxes shall conform to KS 04 – 668: 1986, to be of malleable iron, and black enamelled or galvanised according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.

Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.

All adaptable boxes and lids of the same size shall be interchangeable.

Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.

Where used in conjunction with mineral insulated copper sheathed cable, galvanised boxes shall be used and painted after erection.

Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.

The floor trap covers are to be recessed and filled in with a material to match the floor surface.

The Sub-contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.

Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

### 2.30 TESTING ON SITE

The Sub-contractor shall conduct during and at the completion of the installation and, if required, again at the expiration of the maintenance period, tests in accordance with the relevant section of the current edition of the Regulations for the electrical equipment of buildings issued by the I.E.E of Great Britain, the Government Electrical Specification and the Electric Supply Company's By-Laws.

- (b)** Tests shall be carried out to prove that all single pole switches are installed in the 'live' conductor.
- (c)** Tests shall be carried out to prove that all socket outlets and switched socket outlets are connected to the 'live' conductor in the terminal marked as such, and that each earth pin is effectively bonded to the earth continuity system. Tests shall be carried out to verify the continuity of all conductors of each 'ring' circuit.
- (d)** Phase tests shall be carried out on completion of the installation to ensure that correct phase sequence is maintained throughout the installation. Triplicate copies of the results of the above tests shall be provided within 14 days of the witnessed tests and the Sub-contractor will be required to issue to the service engineer the requisite certificate upon completion as required by the regulations referred to above.
- (e)** Any faults, defects or omissions or faulty workmanship, incorrectly positioned or installed parts of the installation made apparently by such inspections or tests shall be rectified by the Sub-contractor at his own expense.
- (f)** The Sub-contractor shall provide accurate instruments and apparatus and all labour required to carry out the above tests. The instruments and apparatus shall be made available to the services engineer to enable him to carry out such tests as he may require.
- (g)** The Sub-contractor shall generally attend on other contractors employed on the project and carry out such electrical tests as may be necessary.
- (h)** The Sub-contractor shall test to the services engineer's approval and as specified elsewhere in this specification or in standards and regulations already referred to, all equipment, plant and apparatus forming part of the works and before connecting to any power or other supply and setting to work.
- (i)** Where such equipment, etc., forms part of or is connected to a system whether primarily or of an electrical nature or otherwise (e.g. air conditioning system) the Sub-contractor shall attend on and assist in balancing, regulating testing and commissioning, or if primarily an electrical or other

system forming part of works, shall balance, regulate, test and commission the system to the service engineer's approval.

#### APPENDIX TO GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

The electrical sub-contractor shall comply with the following:-

1. Government Electrical Specifications No. 1 and No. 2.
2. All requirements of Kenya Power Company Limited, and Communications Kenya (CA).

Authority of

## ICT INSTALLATIONS SPECIFICATIONS

### TECHNICAL SPECIFICATIONS – STRUCTURED CABLING, SURVEILLANCE/CCTV & ACCESS CONTROL

#### General Conditions

#### **Scope of Work**

The Contractor shall supply, install, test, and commission all structured cabling (data & telephone), CCTV system, and access control system as described in the Bill of Quantities (BOQ) and shown on the drawings. All work shall comply with the latest applicable standards and manufacturer's recommendations.

### Drawings

Contractor shall produce as-built drawings (CAD/PDF) after installation showing cable routes, outlet locations, device positions, and rack elevations.

### STRUCTURED CABLING (DATA & TELEPHONE)

#### Installation Method

- i. Cables shall be installed in dedicated PVC trunking (100×50 mm) or 20 mm conduits as per BOQ.
- ii. No running of data cables through same conduit as power cables (minimum separation per IEC 60364).
- iii. Cables shall be dressed neatly into cable trays, bundled using hook-and-loop ties or nylon cable ties.
- iv. Maximum pulling tension: 110 N (25 lbf). Bend radius: 4× cable diameter during pull, 1× after.
- v. Each floor shall have a 19" 4U wall-mount cabinet (or 42U floor rack for MDF) housing patch panels, switches, and fibre termination.
- vi. Inter-floor backbone: 6-core OM4 fibre (terminated in LC duplex adapters) plus 2× Cat6 UTP as redundancy.

#### Testing & Commissioning

100% of links shall be tested with Fluke DSX-8000 or equivalent to TIA-568.2-D Cat6 channel specifications. Test reports (PDF) shall include: wiremap, length, insertion loss, NEXT, PS NEXT, ACR-F, PS ACR-F, return loss, propagation delay, delay skew. Each cable ID must match the report.

#### Labelling

- i. Cable ID format: [Floor]-[Type][Number]  
Floor: GF (Ground), FF (First), SF (Second)  
Type: D (Data), T (Telephone)  
Example: GF-D24
- ii. Labels at both ends, on patch panel ports, on faceplate designation strips (laser printed).
- iii. Fiber cables: Label at both ends and every 5 m within trays.

#### Handover Deliverables

- i. As-built drawings (floor plans + rack layouts)
- ii. Cable schedule (patch panel port mapping)
- iii. Test reports (structured cabling & fibre OTDR trace)
- iv. Spare parts list: any extra keystone jacks and patch cords.

#### Warranty

Minimum 1-year component warranty (manufacturer certified) + 2-year workmanship warranty.

### Surveillance/CCTV System (IP)

#### Installation Method

- i. All cameras shall be powered via PoE (IEEE 802.3af/at) from the supplied PoE switches.
- ii. Camera mounting height: 2.5–3.0 m (domes) / 3.0–4.0 m (bullets if any).
- iii. Cable from camera to switch: Cat6 UTP, max 90 m. If longer, use fibre media converters.
- iv. Exposed outdoor cables (if any) in galvanized steel conduit with weatherproof glands.
- v. NVR placed in Ground floor MDF. Monitor placed on desktop mount as per BOQ.

#### Testing & Commissioning

- i. Each camera: verify live view, PTZ (if any), IR activation, night mode, motion detection recording.
- ii. Storage test: ensure 30 days of continuous recording + motion events (test by writing dummy data).
- iii. Remote access: test via mobile app and web browser (HTTPS, DDNS or static IP).
- iv. Provide a full system report with bandwidth calculation and storage consumption.

#### Handover Deliverables

- i. NVR configuration backup file
- ii. Camera IP address schedule (with MAC addresses)
- iii. User manual for DVR/NVR and CMS software

- iv. One administrator account + one viewer account documented.

#### Warranty

Minimum 1-year hardware warranty (cameras, NVR, monitor) + 1-year on-site support

#### Access Control System

#### Installation Method

- i. Electromagnetic locks: fail-safe (power-to-lock) for main entrance and ICT room; fail-secure (power-to-open) for emergency exits.
- ii. Wiring
  - o Lock: 2×1.5 mm<sup>2</sup> (power) + 2×0.5 mm<sup>2</sup> (door status sensor) – in separate conduit.
  - o Reader: 6×0.5 mm<sup>2</sup> shielded (Data0, Data1, LED, Beeper, GND, +5V) – max 150 m.
  - o Exit button: 2×0.5 mm<sup>2</sup>.
- iii. Controller: installed inside lockable enclosure near the door or in IDF rack
- iv. All cables shall be labelled at both ends (e.g., AC-D01-LOCK, AC-D01-READER)

#### Operational Requirements

- i. Offline mode: controller must store a minimum of 5,000 events.
- ii. REX (Request to Exit) push button and break glass unit wired in series for emergency egress.
- iii. Door forced-open alarm and held-open alarm (programmable delay).
- iv. System shall integrate with existing fire alarm panel to unlock all locks upon fire signal (dry contact).

#### Testing & Commissioning

- i. Test each door: card reading, exit button, break glass, key override, door status monitoring.
- ii. Test offline event storage by disconnecting network.
- iii. Test fire alarm integration (simulate alarm, confirm all locks release).
- iv. Provide event log report after 72 hours of operation.

#### Handover Deliverables

- i. Access controller configuration (user list, schedules, access groups) backed up to USB.
- ii. Door matrix (door number → controller port → reader location → lock type).
- iii. Master card/proximity fob set (minimum 4 pieces).
- iv. Wiring diagrams for each door.

#### Warranty

Minimum 1-year hardware warranty + 1-year on-site support

## **MECHANICAL INSTALLATIONS SPECIFICATIONS**

## **PLUMBING AND DRAINAGE SYSTEMS**

### **GENERAL PROVISIONS FOR PLUMBING WORK**

#### **PART 1 GENERAL**

##### **1.1 General Requirements**

- A. The requirements of the Contract Documents, including the General and Special Conditions, and Division 1 - General Requirements apply to the work of this division.
- B. In case of conflict between these General Provisions and the special and General Conditions the more restrictive requirements govern as determined by the Architect.
- C. Drawings are diagrammatic and are a graphic representation of contract requirements at the scale required.
- D. Riser diagrams and schematic diagrams generally indicate equipment connections to be used for various systems. Provide all work shown on diagrams whether or not it is duplicated on the plans.
- E. Specifications include incomplete sentences. Words or phrases such as "the contractor shall," "shall be," "furnish," "provide," "a," "an," "the," and "all" have been omitted for brevity.
- F. Except where modified by a specific notation to the contrary, the indication and/or description of any item, in the Drawings or Specifications or both, carries with it the instruction to furnish and install the item complete with all

appurtenances or accessories necessary to complete any required system, regardless of whether or not this instruction is explicitly stated as part of the indication or description.

- G. Specifications and Drawings are complimentary and are to be taken together for a complete interpretation of the work.
- H. Drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installation. Install the work in accordance with the diagrammatic intent expressed on the electrical and mechanical Drawings, and in conformity with the dimensions indicated on final architectural and structural working drawings and on equipment shop drawings.
- I. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field coordination for the indicated work.
- J. Derive information as to the general construction from structural and architectural drawings and specifications.
- K. Responsibility of contractor is to ensure that all works are in conformity with drawings, international stated codes and local regulations.

## **1.2 Quality Assurance and Standards**

- A. Make the complete installation in accordance with all state and local municipal codes, all applicable codes and authorities having jurisdiction, and the applicable requirements and standards of the following:

ASA American Standards Association

AGA American Gas Association

IEEE Institute of Electrical and Electronics Engineers

ANSI American National Standards Institute

ASHRAE American Society of Heating, Refrigerating and Air Conditioning Engineers

ASME American Society of Mechanical Engineers ASTM American Society for Testing and Materials AWS

American Welding Society AWWA American Water Works Association IBR Institute of Boiler and Radiator Manufacturers

AMCA Air Moving and Conditioning Association MSS Manufacturer's Standardization Society of the Valve and Fitting Industry

NEC National Electrical Code NEMA National Electrical Manufacturers Association

PDI Plumbing and Drainage Institute SBI Steel Boiler Institute UL Underwriters Laboratories SMACNA

Sheet Metal and Air Conditioning Contractors National Association NFPA National Fire Protection Association

Refer to the Architect for decisions on any items or requirements noted in the specifications or drawings which conflict with the standards listed above. Provide all work necessary to comply with these requirements at no extra cost to the Owner.

## **1.3 Organization of the Work**

- A. Implement the work called for under these specifications simultaneously with the work of other Trades in a manner such as not to delay the overall progress of the project. Be prepared to furnish promptly to other Trades involved at the project all information and measurements relating to the work which they may require. Cooperate with them in order to secure the harmony necessary in the interest of the project as a whole.

- B. Put work in place as fast as possible to meet all construction schedules.
- C. Keep a competent superintendent in charge of the work. Replace such superintendent if unsatisfactory to the Project Manager.
- D. Maintain a complete file of Contract and shop drawings at the Site available for inspection by the Architect and Project Manager. Upon installation, initial and date shop drawings.
- E. Provide every facility to permit inspection or observation of the work by the Architect during the course of construction.
- F. Be responsible for work until its completion and final acceptance; replace any of the same which may be damaged, lost or stolen, without additional cost to the Owner.

#### **1.4 Acceptance of the Work**

- A. Make all workmanship, equipment and materials supplied under these specifications acceptable to the Architect who has the power to reject any items which in its judgment are not in full accordance with the Drawings and Specifications.

#### **1.5 Permits, Certificates, and Fees**

- A. Obtain and deliver a final Certificate of Approval from the applicable inspection authority having jurisdiction. Make delivery to the Architect for transmittal to the Owner upon completion of the work and before final payment. Pay all charges made by the inspection authority.
- B. Include the procurement of and payment for all permits, certificates and fees for the performance of the work in compliance with codes, applicable laws and municipal regulations including those from local utilities for services.

#### **1.6 Scope of Work**

- A. The Specifications and the accompanying drawings are intended to secure the provisions of all material, labor, equipment, and services necessary to install complete, tested, ready for operation and set to work the Plumbing and Fire Protection Systems in accordance with the Specifications and Drawings. Provide all systems complete with necessary appurtenances and minor auxiliaries, including offsets to clear interferences and supports which are not shown but are needed to make each system come every respect. Provide all work described in the Specifications and not shown on the Drawings, or vice versa, in complete working order. If mention has been omitted of any item of work or material, necessary for completion of the system, then such items must be and are hereby included.

#### **1.7 Examination of Existing Conditions**

- A. Before submitting a proposal, the Contractor is responsible for visiting the site of the work and becoming thoroughly familiar with all conditions and limitations. The submission of a proposal will be construed as evidence that such an examination has been made, and later claims for labor, equipment or materials required for difficulties encountered which could have been foreseen had such an examination been made will not be recognized.
- B. Verify all grades, elevations, dimensions, and clearances at the site.

#### **1.8 Shop Drawings and Other Information Required**

- A. Prior to purchasing equipment or materials, submit a list of proposed manufacturers to the Architect for approval.
- B. Shop drawings which are submitted out of sequence or without supplemental information necessary for proper evaluation of the submission may be subject to delays in processing.
- C. Shop drawings must comply with Division I conditions and bear the Contractor's stamp certifying:
  - 1. That it has checked the submitted shop drawings.
  - 2. That the submitted shop drawing is fully coordinated with all interfacing trades and with other trades where interference may occur.
  - 3. That the submitted shop drawings are in conformance with the contract documents, except for the following substitutions and/or changes.
    - 1 —
    - 2 —
    - 3 —
    - etc.            Signed \_\_\_\_\_"
- D. Prior to assembling or installing the work, submit the following for review:
  - 1. Catalog information and factory assembly drawings, as required for a complete explanation and description of all items of equipment.
  - 2. Field installation drawings, as required to explain fully all procedures involved in erecting, mounting and connecting all items of equipment.
  - 3. Scale drawings indicating insert and sleeve locations.
  - 4. Scale composite drawings, showing all duct work, piping, lighting fixtures, main conduit runs, and drainage piping above the hung ceilings and in the mechanical equipment rooms. The drawings will indicate pipe and duct sizes and their elevation above the floor. Provide layout of plumbing and fire protection work for inclusion on the composite drawing.
- E. Materials installed or work performed without acceptance of materials is done at the risk of the Contractor, and the cost of removal of such material or work which is judged unsatisfactory for any reason is at the expense of the Contractor plus cost of any other work affected.
- F. Documents will not be accepted for review unless:
  - 1. Number of copies and type of paper complies with the requirements of the general conditions.
  - 2. Complete information pertaining to appurtenances and accessories is included.
  - 3. Submitted as a package where documents pertain to related items.
  - 4. Properly marked with service or function identification as related to the project, where they consist of catalog sheets displaying other items which are not applicable.
  - 5. Properly marked with external connection identification as related to the project where they consist of standard factory assembly or field installation drawings.
- G. Shop drawings and other submissions which are submitted for review will be returned with a shop drawing stamp indicating actions based on reviews that are made and contractor's responses that may be necessary. Actions noted regarding "REVIEW" and "RESPONSE" portions of the shop drawing stamp are defined as follows :
  - 1. Review Portion
    - a. Incomplete : Item submitted without contractor's stamp as stated above.

- b. No Exceptions Taken : Contractor may install the items submitted in conformance with the plans and specifications.
- c. Rejected : Item submitted fails to meet criteria in specifications and/or drawings.
- d. Comments Attached : Additional sheet has been attached to the shop drawing submittal and is being returned to the Contractor; additional sheets may include comments which could not be made on the submittal due to limited space or may request additional information.
- e. Note Marking : Notations made directly on the shop drawing submittal.

## 2. Response Required by Contractor Portion

- a. Confirm : Contractor to confirm that he will comply with comments made under items 1d or 1e above; if the Contractor agrees with the comments proceed with the fabrication and installation.
- b. Resubmit : Contractor to resubmit shop drawings for review based upon paragraphs 1a and 1c and may also be required to resubmit under paragraphs 1d and 1e.

### 1.9 **Record Drawing**

- A. Before commencing work, provide complete set of black and white prints of Contract Drawings.
- B. Maintain prints in field office and permanently record, in colored pencil, on such prints, at time of occurrence, deviations from Contract Drawings, due to :
  - 1. Field Coordination.
  - 2. Addenda.
  - 3. Bulletins
- C. Dimension underground utilities from permanent identifiable structural points.
- D. Make drawings available for the Architect's periodic inspection and submit for review with As-Built Drawings.

### 1.10 **As-Built Drawings**

- A. Before commencing work, procure complete set of lithotracings of Contract Drawings on 4 mil mylar.
- B. Neatly revise to conform with Record Drawings.
- C. Conspicuously indicate major deviations by specific reference to shop drawings and provide an accurate and complete record of the work as installed.
- D. Submit up-to-date "in progress" prints to Project Manager when requesting payment for work installed.
- E. Upon completion of work, submit signed certified lithotracings as As-Built and referenced Shop Drawings, along with marked up prints of Record Drawings, to Project Manager for acceptance.

Submit complete copy on computer diskette, submit two copies on tape with complete list of contents.

### 1.11 **Coordination of Work With Other Trades**

- A. Coordinate the work of this division with the work of all other Trade and the utility company and so arrange that there will be no delay in the proper installation and completion of any part or parts of each respective work wherein it may be interrelated with that of this Contract so that generally all construction work can proceed without delaying the completion of the project. Forward all communications of a coordinating nature to the Architect.
- B. Examine contract drawings and specifications for all other trades relating to this project, verify all governing conditions at the site, and become fully informed as to the extent and character of the work required and its relation to other work in the building. No consideration will be granted for any alleged misunderstanding of the materials to be furnished for work to be done.
- C. Scaled and figured dimensions with respect to the items are approximate only; sizes of equipment have been taken from typical equipment items of the class indicated. Before proceeding with work, carefully check all dimensions and sizes and assume full responsibility for the fitting-in of equipment and materials to the building and to meet architectural and structural conditions.
- D. Coordinate work with other disciplines. Confer with other contractors whose work might affect this installation; and arrange all parts of this work and equipment in proper relation to the work and equipment of others, with the building construction and with architectural finish so that this work will harmonize in service, appearance, and function.
- E. Install exposed piping to provide the maximum amount of headroom but in no case less than 2150mm above the finished floor. Install piping concealed in areas where hung ceilings or other furred spaces are indicated.
- F. Refer to the Architectural Drawings for ceiling heights, locations and types of hung ceilings and furred spaces.
- G. Furnish to the Trade Contractors for general construction, detailed advance information regarding all requirements related to work under other Divisions and/or Sections. Furnishes, accurate data, and locations of any and all pads, pits, chases, sleeves, and slots through floor slabs, walls, foundations, ceilings, roof, and other special openings required for work under this Division.
- H. The IIVAC trade shall provide sepia drawings for trade coordination. The sepia of this "coordination" drawing will be circulated in timely fashion to the other trades for indication of their work to permit coordination. Attend coordination meetings.

When coordination is complete to "sign off the coordination drawings. See "SHOP RAWINGS AND OTHER INFORMATION REQUIRED."

### **1.12 Delivery and Receiving**

- A. Owner-furnished equipment will be delivered, crated or otherwise packaged to the site delivery point selected by the Project Manager. This Contractor is responsible for accepting delivery of all Owner-furnished items which are under his trade jurisdiction and place them in their final location.
- B. Where items cannot be immediately placed in their final position, the Contractor is responsible for storing and protecting all Owner-furnished items until the time of their final installation. The contractor is responsible for the care and protection of the items until acceptance by the Owner. Coordinate delivery of Utility Company furnished equipment with the delivery policy of that company.

### **1.13 Protection, Maintenance and Product Handling of Plumbing and Fire Protection Equipment**

- A. Deliver and store Plumbing and Fire Protection equipment at the site, properly packed and crated until finally installed. Investigate each space through which equipment must be moved. If necessary, have equipment shipped from manufacturer in crated sections of size suitable for moving through restricted spaces.
- B. Adequately protect uninstalled and installed equipment and materials against loss or stealing, damage caused by water, paint, fire, plaster, moisture, acids, fumes, dust or other environmental conditions, or physical damage, during delivery, storage, installation and shutdown conditions. Replace any damaged or stolen material without extra cost to the Owner.
- C. Provide effective protection for all material and equipment against damage that may be caused by environmental conditions. Do no work when conditions of temperature in area or moisture on materials or substrates are not in accordance with material manufacturer's recommended conditions for installation.
- D. Maintain all equipment and systems installed, until issuance of the certificate of practical completion. The operation of the equipment by the Owner does not constitute an acceptance of the work. Work will be accepted only after the Contractor has adjusted its equipment, demonstrated that it fulfills the requirements of the Drawings and Specifications, and has furnished all required certificates.
- E. Provide effective protection against damage for all materials and equipment during shipment, and storage at the Project Site. Cover all stored equipment to exclude dust and moisture. Place stored equipment on pallets or racks with appropriate weather cover.
- F. After piping and equipment are installed, cover openings to prevent entrance of water and foreign materials. Close openings with temporary metal or plastic caps.
- G. Protect all rough and finished floors and other finished surfaces from damage which may be caused by construction materials and methods. Protect floors with tarpaulins, chip pans and oil-proof floor covering. Protect finished surfaces from welding and "cutting" splatters with baffles and splatter blankets. Protect finished surfaces from paint droppings, adhesive and other marring agents with drop cloths. Protect other surfaces with appropriate protective measures.
- H. Deliver materials to Site in manufacturer's original unopened containers with manufacturer's name and product identification clearly marked thereon.
- I. After completion of project, clean the exterior surfaces of equipment furnished in this Division including concrete residue.

#### **1.14 Equipment and Materials**

- A. Provide Equipment and Materials required for installation under the Specifications new and without blemish or defect. Provide equipment and materials which will meet with the acceptance of authorities having jurisdiction over the work. Where such acceptance is contingent upon having the products listed or labeled by Underwriters Laboratories Inc., or other test laboratory, provide products so listed or labeled. Where no specific indication as to the type or quality of material or equipment is indicated, furnish a first class standard article.
- B. Wherever a manufacturer of a product is specified and the terms "other approved" or "approved equal" or "equal" or "similar to" are used, the substituted item must conform in all respects to the specified item. Consideration will not be given to claims that the substituted item meets the performance requirements with lesser construction. Performance as delineated in schedules and in the Specifications indicate minimum performance. In many cases, equipment is oversized to allow for pick-up loads, derating and future loads which cannot be delineated under the minimum performance.

- C. Provide all equipment of one type (such as valves, fans, pumps, coils, etc.) produced by one manufacturer.
- D. Substituted equipment where permitted and accepted must conform to space requirements. Replace at Contractor's expense any substituted equipment that cannot meet space requirements, whether accepted or not. Make any modifications of related systems as a result of substitutions at Contractor's expense.
- E. Note that shop drawings, or other information submitted in accordance with the requirements hereinbefore specified, do not assure that the Architect attests to the dimensional suitability of the material or equipment involved. Architect's approval of shop drawings for substituted equipment, does not waive the Contractor's responsibility to assure proper fit with adequate clearances for maintenance.
- F. Substitutions of equipment for that listed on the Schedules or designated by model number in the Specifications will not be considered if the proposed substitution is not a regular cataloged item shown in the current catalog of the manufacturer and has not been successfully used for a period of not less than five years or more.

### **1.15 Access Doors in Finished Construction**

- A. Access doors as required for operation and maintenance of concealed equipment, valves, controls, pull boxes, etc., shall be provided whether indicated on the drawings or not.
- B. Coordinate and prepare a location, size, final and function schedule of access doors required and deliver to a representative of the installing Trade and the Engineer for acceptance.

### **1.16 Operating and Maintenance Instructions**

- A. After completion of all required equipment and system tests and unless specifically noted elsewhere in these specifications, provide at owner's/operator's convenience, knowledgeable personnel and necessary equipment to instruct and demonstrate the operation and maintenance of said equipment and systems. Arrange for the related manufacturer or authorized representative to assist with this orientation.
- B. Before requesting acceptance of work, furnish 5 copies in bound form of a complete operation and maintenance manual, typewritten or printed.
- C. Include the following in the operation and maintenance.
  - 1. Table of Contents
  - 2. Introduction - Explanation of manual and its use
  - 3. Description of system and/or equipment
    - a. Complete schematic drawings of all systems
    - b. Functional and sequential description of all systems.
  - 4. Systems operation
    - a. Operation procedures
    - b. All posted instruction charts
  - 5. Maintenance
    - a. Systems trouble-shooting charts
    - b. Procedures for checking out functions
    - c. Recommended list of spare parts

6. Listing of manufacturers
7. Manufacturer's data: Where multiple model, type and size listings are included, clearly and conspicuously indicate those that are pertinent to this installation.
  - a. Description - literature, drawings, illustrations, certified performance charts, technical data, etc.
  - b. Operation
  - c. Maintenance – incomplete t-shooting charts
  - d. Parts list
  - e. Names, addresses and telephone numbers of recommended repair and service companies.
  - f. Guarantee data

### **1.17 Guarantees and Certifications**

- A. Guarantee all work to be free from leaks and defects. Replace or repair, as directed by the Architect, defective materials or workmanship, as well as damage to the work of the Trades resulting from same for the duration of stipulated guarantee periods.
- B. The duration of guarantee periods following the date of acceptance of the entire work, unless otherwise specified, is one year.
- C. Submit certification attesting to the fact that specified performance and other criteria are met by all items of equipment.

### **1.18 Site Visits for Observation**

- A. As the project progresses, the Architect, will observe the mechanical and electrical installations, punch lists or non-compliance notices will be issued at any time.

### **1.19 Identification**

- A. Valves
  1. Valve identification to comply with MSSSP-25.
  2. Attach a 50mm round brass tag stamped with designating numbers 25mm high filled in with black enamel to each valve, except those on fixtures.
  3. Securely fasten valve tag to valve spindle or handle with a brass chain.
  4. Appropriate ceiling tile markers, in areas where removable ceilings occur to indicate location of valves or other devices, to be provided under the general construction division of these specifications.
- B. Motor Control Identification
  1. Mount black lamacoid nameplates on each motor controller identifying primary control function and individual position indication such as Pump No. 1, etc. Nameplates to be cut through to white background and have beveled edges. Mounted with chromium plated acorn head screws.
- C. Schedule and Charts
  1. Furnish to the Architect three (3) complete framed plastic laminated valve tag schedules. Schedule to indicate tag number, valve location by floor and nearest column number, valve size and service controlled.
- D. Piping Identification and Coding

1. Apply color coded Polyvinyl Chloride pipe bands identifying pipe contents and direction of flow.
2. On exposed piping, apply bands on 10 meters centers of straight runs, at valve locations, at point where piping enters and leaves a partition, wall, floor or ceiling.
3. On concealed piping installed above removable ceiling construction, apply bands in manner described for exposed piping.
4. On concealed piping installed above non-removable ceiling construction, or in pipe shafts, apply bands at valve or other devices that are made accessible by means of access doors or panels.
5. Apply bands at exit and entrance points to each vessel, tank or piece of equipment.
6. Band widths to be 200mm for pipes up to 300mm diameter and 400mm wide for larger diameter piping. Letter heights slating service to be preprinted on band, 20mm high for 200mm bands and 40mm high for 400mm bands.
7. For insulated pipes, apply bands after insulation and painting work has been completed.
8. Colors to conform to ASA Standard A 13.1. Provide 24 additional bands of each type for future use by owner's personnel.
9. Follow manufacturer's instructions for application procedures using non-combustible materials and contact adhesives.
10. Pipe background color coding shall be as follows:
  - a. Fire standpipe - red
  - b. Sprinkler - green
  - c. Domestic Cold Water Piping - blue
  - d. Domestic Hot Water Piping - yellow

## 1.20 Painting

A. Deliver all equipment with standard factory finish or as specified. Clean all equipment before acceptance by the Owner.

B. Except as otherwise specified, priming will be done under other Sections of the work.

C. Any Material transported in a piping system will be color coded. Positive Identification of contents of A piping system shall be by lettered legend giving the name of the material in full or abbreviated form Arrows will be used to indicate the direction of flow. Color coding shall be applied to the entire exposed piping system. Identifying color of materials one word in piping systems are as :

Material	Color
Blow-off water	Yellow
Fire protection water	Red
Fuel gas	Yellow
Hot water	Yellow
Sanitary, water	Green
Sprinkler, water	Red
Storm sewer	Green
Make-up water	Green
Waste Water	Green
Water	Green

## 1.21 Drip Pan

- A. Examine the drawings, and in cooperation with the Electrical Trade confirm the final location of all electrical equipment to be installed in the vicinity of piping. Plan and arrange all overhead piping no closer than 600 mm from a vertical line to electric motors and controllers, switchboards, panelboards, or similar equipment.
- B. Where the installation of piping does not comply with the requirements of foregoing paragraph, the piping shall be relocated.
- C. Furnish galvanized steel gutters as follows:
  - 1. Provide and erect a gutter of 1.31mm galvanized steel under every pipe which is within 600 mm of being vertically over any motor, electrical controllers, switchboards, panelboards, or the like.
  - 2. Each gutter shall be welded and made watertight, properly suspended and carefully pitched to a convenient point for draining. Provide a 20mm drain, with valve as directed, to nearest floor drain or slop sink, as approved.
  - 3. In lieu of such separate gutters, a continuous protecting sheet in similar construction, adequately supported and braced, properly rimmed, pitched and drained, may be provided over any such motor, and extending 600 mm in all directions beyond the motor, over which such piping has to run.

## 1.22 Training

- A. The Contractor shall instruct and train personnel, designated by the Owner for the purpose, in the operation and maintenance of every part, device and equipment in the systems with particular emphasis on proper start-up and shutdown procedures, preventive maintenance and lubrication procedures with the recommended lubricants overhaul and major maintenance methods, adjustment and calibration of instruments and controls, the use of special tools and safe practices.
- B. The Owner will bear all the expenses of his personnel allocated for this purpose.

## **PART 2 PRODUCTS**

### **2.1 Pipe and Pipe Fittings**

- A. Refer to individual Division 15 piping Sections for pipe and fitting materials and joining methods.
- B. Pipe Threads: ASME B 1.20.1 or British Standard Taper Pipe Thread for factory-threaded pipe and pipe fittings.

### **2.2 Joining Materials**

- A. Refer to individual Division 15 piping Sections for special joining materials not listed below.
- B. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B 16.21, nonmetallic, flat, asbestos- free, 3.2 mm maximum thickness, unless thickness or specific material is indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
  - 2. AWWA C110, rubber, flat face, 3.2 mm thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.

- C. Flange: ASME B18.2.1, carbon steel, unless otherwise indicated; Bolts, Nuts and washers, stainless steel for potable/domestic water piping, galvanized for other piping systems.
- D. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- E. Solder Filler Metals: ASTM B32.
  - 1. Alloy Sn95: Approximately 95 percent tin and 5 percent silver, with 0.10 percent lead content.
  - 2. Alloy E: Approximately 95 percent tin and 5 percent copper, with 0.10 percent maximum lead content.
  - 3. Alloy HA: Tin-antimony-silver-copper zinc, with 0.10 percent maximum lead content.
  - 4. Alloy HB: Tin-antimony-silver-copper nickel, with 0.10 percent maximum lead content.
  - 5. Alloy Sb5: 95 percent tin and 5 percent antimony, with 0.20 percent maximum lead content.
- F. Brazing Filler Metals: AWS A5.8.
  - 1. BCuP Series: Copper-phosphorus alloys.
  - 2. BAgl: Silver alloy.
- G. Welding Filler Metals: Comply with AWS DI 0.1 2 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
- H. Solvent Cements: Manufacturer's standard solvent cements for the following:
  - 1. ABS Piping: ASTM D 2235.
  - 2. CPVC Piping: ASTM F 493.
  - 3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
  - 4. PVC to ABS Piping Transition: ASTM D 3138.
- I. Plastic Pipe Seals: ASTM F 477, elastomeric gasket.
- J. Flanged, Ductile-Iron Pipe Gasket, Bolts, and Nuts: AWWA C110, rubber gasket, carbon-steel bolts and nuts.
- K. Couplings: Iron-body sleeve assembly, fabricated to match OD of plain-end, pressure pipes.
  - 1. Sleeve: ASTM A 126, Class B, gray iron.
  - 2. Followers: ASTM A 47 malleable iron or ASTM A 536 ductile iron.
  - 3. Gaskets: Rubber.
  - 4. Bolts and Nuts: AWWA C111.
  - 5. Finish: Enamel paint
- L. Couplings for RTRP and Fittings: Piping manufacturer's standard.

### **2.3 Dielectric Fittings**

- A. General: Assembly or fitting with insulating material isolating joined dissimilar metals, to prevent galvanic action and stop corrosion.
- B. Description: Combination of copper alloy and ferrous; threaded, solder, plain, and weld-neck end types and matching piping system materials.

- C. Insulating Material: Suitable for system fluid, pressure, and temperature.
- D. Dielectric Unions: Factory-fabricated, union assembly, for 1725 kPa minimum working pressure at 82deg. C.
- E. Dielectric Flanges: Factory-fabricated, companion-flange assembly, for 1035 or 2070 kPa minimum working pressure as required to suit system pressures.
- F. Dielectric-Flange Insulation Kits: Field-assembled, companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.
  - 1. Provide separate companion flanges and steel bolts and nuts for 1035 or 2070 kPa minimum working pressure as required to suit system pressures.
- G. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 2070 kPa minimum working pressure at 107 deg. C.
- H. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 2070 kPa minimum working pressure at 107 deg. C.

## 2.4 Flexible Connectors

- A. General: Fabricated from materials suitable for system fluid and that will provide flexible pipe connections. Include 860 kPa minimum working-pressure rating, unless higher working pressure is indicated, and ends according to the following:
  - 1. DN50 and Smaller: Threaded.
  - 2. DN65 and Larger: Flanged.
  - 3. Option for DN65 and Larger: Grooved for use with keyed couplings.
- B. Bronze-Hose, Flexible Connectors: Corrugated, bronze, inner tubing covered with bronze wire braid. Include copper-tube ends or bronze flanged ends, braze welded to hose.
- C. Stainless-Steel-Hose/Steel Pipe, Flexible Connectors: Corrugated, stainless-steel, inner tubing covered with stainless-steel wire braid. Include steel nipples or flanges, welded to hose.
- D. Stainless-Steel-Hose/Stainless-Steel Pipe, Flexible Connectors: Corrugated, stainless-steel, inner tubing covered with stainless-steel wire braid. Include stainless-steel nipples or flanges, welded to hose.
- E. Rubber, Flexible Connectors: CR or EPDM elastomer rubber construction, with multiple plies of NP fabric, molded and cured in hydraulic presses. Include 860 kPa minimum working-pressure rating at 104 deg. C. Units may be straight or elbow type, unless otherwise indicated.

## 2.5 Mechanical Sleeve Seals

- A. Description: Modular design, with interlocking rubber links shaped to continuously fill annular space between pipe and sleeve. Include connecting bolts and pressure plates.

## 2.6 Piping Specialties

- A. Sleeves: The following materials are for wall, floor, slab, and roof penetrations:

1. Steel Sheet Metal: 0-6 mm minimum thickness, galvanized, round tube closed with welded longitudinal joint.
  2. Steel Pipe: ASTM A 53, Type E, Grade A, Schedule 40, galvanized, plain ends.
  3. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
    - a. Underdeck Clamp: Clamping ring with set screws.
    - b. Screws used for outdoor and wet application shall be of stainless steel.
- B. Escutcheons: Manufactured wall, ceiling, and floor plates; deep-pattern type if required to conceal protruding fittings and sleeves.
1. ID: Closely fit around pipe, tube, and insulation of insulated piping.
  2. OD: Completely cover opening.
  3. Cast Brass: One piece, with set screw and polished chrome-plated finish.
  4. Cast Brass: Split casting, with concealed hinge, set screw and polished chrome-plated finish.
  5. Stamped Steel: One piece, with set screw and chrome-plated finish.
  6. Stamped Steel: One piece, with spring clips and chrome-plated finish.
  7. Stamped Steel: Split plate, with concealed hinge, set screw, and chrome-plated finish.
  8. Stamped Steel: Split plate, with concealed hinge, spring clips, and chrome-plated finish.
  9. Cast-iron Floor Plate: One-piece casting.
- C. Screws: Provide Stainless Steel screws for outdoor and wet applications.

## 2.7 **Grout**

- A. Nonshrink, Nonmetallic Grout: ASTM C 1107, Grade B.
1. Characteristics: Post-hardening, volume-adjusting, dry, hydraulic-cement grout, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
  2. Design Mix: 34.5 MPa, 28-day compressive strength.
  3. Packaging: Premixed and factory packaged.

## **PART 3 - EXECUTION**

### **3.1 Piping Systems - Common Requirements**

- A. General: Install piping as described below, unless piping Sections specify otherwise. Individual Division 15 piping Sections specify unique piping installation requirements.
- B. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated, unless deviations to layout are approved on Coordination Drawings.
- C. Install piping at indicated slope.
- D. Install components with pressure rating equal to or greater than system operating pressure.
- E. Install piping in concealed interior and exterior locations, except in equipment rooms and service areas.
- F. Install piping free of sags and bends.

- G. Install exposed interior and exterior piping at right angles or parallel to building walls. Diagonal runs are prohibited, unless otherwise indicated.
- H. Install piping tight to slabs, beams, joists, columns, walls, and other building elements. Allow sufficient space above removable ceiling panels to allow for ceiling panel removal.
- I. Install piping to allow application of insulation plus 25 mm clearance around insulation.
- J. Locate groups of pipes parallel to each other, spaced to permit valve servicing. .
- K. Install fittings for changes in direction and branch connections.
- L. Install couplings according to manufacturer's written instructions.
- M. Install pipe escutcheons for pipe penetrations of concrete and masonry walls, wall board partitions, and suspended ceilings according to the following:
  - 1. Chrome-Plated Piping: Cast brass, one piece, with set screw, and polished chrome-plated finish. Use split-casting escutcheons if required, for existing piping.
  - 2. Uninsulated Piping Wall Escutcheons: Cast brass or stamped steel, with set screw.
  - 3. Uninsulated Piping Floor Plates in Utility Areas: Cast-iron floor plates.
  - 4. Insulated Piping: Cast brass or stamped steel; with concealed hinge, spring clips, and chrome-plated finish.
  - 5. Piping in Utility Areas: Cast brass or stamped steel, with set-screw or spring clips.
- N. Install sleeves for pipes passing through concrete and masonry walls, and concrete floor and roof slabs.
- O. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.
  - 1. Cut sleeves to length for mounting flush with both surfaces.
    - a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 50 mm above finished floor level. Extend sleeve fittings below floor slab as required to secure clamping ring if ring is specified.
  - 2. Build sleeves into new walls and slabs as work progresses.
  - 3. Install sleeves large enough to provide 6 mm annular clear space between sleeve and pipe or pipe insulation. Use the following sleeve materials:
    - a. Steel Pipe Sleeves: For pipes smaller than DN150.
    - b. Steel, Sheet-Metal Sleeves: For pipes DN150 and larger, penetrating gypsum-board partitions.
    - c. Stack Sleeve Fittings: For pipes penetrating floors with membrane waterproofing. Secure flashing between clamping flanges. Install section of soil pipe to extend sleeve to 50 mm above finished floor level. Refer to Division 7 Section "Sheet Metal Flashing and Trim" for flashing.
      - 1) Seal space outside of sleeve fittings with nonshrink, nonmetallic grout.
  - 4. Except for underground wall penetrations, seal annular space between sleeve and pipe or pipe insulation, using elastomeric joint sealants. Refer to Division 7 Section "Joint Sealants" for materials.
  - 5. Use Type S, Grade NS, Class 25, Use O, neutral-curing silicone sealant, unless otherwise indicated.

- P. Aboveground, Exterior-Wall, Pipe Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeve for 25 mm annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Install steel pipe for sleeves smaller than 150 mm in diameter.
  2. Install steel sheet for sleeves 150 mm in diameter and larger.
  3. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.
- Q. Underground, Exterior-Wall, Pipe Penetrations: Install steel pipe for sleeves. Seal pipe penetrations using mechanical sleeve seals. Size sleeve for 25 mm annular clear space between pipe and sleeve for installing mechanical sleeve seals.
1. Assemble and install mechanical sleeve seals according to manufacturer's written instructions. Tighten bolts that cause rubber sealing elements to expand and make watertight seal.
- R. Fire-Barrier Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at/pipe penetrations. Seal pipe penetrations with firestopping materials. Refer to Division 7 Section "through-Penetration Firestop Systems" for materials.
- S. Verify final equipment locations for roughing-in.
- T. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.
- U. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping Specification Sections:
1. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
  2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
  3. Soldered Joints: Construct joints according to AWS1 "Soldering Manual," Chapter "The Soldering of Pipe and Tube"; or CDA's "Copper Tube Handbook."
  4. Brazed Joints: Construct joints according to AWS' "Brazing Handbook," Chapter "Pipe and Tube."
  5. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
    - a. Note internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
    - b. Apply appropriate tape or thread compound to external pipe threads, unless dry seal threading is specified.
    - c. Align threads at point of assembly.
    - d. Tighten joint with wrench. Apply wrench to valve end into which pipe is being threaded.
    - e. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
  6. Welded Joints: Construct joints according to AWS D10.12, "Recommended Practices and Procedures for Welding Low Carbon Steel Pipe," using qualified processes and welding operators according to "Quality Assurance" Article.
  7. Flanged Joints: Align flange surfaces parallel. Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly using torque wrench.

8. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join pipe and fittings according to the following:
  - a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
  - b. ABS Piping: ASTM D 2235 and ASTM D 2661.
  - c. CPVC Piping: ASTM D 2846 and ASTM F 493.
  - d. PVC Pressure Piping: ASTM D 2672.
  - e. PVC Nonpressure Piping: ASTM D 2855.
  - f. PVC to ABS Nonpressure Transition Fittings: Procedure and solvent cement according to ASTM D 3138.
9. Plastic Piping Heat-Fusion Joints: Clean and dry joining surfaces by wiping with clean cloth or paper towels. Join according to ASTM D 2657 procedures and manufacturer's written instructions,
  - a. Plain-End Pipe and Fittings: Use butt fusion,
  - b. Plain-End Pipe and Socket Fittings: Use socket fusion.

V. Piping Connections: Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping DN50 and smaller, adjacent to each valve and at final connection to each piece of equipment with DN50 or smaller threaded pipe connection.
2. Install flanges, in piping DN65 and larger, adjacent to flanged valves and at final connection to each piece of equipment with flanged pipe connection.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

W. Protect underground pipes installed less than 1500 mm from FGL and passing under roads or landscaped areas by 50 mm thick precast concrete slabs. Slabs to extend 200 mm from both sides of protected pipe and be located 600 mm. above pipe.

### **3.2 Equipment Installation - Common Requirements**

- A. Install equipment to provide maximum possible headroom, if mounting heights are not indicated.
- B. Install equipment according to approved submittal data. Portions of the Work are shown only in diagrammatic form. Refer conflicts to the Engineer.
- C. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.
- D. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.
- E. Install equipment giving right of way to piping installed at required slope.
- F. Install flexible connectors on equipment side of shutoff valves, horizontally and parallel to equipment shafts if possible.

### **3.3 Painting And Finishing**

- A. Refer to Division 9 Section "Painting" for paint materials, surface preparation, and application of paint.

- B. Apply paint to exposed piping according to the following, unless otherwise indicated:
1. Interior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
  2. Interior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include 2 finish coats over galvanized metal primer.
  3. Interior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include finish coat over enamel undercoat and primer.
  4. Exterior, Ferrous Piping: Use semigloss, acrylic-enamel finish. Include 2 finish coats over rust-inhibitive metal primer.
  5. Exterior, Galvanized-Steel Piping: Use semigloss, acrylic-enamel finish. Include 2 finish coats over galvanized metal primer.
  6. Exterior, Ferrous Supports: Use semigloss, acrylic-enamel finish. Include 2 finish coats over rust-inhibitive metal primer.
- C. Do not paint piping specialties with factory-applied finish.
- D. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

### **3.4 Concrete Bases**

- A. Construct concrete bases of dimensions indicated or otherwise required, but not less than 150 mm larger in both directions than supported unit. Follow supported equipment manufacturer's setting templates for anchor bolt and tie locations. Use 21 MPa, 28-day compressive-strength concrete and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete."

### **3.5 Erection Of Metal Supports And Anchorage**

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor mechanical materials and equipment. Floor mounted metallic supports shall have base and concrete plinths beneath.
- B. Field Welding: Comply with AWS D1.1, "Structural Welding Code-Steel."
- C. Floor Mounted Support: Provide base plate and concrete plinths beneath each floor mounted support.

### **3.6 Demolition**

- A. Disconnect, demolish, and remove Work specified in Division 15 Sections.
- B. If pipe, ductwork, insulation, or equipment to remain is damaged or disturbed, remove damaged portions and install new products of equal capacity and quality.
- C. Accessible Work: Remove indicated exposed pipe and ductwork in its entirety.
- D. Work Abandoned in Place: Cut and remove underground pipe a minimum of 50 mm beyond face of adjacent construction. Cap and patch surface to match existing finish.
- E. Removal: Remove indicated equipment from Project site.

- F. Temporary Disconnection: Remove, store, clean, reinstall, reconnect, and make operational equipment indicated for relocation.

### **3.7 Cutting And Patching**

- A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces necessary for mechanical installations. Perform cutting by skilled mechanics of trades involved.
- B. Repair cut surfaces to match adjacent surfaces.

### **3.8 Grouting**

- A. Install nonmetallic, no shrink, grout for mechanical equipment base bearing surfaces, pump and other equipment base plates, and anchors. Mix grout according to manufacturer's written instructions.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placing of grout.
- E. Place grout, completely filling equipment bases.
- F. Place grout on concrete bases to provide smooth bearing surface for equipment.
- G. Place grout around anchors.
- H. Cure placed grout according to manufacturer's written instructions.

## **METERS AND GAUGES**

### **PART 1 GENERAL**

#### **1.1 Related Documents**

- A. Drawings and general provisions of the Contract, including the General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### **1.2 Summary**

- A. This Section includes meters and gauges used in mechanical systems.
- B. Related Sections: Division 15 piping Sections contain requirements that relate to this Section.
  - 1. Meters and gauges furnished as part of factory-fabricated equipment are specified as part of the equipment assembly in other Division 15 Sections.
  - 2. Division 15 Section "Fire Pumps" for flow meters for testing fire pumps.

#### **1.3 Submittals**

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.

- B. Product data for each type of meter, gauge, and fitting specified. Include scale range, ratings, and calibrated performance curves, certified where indicated. Submit a meter and gauge schedule showing manufacturer's figure number, scale range, location, and accessories for each meter and gauge.
- C. Product certificates signed by manufacturers of meters and gauges certifying accuracies under specified operating conditions and compliance with specified requirements.
- D. Maintenance data to include in the "Operating and Maintenance Manuals" specified in Division 1 Section "Project Closeout". Include data for the following:
  - 1. Test plugs.
  - 2. Flow measuring systems.
  - 3. Flow meters.
  - 4. BTU meters.

#### **1.4 Quality Assurance**

- A. Comply with applicable portions of American Society of Mechanical Engineers (ASME) and Instrument Society of America (ISA) standards pertaining to construction and installation of meters and gauges.

### **PLUMBING WORKS**

#### **GENERAL**

##### **1.1 Related Documents**

Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specification Sections, apply to work of this Section.

##### **1.2 Description of Work**

This section covers the work of drainage, water supply required by the Contract.

##### **1.2.1 Domestic Cold and Hot Water Systems**

- Provide cold and hot water system to supply water to all fixtures and water consuming equipment.
- Provide water meter located at site boundary and include pipework therefrom to the on-site fire water and domestic water tanks. Coordinate the connection to the water main. Include for float valves, overflows, vents, level indicators, washouts, access doors, access ladders with safety cage, related to water storage tanks.
- Provide intermittent duty domestic water pump sets with controls, valves, low level cut outs.
- Provide domestic hot water system, including pipework, controls, electric heaters and safety devices.
- Provide interior and exterior cold and hot water supply including valves, hangers and supports, expansion joints/loops, regulating valves, automatic air vents, drain valves, insulation, wrapping, excavation, dewatering, testing, back fill and commissioning.

##### **1.2.2 Drainage System**

- Provide soil, waste, rainwater and vent drainage system to collect soil borne wastewater from sanitary fixtures, roofs, and equipment.

- Provide above ground and underground interior piping, hangers and supports, floor drains, cleanouts, trench grates, oil interceptors, lint trap, grease interceptor, solid interceptor, sand traps, waste oil tanks, exterior piping, manholes, plumbing fixtures and fittings, excavation, pipe bedding and surroundings, backfill, testing and commissioning.

### **1.3 Reference Standards and Codes**

Comply with the stipulations of the Uniform Plumbing Code (UPC) and with applicable portions of National Standard Plumbing Code (USA), or other equivalent International Standards, by-laws and regulations of all statutory authorities concerned.

BRITISH STANDARD SPECIFICATIONS  
BS NO.

4504	Flanges and Bolting for Pipes, Valves and Fittings. Metric Series
4772	Ductile iron pipe for pressure pipelines
5154	Copper alloy globe, globe stop and check for general purposes.

### **1.4 Submittals**

Submit in accordance with the following requirements:

1.4.1 Product Data: Submit manufacturer's technical product data for materials and products.

1.4.2 Shop Drawings: Submit scaled layout drawings of plumbing pipes and fittings including, but not necessarily limited to, pipe sizes, locations, elevations and slopes of horizontal runs, wall and floor penetrations and connections. Show interface and spatial relationship between piping and proximate equipment. Obtain Engineer's approval prior to the commencement of work. Alterations in shop drawings from Contract Drawings, whether due to coordination or otherwise, shall be carried out by the Contractor.

1.4.3 Coordination, Drawings: Drawn accurately to scale and coordinating penetrations.

1.4.4 Record Drawings: At project close-out, submit drawings of installed systems in accordance with requirements of Division 1.

1.4.5 Maintenance Data: Submit maintenance data and parts lists for plumbing systems, materials and products. Include this data, product data, shop drawings and record drawings in maintenance manual.

1.4.6 Samples: Submit samples for the Engineer's approval.

### **1.5 Quality Assurance**

1.5.1 Manufacturer's Qualifications: Firms regularly engaged in manufacture of soil and waste systems products of types, materials and sizes required and whose products have been in satisfactory use in similar service for not less than 5 years.

1.5.2 Contractor Engineer's Qualifications: Graduated mechanical engineer with experience of not less than 10 years in the plumbing fields for projects of similar nature and size.

### **1.6 Nominal Pipes**

Pipe diameters indicated on the Drawings are nominal. Exact pipe diameters are understood to be the exact pipe diameters as per the applicable specified standard for each pipe material.

### 1.7 System Performance Requirements

Provide components and installation capable of producing systems with the following minimum working pressure ratings, except where indicated otherwise.

Working Test  
Pressure Pressure

Domestic Water Supply Systems	kPa	600	900
Soil, Waste & Vent Systems	2 m water head		3 m water head
Fuel Oil System	kPa	400	600
Fire Protection	kPa	1 200	1 800

## PLUMBING PIPING AND FITTING MATERIALS

### GENERAL

#### 1.1 Related Documents

- A. Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specification Sections, apply to work of this Section.
- B. The requirements specified in this section apply to all related sections in this Division. The requirements of all related sections, elsewhere in this division also apply to this section unless specified to the contrary.

#### 1.2 Description of Work

This section covers the work of all plumbing piping, fittings and jointing materials for plumbing systems in accordance with Drawings and Specifications.

#### 1.3 Quality Assurance

- A. Acceptable manufacturers: firms regularly engaged in manufacture of piping, fittings, and jointing materials of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years. Provide products produced by a manufacturer listed as an Acceptable Manufacturer as approved by the Architect.
- B. Cast, stamp or roll manufacturer's name on each pipe length, and cast stamp or roll manufacturer's symbol and pressure rating on each fitting.
- C. Standard Compliance: Comply with requirements of applicable local codes, ANSI, ASTM, CS, CISPI and as follows:

#### **Material Authority Spec. Number**

Copper Water Tubing (Types "K" & "L") (Hard Temper) ASTM B-88, ANSI A23.1

Brass Pipe 85% Red Brass FS-WW-P351, ANSI H27.1, ASTM B43

DWV Copper Tube ASTM B306

No Hub and Cast Iron Soil ASTM A-888 & Cast Iron Soil

Pipe and Fittings Pipe Institute Standards No.301-72

Malleable Iron Screwed ANSI B16.3  
Fittings 1035 kPa Class

Malleable Iron Screwed ANSI B16.3  
Fittings 2070 kPa Class

Cast Iron Screwed Drainage ANSI B16.12  
Fittings

Cast Iron Screwed Fitting ANSI B16.4

Cast Brass Screwed ANSI B16.15  
Fittings 860 kPa Class

Cast Brass Solder Joint ANSI B16.18  
Fittings

Cast Copper Fittings ANSI B16/23

Wrought Copper Solder ANSI B16.18/B16.29  
Joint Fittings

Brass Compression Fittings ANSI A40.2

Cast Bronze Brazing MIL-F-0011830  
Fittings

Bronze Flanges ANSI B16.24

Cast Iron Flanged Fittings ANSI B16.1  
and Flanges, Standard  
Weight

Brazing Alloys Having Class BCUP5  
Point Higher Than  
538°C.

Brazing Flux Harmon's "Handy Flux"

Brazing Filler Metal ASTM-B260-62T

Clay Pipe ASTM C700

Copper Sheet ASTM B-152

PP-R (Poly Propylene) DIN 8078 & DIN16962  
Piping & Fittings system

High Density Polyethylene DIN19537, 8074 & 8075  
(HDPE) Pipes and Fittings

CPVC Piping & Fittings Schedule 80 ASTM F441& 439-93a

uPVC Piping & Fittings Schedule 40 ASTM D-1785&D-2665

#### **1.4 Submittals**

- A. Product Data: submit manufacturer's data including printed technical literature, installation, instructions, and catalog cuts for each type of pipe and pipe fitting.
- B. Submit piping schedule showing manufacture, pipe or tube weight, fitting type, and joint type for each piping system.

### **DOMESTIC WATER SYSTEM**

#### **PART1 GENERAL**

##### **1.1 Related Documents**

- A. Division-1 Specification sections, apply to work of this section
- B. Division-15 Plumbing Piping section apply to work of this section.

##### **1.2 Scope of Work**

- A. Extent of cold, hot and potable water distribution systems work is indicated on Drawings and schedules, and by requirements of this section and design guideline where applicable.
- B. Refer to other Division-15 sections for insulation required in conjunction with hot water piping; not work of this section.
- C. Refer to other Division-15 sections for plumbing equipment; not work of this section.
- D. Refer to other Division-15 sections for plumbing fixtures; not work of this section.
- E. Refer to other Division-15 sections for plumbing pumps; not work of this section.
- F. Trenching and backfill required in conjunction with exterior water piping is specified in other Division-15 sections, and is included as work of this section.
- G. Refer to Division-2 sections for trenching and backfill required in conjunction with exterior water piping; not work of this section.
- H. Trenching and backfill required in conjunction with water piping inside of building foundations is specified in other Division- 15 sections, and is included as work of this section.

## **PART 2 PRODUCTS**

### **2.1 Materials and Products - General**

- A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, temperature ratings, and capacities as indicated. Where not indicated, provide proper selection to comply with installation requirements.
- B. Provide materials and products of sizes and types to match piping and equipment connections.
- C. Provide fittings of materials as specified, which match pipe materials used in water distribution systems.

### **2.2 Basic Identification**

- A. Provide identification complying with Division-15 section "Basic Mechanical Requirements" and "Mechanical Identification".

### **2.3 Basic Pipes And Pipe Fittings**

- A. Provide pipes and pipe fittings complying with Division-15 Basic Mechanical Materials and Methods section "Pipes and Pipe Fittings", and "Plumbing Piping" sections.

### **2.4 Basic Piping Specialties**

- A. Provide piping specialties complying with Division-15 section "Piping Specialties", in accordance with the following listing:
  - Pipe escutcheons.
  - Low-pressure Y-type strainers.
  - Dielectric unions.
  - Mechanical sleeve seals.
  - Fire barrier penetration seals.
  - Drip pans.
  - Pipe sleeves.
  - Sleeve seals.

### **2.5 Basket Strainers**

- A. Provide basket strainers as indicated, with cast-iron body, 860 kPa (125 psi) flanges, bolted type or yoke type cover. Provide 1725 kPa minimum for pipes with 50 m static head or more.
- B. Furnish strainers with removable, non-corrosive perforated strainer basket, with 3 mm perforations and lift-out handle.
- C. Subject to compliance with requirements, provide basket strainers of one of the following manufacturers, or approved equal:
  - JosamMfg. Co.
  - MetraflexCo.
  - Spirax Sarco.
  - Smith (Jay R.) Mfg. Co.

### **2.6 Basic Supports And Anchors**

- A. Provide supports and anchors complying with Division-15 "Supports and Anchors" and "Plumbing Piping" sections.

## **2.7 Basic Valves**

- A. Provide valves complying with Division-15 "Valves" and "Plumbing Piping" sections.

## **2.8 Backflow Preventers**

- A. Provide a backflow prevention device at any point in the plumbing system where the potable water supply comes in contact with a potential source of contamination. Device shall be certified by the American Society of Sanitary Engineers (ASSE). Listed below is a partial list of connection to the potable water system which shall be protected against backflow or back siphonage.
- B. Reduced Pressure Backflow Preventer: ASSE 1013.
  - 1. Water make-up to heating systems, cooling tower, chilled water system, and generators.
  - 2. Water service entrance from loop system.
- C. Atmospheric Vacuum Breaker: ASSE 1001
  - 1. Hose bibs and sinks w/threaded outlets.
  - 2. Disposers.
  - 3. Showers (telephone type).
  - 4. All kitchen equipment, if not protected by air gap.
  - 5. Ventilating hoods w/washdown system.
- D. Provide backflow preventers of the reduced pressure principle type, consisting of assembly including shutoff valves on inlet and outlet, and strainer on inlet.
- E. Backflow preventers to include test cocks and pressure-differential relief valve located between two positive seating check valves.
- F. Subject to compliance with requirements, provide backflow preventers of one of the following manufacturers, or approved equal:  
Febco Sales, Inc.; Subs, of Charles M. Bailey Co., Inc. Hersey Products, Inc.  
ITT Lawler; Fluid Handling Div.  
Watts Regulator Co.

## **2.9 Pressure Reducing Valves**

- A. Provide pressure regulating valves as indicated, of the single seated for dead end service for 200 to 850 range on low pressure side, direct operated type, bronze body, integral strainer, complying with requirements of ASSE Standard 1003. Composition diaphragm and stainless steel springs, bronze body with threaded connections for sizes 15 to 50 mm, cast iron or semi-steel body with bronze trimmings and flanged connections for sizes larger than 50 mm.
- B. Size pressure regulating valves for maximum flow rate and inlet and outlet pressures indicated on Drawings.
- C. Operation: Diaphragm and spring to act directly on valve stem. Delivered pressure shall vary not more than one kPa for each 10 kPa variation on inlet pressure.

- D. Setting: Entering water pressure, discharge pressure, capacity, size, and related measurements shall be as shown on the drawings.
- E. Connections Valves and Strainers: Install shut off valve on each side of reducing valve and full sized bypass with shut off valve. Install strainer on inlet side of, and same size as pressure reducing valve. Install pressure gage on low pressure side of line.
- F. Subject to compliance with requirements, provide pressure regulating valves of one of the following manufacturers, or approved equal:
  - Cash (A. W.) Valve Mfr. Corp.
  - Cla-ValCo
  - Spence Engineering Co., Inc
  - Watts Regulator Co

## **2.10 Basic Expansion Compensation**

- A. Provide expansion joints complying with Division-15 section "Piping Specialties".
- B. Provide expansion loops on straight runs of pipes longer than 30 m.
- C. Provide anchors and guides to control expansion of pipes as required.

## **2.11 Basic Meters And Gages**

- A. Provide meters and gages complying with Division-15 Basic Mechanical Materials and Methods section "Meters and Gages".

## **2.12 Relief Valves**

- A. Provide relief valves as indicated, of size and capacity as selected by Contractor for proper relieving capacity, in accordance with ASME Boiler and Pressure Vessel Code.
- B. Combined Pressure-Temperature Relief Valves: Bronze body, test lever, thermostat, complying with ANSI Z21.22 listing requirements for temperature discharge capacity. Provide temperature relief at 99 deg. C, and pressure relief at 1030 kPa or 1725 kPa per system requirements.
- C. Subject to compliance with requirements, provide relief valves of one of the following manufacturers, or approved equal:
  - Cash (A. W.) Valve Mfg. Corp.
  - Conbraco Industries, Inc. Watts Regulator Co. Zurn Industries, Inc.;
  - Wilkins-Regulator Div.

## **2.13 Drinking Water Filters**

- A. Drinking water filters to be renewable cartridge, sterilizing, pressure type, to fit directly on any water tap feed pipe, minimum rated capacity 50 litres per hour at pressure of 200 kPa and good for working pressure of 800 kPa.
- B. Filters to have cast iron housing finished with white enamel internally and externally, chrome plated brass swivelling spout, inlet valve, drain cock and removable cover for easy cartridge removal without need for tools.

- C. Cartridge to be special filtering material designed to retain bacteria and impurities and remove objectionable tastes, colors and odours.
- D. Filters to be as manufactured by Berkefeld Type H51, or approved equal.

#### **2.14 Silcock**

- A. Silcock to be flush type 75 mm wall hydrant, with flush wall box, key locked hinged cover, integral vacuum breaker, hose thread nozzle, bronze or brass parts throughout, female key operated valve with composition washer and removable seat.
- B. Obtain from one of the following manufacturers, or approved equal: Josam (U.S.A.) Zurn (U.S.A.) Rototech Smith (Canada)

#### **2.15 Cleaning Hose**

- A. Hose reel, 25 mm hose, 30 mt long rubber hose, adjustable spray brass nozzle, hose drum. The cleaning hose shall be provided with isolating valve. Drum to retract hose after use.

### **PART 3 EXECUTION**

#### **3.1 Inspection**

- A. Examine areas and conditions under which potable water systems are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

#### **3.2 Installation Of Basic Identification**

- A. Install mechanical identification in accordance with Division-15 section "Basic Mechanical Requirements".

#### **3.3 Installation Of Water Distribution Piping**

- A. Install water distribution piping in accordance with Division-15 "Pipes and Pipe Fittings" and "Plumbing Piping" sections.
- B. Install piping with 1/4% downward slope towards drain point.
- C. Locate groups of pipes parallel to each other, spaced to permit applying full inservicing v.
- D. Install air vents at all high points of piping systems.
- E. Install drain valves at all low points of piping systems.

#### **3.4 Installation Of Exterior Water Piping**

- A. Install underground piping at least 3 m away from any sewer line. Protect from contamination from any source.
- B. Protect underground galvanized steel pipes by wrapping with special self-adhesive polyethylene tape, wound spirally and firmly around pipe, with adequate overlap. Pay particular attention to protection at the threaded joints.
- C. Install exterior water service piping system in compliance with local governing regulations.

- D. Street Main Connection: Arrange and pay for tap in water main, of size and in location indicated. Cut into and install new tee for water service in existing water main, at location indicated, in accordance with local Water Utility Company requirements. Provide curb valve and curb box as indicated.
- E. Water Service Piping: Extend water service piping of size and in location indicated to water service entrance at building. Provide sleeve in foundation wall for water service entry; make entry watertight. Provide shutoff valve at water service entry inside building; strainer, pressure gage, test tee with valve.

### **3.5 Installation Of Piping Specialties**

- A. Install piping specialties in accordance with Division-15 "Piping Specialties" and "Plumbing Piping" sections.

### **3.6 Installation Of Supports And Anchors**

- A. Install supports and anchors in accordance with Division-15 Basic Mechanical Materials and Methods section "Supports and Anchors".

### **3.7 Installation Of Valves**

- A. Install valves in accordance with Division-15 Basic Mechanical Materials and Methods section "Valves".
- B. Sectional Valves: Install on each branch and riser, close to main, at branch out to each floor and where branch or riser serves two or more plumbing fixtures or equipment connections, and elsewhere as indicated.
- C. Shutoff Valves: Install on inlet of each plumbing equipment item, and on inlet of each plumbing fixture, and elsewhere as indicated.
- D. Drain Valves: Install on each plumbing equipment item located to completely drain equipment for service or repair. Install at base of each riser, at base of each rise or drop in piping system, and elsewhere where indicated or required to completely drain potable water system.
- E. Check Valves: Install on discharge side of each pump, and elsewhere as indicated.
- F. Balance Cocks: Install in each hot water recirculating loop, and elsewhere as indicated.

### **3.8 Installation Of Backflow Preventers**

- A. Install backflow preventers where indicated, and where required whether indicated on drawings or not.,
- B. Locate in same room as equipment being protected.
- C. Pipe relief outlet to nearest floor drain

### **3.9 Installation Of Pressure Regulating Valves**

- A. Install pressure regulating valves where indicated. Provide inlet and outlet shutoff valves, and throttling valve bypass. Provide pressure gage on valve outlet.

### **3.10 Installation Of Expansion Joints**

- A. Install expansion joints on hot water and hot water recirculating piping in accordance with Division-15 section "Basic Mechanical Requirements".

### **3.11 Installation Of Meters And Gages**

- A. Install meters and gages in accordance with Division-15 section "Meters and Gages".

### **3.12 Installation Of Water Meter**

- A. Install water meter in accordance with local utility companies' installation instructions, and comply with requirements.
- B. Set meter on concrete pad.

### **3.13 Piping Connections to Fixtures and Equipment**

- A. Piping Runouts to Fixtures: Provide hot and cold water piping runouts to fixtures of sizes indicated.
- B. Mechanical Equipment Connections: Connect hot and cold water piping system to mechanical equipment as indicated, and comply with equipment manufacturer's installation instructions. Provide shutoff valve and union for each connection. Provide drain valve on drain connection.

### **3.14 Testing**

- A. Test water distribution piping in accordance with testing requirements of Division-15 "Pipes and Pipe Fittings" and "Plumbing Piping" sections.

### **3.15 Cleaning. Flushing. Inspecting And Disinfecting**

- A. Clean, flush, inspect and disinfect water distribution systems in accordance with requirements of Division-15 "Pipes and Pipe Fittings" and "Plumbing Piping" sections.

### **3.16 Balancing**

- A. After putting system into operation, completely balance the hot water distribution piping system by correctly setting all balancing valves on return pipes to give adequate quantity of hot water flowing in different circuits to obtain immediate hot water flow from each hot water tap in system. After balancing remove handles of balancing valves.

## **SOIL, WASTE, VENT AND STORM WATER SYSTEMS**

### **PART 1 GENERAL**

#### **1.1 Related Documents**

- A. Division-1 Specification sections apply to work of this section.
- B. Division-15 Plumbing piping section apply to work of this section.

#### **1.2 Scope Of Work**

- A. Extent of soil, waste, vent and storm water systems work is indicated on Drawings and schedules, and by requirements of this section.
- B. Exterior sanitary sewer system required in conjunction with soil and waste systems, up to the manholes outside the building, is work of this section.
- C. Trenching and backfilling required in conjunction with underground building drain piping is specified in applicable Division-15 sections, and is included as work of this section.
- D. Flashings required in conjunction with soil, waste and storm water systems are included as work of this section.
- E. Refer to other Division-15 sections for sump pumps and sewage pumps; not work of this section.

## **PART 2 PRODUCTS**

### **2.1 Materials and Products – General**

- A. Provide piping materials and factory-fabricated piping products of sizes, types, pressure ratings, and capacities as indicated.
- B. Provide materials and products of sizes and types to match piping and equipment connections.
- C. Provide fittings of materials which match pipe materials used in soil and waste systems; preferably the product of same manufacturer.

### **2.2 Basic Pipes and Pipe Fittings**

- A. Provide pipes and pipe fittings complying with Division-15 section "Pipes and Pipe Fittings", and "Plumbing Piping" Sections and with section Special Pipes

### **2.3 Basic Piping Specialties**

- A. Provide piping specialties complying with Division-15 section "Piping Specialties", in accordance with the following listing:
  - Pipe Escutcheons
  - Mechanical Sleeve Seals
  - Fire Barrier Penetration Seals
  - Drip Pans
  - Pipe Sleeves
  - Sleeve Seals

### **2.4 Basic Supports And Anchors**

- A. Provide supports and anchors complying with Division-15 "Supports and Anchors" and "Plumbing Piping" sections.

### **2.5 Expansion Joints**

- A. Provide cast-iron body expansion joints with adjustable bronze sleeve, bronze bolts with wing nuts; for vertical installation only.
- B. Subject to compliance with requirements, provide expansion joints of one of the following manufacturers, or approved equal:

Josam Mfg. Co. Smith (Jay R.) Mfg. Co. Tyler Pipe; Subs, of Tyler Corp. Zurn Industries Inc.; Hydromechanics Div.

## **2.6 Drainage Piping Products - General**

- A. Provide factory-fabricated drainage piping products of size and type indicated,

## **2.7 Cleanouts**

- A. Cleanouts on pipes to be full size, with round head. Cleanouts shall be easily accessible. Provide a minimum clearance of 600 mm for the rodding.
- B. Cleanouts at base of stacks to be extra heavy Y-branch or tee branch cleanout with full size brass screw Plug-
- C. Cleanouts in suspended soil pipe shall consist of cast brass tapered screw plug in fitting or caulked/no hub cast iron ferrule. Plain end (no-hub) piping in interstitial space or above ceiling may use plain end (no-hub) blind plug and clamp
- D. Floor cleanouts to be No-Hub outlet. Floor cleanouts shall have cast iron body and frame with square adjustable scoriated secured nickel bronze top. Unit shall be vertically adjustable for a minimum of 50 mm. When a waterproof membrane is used in the floor system, provide clamping collars on the cleanouts. Cleanouts shall consist of "Y" fittings and 3 mm bends with brass or bronze screw plugs. Cleanouts in the resilient tile floors, quarry tile and ceramic tile floors shall be provided with square top covers recessed for tile insertion. In the carpeted areas, provide carpet cleanout markers
- E. Floor cleanouts to be carefully set at locations and elevations indicated on the Drawings. Set level and square with floor construction.
- F. Cleanouts in finished areas to be adjustable cleanout with square nickel bronze top. Cleanouts to be as follows:  
Wade W-7000-S or W-7010-S  
Josam 56030 or 56020  
ZurnZ-1400-3 J.R.  
Smith 4040 or 4051
- G. Cleanouts in concrete floors where heavy traffic occurs to be adjustable cast-iron cleanout bodies with heavy duty cast-iron tractor cover and neoprene seal plug. Cleanouts to be as follows: Wade Fig. W-700-Z or W-7010-Z Josam 58090 or 58140 Zurn Z-1420-27 or Z-12425-27  
J.R. Smith 4240 or 4245
- H. Cleanouts in floors to be provided with carpeting to be as specified for finished areas with carpet marker.
- I. Cleanouts in walls to be cast-iron caulk ferrule, cast bronze lead seal countersunk plug and stainless steel shallow cover with screw. Cleanouts to be as follows: Wade W-8550-S with 8480-R cover Josam 58730-25 ZumZN 1440-1 J.R. Smith

## **2.8 Floor Drains**

- A. ANSI A1 12.21 .1 . Provide a screwed or no hub outlets for connection to steel pipe and cast iron pipe, and side outlet when shown. Provide membrane clamp and extensions if required, where installed in connection with waterproof membrane. Puncturing membrane other than for drain opening will not be permitted. Double drainage pattern floor drains shall have integral seepage pan for embedding into floor construction, and weep holes to provide adequate drainage from pan to drain pipe.

- B. FD-1 to have 150 mm round flat strainer with 58 sq.cm. minimum open free area, as manufactured by Zum No. Z415 or Josam No. 30000-A or approved equal.
- C. FD-2: To be used in Garbage rooms, rectangular sani-flor can wash drain, stainless steel body, no-hub bottom outlet, anchor pan, medium duty stainless steel loose set grate, complete with standing sediment bucket, chrome plated bronze spray nozzle and water supply assembly, approximately 300 x 300 mm and 200 mm deep. Floor drains to be similar to zurn Z-1982 or approved equal
- D. FD-3: To be used in mechanical rooms for AHU's condensate drains. Funnel floor drains to be cast-iron floor drain with flange, sediment bucket, cast-iron grate, and 1 50 mm top diameter screw secured funnel Floor drains to be as follows or approved equal:  
Wade W-1660-EF6  
Josam 32120 E2  
J.R.Smith2220FI ZurnZ-550-YE
- E. FD-4: To be used in boiler rooms and chiller plants, heavy duty round cast iron floor drain, no-hub bottom outlet complete with ductile iron slotted grates, suspended sediment bucket, approximately 300 mm diameter. Floor drains to be similar to zurn Z-54 1 or approved equal.
- F. FD-5: To be used in loading docks, ramp areas and parking, heavy duty cast iron floor drain, no-hub bottom outlet complete with heavy duty vandal proof ductile iron grates, dome bottom strainer, approximately 500 x 300 mm and 200 mm depth. Floor drains to be similar to J.R. Smith Fig. 2570 or approved equal.
- G. FD-6: To be used for open Area Drain cast iron floor drain, no-hub bottom outlet complete with, dome bottom strainer,. Floor drains to be similar to J.R. Smith Fig. 2630 or approved equal
- H. FD-7: Floor drains for planting areas to be cast-iron body and flashing clamp with bronze or polyethylene dome and stainless steel mesh screen.. Floor drains to be similar to zurn Z-352 or approved equal

## 2.9 Roof Drains

- A. Roof Drain Type RD-1: coated cast iron, large sump, elevated dome type, complete with lightweight, shock resistant, aluminium elevated dome strainer, non-puncturing flashing clamping collar with integral high stainless steel perforated gravel guard and extension sleeve for up to 50mm thick roof insulation and bottom inside No-Hub outlet of same size as rainwater pipe, as manufactured by J.R Smith Fig 1011 or approved equal.
- B. Roof drain type RD-2 side type, cast iron with chrome finished grating as manufacturer by Josam/Smith or approved equal.

## 2.10 Vent Caps

- A. Provide uPVC vandal-proof vent caps, full size of vent pipe.
- B. Subject to compliance with requirements, provide vandal-proof vent caps of one of the following manufacturers, or approved equal:  
Josam Mfg. Co.  
Smith (Jay R.) Mfg. Co,  
Tyler Pipe; Sub. of Tyler Corp.  
Zurn Industries, Inc.; Hydromechanics Div.

### **2.11 Grating and Frame**

- A. 300 or 600 mm wide, medium or heavy duty grating and frame as manufactured by Josam or brick house approved equal.

### **2.12 Manhole Covers and Frames**

- A. Manhole covers and frames to be to BS 497, Grade B, medium duty, with square frame and circular cover, coated at factory with tar or bitumen base composition.

### **2.13 Gulley Trap**

- A. Construction: in situ reinforced concrete, with opening in top recessed to accommodate cast iron manhole cover and frame.
- B. Walls: plaster internally with two coats cement and sand (1:3) to total thickness of 15 mm.
- C. Inlet and Outlet: Difference in elevation between inlet and outlet is to be 30 mm. Outlet is to have trap and cleanout.
- D. Cover and Frame: Replace if found to rattle under traffic. Plugging, burning in or filling to obtain tight cover will not be allowed. Recess for cover in concrete is to be accurately made to dimensions of frame. Embed frame in mortar and set frame and cover level and to proper grade.

### **2.14 Inspection Chambers**

- A. Construction: In situ reinforced concrete.
- B. Access: opening in top with recess to accommodate cast iron cover and frame.
- C. Floors: Form by hand with cement mortar to size and shape of sewer. Changes in sewer size to be gradual and even. Floors to have gradual slope from side walls to central channel. Half pipe inverts may be used in straight through inspection chambers.
- D. Inlets: Main and side inlets are to have drop of 50 to 80 mm above invert of central channel.
- E. Walls: Plaster internally with two coats cement and sand (1:3) to total thickness of 15 mm.
- F. Steps: Galvanized pipe steps set in place during construction, properly embedded, beginning 600 mm abottom and spaced at approximately 35 mm .
- G. Caulk and repair leaks if approved or remove entire work and rebuild at no extra cost.
- H. Keep groundwater level below bottom of inspection chamber until concrete has obtained adequate set.
- I. Covers are to fit frames. Replace if found to rattle under traffic. Plugging, burning in or filling to obtain tight covers will not be allowed.
- J. Recess in concrete for covers is to be neatly and accurately made to dimensions of frame. Thoroughly embed frame in mortar and set frame and cover level and to proper grade.
- K. Drop Inspection Chamber: Provide where conditions necessitate free vertical drop exceeding 450 mm.

## **PART 3 EXECUTION**

### **3.1 Inspection**

- A. Examine substrates and conditions under which soil, waste and storm water systems are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Contractor.

### **3.2 Installation Of Above Ground Piping**

- A. Install soil, waste, vent and storm water piping in accordance with Division-15 "Pipes and Pipe Fittings", and "Plumbing Piping" sections.
- B. Lay horizontal pipes at uniform slope of not less than 1% and not more than 3%.
- C. Changes of direction in pipes are to be gradual using long sweep fittings and 45 degree fittings.
- D. Avoid unnecessary turns and offsets and run wastes as direct as possible from sanitary fixtures to vertical stacks.
- E. Vent sanitary fixtures to prevent siphonage of traps and air binding.
- F. Slope vent pipes and connect to drip back into soil or waste pipe by gravity.
- G. Where connected to a horizontal soil or waste pipe connect vent pipe above centreline of soil or waste pipe. Vent pipe is to rise vertically or at an angle of not more than 45 degrees from vertical to a point at least 150mm above flood level rim of fixture before offsetting horizontally or before connecting to branch vent.
- H. All gravity waste drain lines inside the building with vertical drops over 6 m shall be provided with joint restraint on the vertical drop and horizontal offset or branch below the vertical drop. Joint restraint shall be accomplished by threaded, soldered, or grooved joints or a combination of pipe clamps and tie-rods as detailed in NFPA 24. Vertical joint restraint shall be provided from the fitting at the bottom of the vertical drop through every joint up to the riser clamp at the floor penetration of the floor above. Horizontal joint restraint shall be provided from the same fitting at the bottom of the vertical drop through every joint on the horizontal offset or branch for a minimum of 18 m or to anchoring point from the building structure. Joint restraint below ground shall be accomplished by thrust blocks detailed in NFPA 24.
- I. Penetrations: Where pipes pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases. Completely fill and seal clearances between raceways and openings with the fire stopping materials. Material to expend during fire to seal masonry or concrete wall penetration.
- J. At floor penetrations, completely seal clearances around the pipe and make watertight with sealant.
- K. Connect vent pipes to vent stack at least 150 mm above flood level rim of highest fixture served by vent.
- L. Vent pipes above roof are to pass through flashed and waterproofed sleeves.

### **3.3 Installation Of Building Drain Piping**

- A. Lay underground building drains beginning at low point of systems, true to grades alignment indicated with unbroken continuity of invert.

- B. Place bell ends of piping facing upstream.
- C. install required in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.
- D. Clean interior of piping of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed.
- E. Place plugs in ends of uncompleted piping at end of day or whenever work stops.
- F. Install soil and vent piping pitched to drain at minimum slope of one percent (1%).
- G. Lay pipes on good foundation to prevent settlement. Pipes laid in trenches to have solid uniform bearing throughout their length.
- H. Lay pipes in trenches supported along their length on layer of clean compacted sand.
- I. Lay pipes to uniform slope not exceeding 3% and true to line and grade.
- J. Lay pipes at not less than 600 mm below finished grade and not closer than 1 m to bearing walls and footings.
- K. Free vertical drop of sewer pipe into manhole is not to exceed 450 mm from invert of pipe to invert of manhole.
- L. Make connections to manholes, city sewers or other underground structure in a watertight approved manner. Full circle of pipe is to be visible at manhole.
- M. Make connections to existing systems with minimum disturbance to existing lines. Existing pipes or structures damaged whilst making connections are to be replaced or reconstructed to the Engineer's satisfaction at no extra cost.
- N. Groundwater: Keep trenches dry during pipe laying by pumping, use of well points, underdrains or other approved means. Make pipe joints in the dry.
- O. Join concrete pipes by inserting a layer of jute or hemp dipped in Portland cement slurry into joint base. Fill remaining space with cement mortar (1:2), ram and trowel mortar to form 45 degree taper with pipe barrel. Clean pipe interior to remove mortar.

### **3.4 Installation Of Piping Specialties**

- A. Install piping specialties in accordance with Division-15 section "Piping Specialties".

### **3.5 Installation Of Supports And Anchors**

- A. Install supports and anchors in accordance with Division-15 "Supports and Anchors" and "Plumbing Piping" sections.

### **3.6 Installation of Cleanouts**

- A. Install cleanouts in above ground piping and building drain piping as indicated; as required by the American Standard National Plumbing Code; at each change in direction of piping greater than 45 deg.; at minimum intervals of 15 m for piping 100 mm and smaller and 30 m for larger piping; and at base of each vertical soil or waste stack.

- B. Install floor and wall cleanout covers for concealed piping. Select type to match adjacent building finish.
- C. Cleanouts on uPVC pipes to be fitted to pipe or fitting at end of pipe and to be same size as pipe.
- D. Cleanouts on exposed pipes to be installed directly on pipe and those on concealed pipes extended through and terminated flush with finished floor or wall and concealed with floor or wall cleanout covers.

### **3.7 Installation Of Flashing Flanges**

- A. Install flashing flanges and clamping device with each stack and cleanout passing through waterproof membranes.

### **3.8 Installation Of Vent Flashing Sleeves**

- A. Install vent flashing sleeves on stacks passing through roof.

### **3.9 Installation Of Vent Caps**

- A. Provide vandal-proof vent caps at the terminations of all vent stacks and vent pipes outside the building.
- B. Secure over stack flashing in accordance with manufacturer's instructions.

### **3.10 Installation Of Floor Drains**

- A. Provide floor drains of size and location as indicated on Drawings; and type, including features, as specified herein.
- B. Install floor drains in accordance with manufacturer's written instructions.
- C. Coordinate with soil and waste piping as necessary to interface floor drains with drainage piping systems.
- D. Floor drains to be carefully set at locations and elevations indicated on the Drawings. Set level and square with the floor construction.
- E. Floor drains to be provided with deep seal P-traps except where noted on the Drawings or in the Specifications.
- F. Coordinate flashing work with work of waterproofing and adjoining substrate work.
- G. Install drain flashing collar or flange so that no leakage occurs between floor drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.
- H. Floor drains in floors above grade with membrane waterproofing to be flashed with 1.8 kg sheet lead and secured with flashing clamps.
- I. Position floor drains so that they are accessible and easy to maintain.

### **3.11 Installation Of Roof Drains**

- A. Install roof drains in accordance with manufacturer's written instructions and in locations indicated.
- B. Install roof drains in a completely watertight manner with the roof. Install drain flashing collar or flange so that no leakage occurs between roof drain and adjoining roofing. Maintain integrity of waterproof membranes, where penetrated.
- C. Coordinate flashing work with work of roofing, water-proofing and adjoining substrate work.

- D. Coordinate with roofing as necessary to interface roof drains with roofing work.
- E. Coordinate with storm water systems as necessary to interface drains with drainage piping systems.
- F. Install roof drains at low points of surface areas to be drained, or as indicated.

### **3.12 Piping Connections To Plumbing Fixtures And Drains**

- A. Provide soil and waste piping runouts to plumbing fixtures and drains with approved trap, of sizes indicated.
- B. Locate piping runouts as close as possible to bottom of floor slab supporting plumbing fixtures or drains.

### **3.13 Testing**

- A. Test soil, waste, vent and storm water systems in accordance with Division-15 section, Testing, Adjusting, and Balancing and "Plumbing Piping" section.

### **3.14 Cleaning And Inspection**

- A. Clean, flush, and inspect soil, waste, vent and storm water piping in accordance with requirements of Division-15 "Pipes and Pipe Fittings" and "Plumbing Piping" sections.

### **3.15 Grease Or Oil Interceptor**

- A. Provide two separate vent pipes terminating above roof at least 300 mm above each other to assure optimum recirculation and as safety factor against foulbg or clogging of a sbgle vent.
- B. Install flow control with cleanout to facilitate servicing.

### **3.16 Protection Of Underground Structures**

- A. Protect incompletd work from floating. Lbes or structures not stable against uplift during construction are to be well braced or otherwise protected.

### **3.17 Inspection And Testing Of Underground Piping**

- A. Inspection: Completed underground lines are to be inspected and approved by the Engineer.
- B. Testing: as mentioned under "Plumbing Piping" section.
- B. Repair or replace defective work as directed.

## **PLUMBING FIXTURES**

### **PART 1 GENERAL**

#### **1.1 Related Documents**

- . Drawings and general provisions of Contract, including General and Special Conditions and Division 1 Specification Sections, apply to work of this Section.

## 1.2 Description of Works

Extent of Plumbing fixtures work required by this Contract is indicated on Drawings and by requirements of this section. Types of plumbing fixtures specified in this section include the following:

- Water Closets
- Bidet
- Lavatory
- Pantry and kitchen Sinks
- Shower Trays
- Bath Tube
- Column Showers

## 1.3 Reference Standards

All plumbing fixtures and trim work shall be performed in strict accordance with the requirements of ANSI Standards, the Specifications, Drawings and the stipulations of the National Standard Plumbing Code (USA) or other equivalent International Standards and Sound Practice.

## 1.4 Related Section

The following sections include requirements which relate to this sections:

15400 Plumbing Works

## 1.5 Quality Assurance

Manufacturer's Qualifications: Firms regularly engaged in manufacture of plumbing fixtures of type, style and configuration required whose products have been in satisfactory use in similar service for not less than 15 years.

## 1.6 Submittals

Submit the following in accordance with Conditions of the Contract and Division-1 Specification Sections:

- Product Data: Submit manufacturer's technical product data, including rated capacities of selected model clearly indicated, furnished specialties and accessories and installation instructions.
- Shop Drawings: Submit manufacturer's assembly-type shop drawings indicating dimensions, roughing-in requirements, required clearances and methods of assembly of components and anchorages.
- Samples: Submit samples of each plumbing fixture furnished.
- Maintenance Data: Submit maintenance data and part lists for each type of plumbing fixture and accessory including "trouble-shooting" maintenance guide. Include this data, product data and shop drawings in maintenance manual in accordance with requirements of Division-1.

## 1.7 Delivery, Storage and Handling

Deliver plumbing fixtures individually wrapped in factory-fabricated containers and handle them carefully to prevent breakage, chipping and scoring their finish. Do not install damaged plumbing fixtures, replace and remove from the project site damaged units.

## **PART 2 PRODUCTS**

### **2.1 Plumbing Fixtures**

Provide factory-fabricated fixtures of type, style, sizes, pressure rating and material indicated. For each fixture type, provide fixture manufacturer's standard trim, carrier, seats and valves as indicated by their published product data, either as designed and constructed, or as recommended by manufacturer and as required for complete installation. All fixtures of same type shall be furnished by a single manufacturer.

Where type is not otherwise indicated, provide fixtures complying with installation requirements and governing regulations.

### **2.2 Materials, General**

Unless otherwise specified, comply with applicable Standard Specification of country of origin pertaining to plumbing fixtures, fittings, trim, metals, finishes and quality of ware, glazing, enamel, composition and finish of metals, air gaps, and vacuum breakers.

Provide materials which have been selected for their surface flatness and smoothness. Exposed surfaces which exhibit pitting seam marks, roller marks, foundry sand holes, stains, decolouration or other surface imperfections on finished units are not acceptable.

Where fittings, trim and accessories are exposed or semi-exposed, provide bright chrome-plated or polished stainless steel units. Provide copper or bronze where not exposed.

**2.2.1 Vitreous China:** High quality, free from fire cracks, spots, blisters, pinholes and specks, glaze exposed surfaces and test for crazing resistance in accordance with standard specifications. The glaze shall be thoroughly fused to the body and all exposed surfaces shall be glazed. Surfaces coming into contact with walls and floors may be without glaze.

### **2.3 Plumbing Fittings, Trim and Accessories**

- **Water Outlets:** At locations where water is supplied provide commercial quality faucets, valves or dispensing devices of type and size indicated and as required to operate as indicated. Include manual shutoff valves and connecting stem pipes to permit outlet servicing without shut-down of water supply piping systems.
- **Vacuum Breakers:** Provide with flush valves where required by governing regulations, include location where water outlets are equipped for hose attachment.
- **P-Traps:** Include removable P-traps where drains are indicated for direct connection to drainage system.
- **Carriers:** Provide cast-iron supports for fixtures of either graphitic gray iron, ductile iron or malleable iron as indicated.
- **Fixture Bolt Caps:** Provide manufacturer's standard exposed fixture bolt caps finished to match fixture finish.

- Aerators: Provide aerators of types approved by Health Departments.

## 2.4 Plumbing Fixtures and Trim

### 2.4.1 Water Closet Suites

2.4.1.1 Floor Mounted Type WWC-1: White colour vitreous china wash down, floor mounted water closet bowl with effective water seal, suitable size horizontal outlet "P or S" trap, vitreous china close coupled cistern with 9 liters flushing capacity, two 15 mm angle valves with 300 mm long tubes and heavy duty solid plastic closed front seat with cover and stainless steel self sustaining hinge.

Chrome plated bronze ablutions faucet with stainless steel hose, vacuum breaker, self closing spray valve and hose hanger as manufactured by T&S Brass and Bronze Works, Inc., USA or approved equal.

2.4.1.2 Wall Hung Type (WWC-2): White colour vitreous china wash down, wall hung water closet bowl with effective water seal; suitable size horizontal outlet "P" trap; heavy duty ductile iron supporting carrier, large water area; and heavy duty solid plastic closed front seat with cover and stainless steel self sustaining hinge.

Concealed closet flush valve, rough brass, water saving feature 11.4 l/min., 25 mm (1"IPS) wheel handle, check angle stop, adjustable tail piece, vacuum breaker, elbow flush connection and spud coupling for 40 mm concealed back spud, non-hold-open push button or chrome plated oscillating handle suitable for the indicated wall thickness, with chrome plated exposed parts as model Royal 154-3 manufactured by Sloan Valve Company, USA or approved equal.

Ablution faucet is identical to that specified for (WWC-1), Item 2.4.1.1

2.4.1.3 Wall Hung Type (WWC-3): Identical as Type (WWC-2) Item 2.4.1.2 and provided with hand rails.

### 2.4.2 Lavatories

2.4.2.1 Counter Top Type (LAV1): White colour self-rimming vitreous china counter top lavatories 610 x 525 mm with faucet hole(s), chain stay hole and overflow.

Single lever chrome plated bronze lavatory faucets, with pop-up waste assemble, conversion plate if necessary.

Chrome plated metal antisiphon trap, 35 mm diameter waste pipe, and escutcheon as manufactured by Friedrich Grohe, Germany or approved equal.

2.4.2.2 Floor Pedestal Type (LAV2): White colour vitreous china, 480 x 370 mm lavatories.

Waste assemble and trap are identical to those specified for counter top types 2.4.2.1. Lavatory Faucet, chrome plated brass, with chrome plated metal hand, with swivel tube spout as model Pillar, 20444 Grohe, or approved equal.

## **PART 3 EXECUTION**

### 3.1 Inspection

Examine roughing-in work of potable water and waste piping systems to verify actual locations of piping connections prior to installing fixtures. Also examine floors and substrates and conditions under which fixture work is to be accomplished. Correct any incorrect locations of piping and other unsatisfactory conditions for

installation of plumbing fixtures. Do not proceed with work until unsatisfactory conditions have been corrected and approved.

### **3.2 Installation of Plumbing Fixtures**

Install plumbing fixtures of types indicated where shown and at heights, in accordance with fixture manufacturer's written instructions, roughing-in drawings, and with recognized industry practices. Ensure that plumbing fixtures comply with requirements and serve intended purposes. Comply with applicable requirements of the National Standard Plumbing Code U.S.A.

Fasten Plumbing fixtures securely to supports or building structure; and ensure that fixtures are level and plumb. Secure plumbing supplies behind or within wall construction so as to be rigid and not subject to pull or push movement. Protect, installed fixtures from damage during the remainder of construction period.

### **3.3 Field Quality Control**

Upon completion of installation of plumbing fixtures and after units are water pressurized, test fixtures to demonstrate capability and compliance with requirements.

Flush each water closet twice and check for leaks and any other defects. Fill each basin, and sink to the overflow level and then after running the water through the overflow for a minimum of 30 seconds, remove or open the plug. Check for leaks and other defects.

When possible, correct malfunctioning units at Site then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.

Inspect each installed unit for damage to finish. If feasible, restore and match finish to original at Site; otherwise, remove fixture and replace with new unit. Feasibility and match to be judged by the Engineer. Remove cracked or dented units and replace with new units.

### **3.4 Adjusting and Cleaning**

Clean plumbing fixtures, trim and strainers of dirt and debris upon completion of installation.

Adjust water pressure at faucets, and flush valves to provide proper flow stream.

Adjust or replace washers to prevent leaks at faucets and stops.

### **3.5 Extra Stock**

Furnish special wrenches and other devices necessary for servicing plumbing fixtures and trim to the Employer with receipt. Furnish one device for every 10 units.

## **WATER TANKS**

### **PART 1 GENERAL**

#### **1.1 Summary**

A. This Section includes potable-water storage tanks and related specialties and accessories for indoor installations.

#### **1.2 Submittals**

A. Product Data: For each potable-water storage tank indicated.

B. Field quality-control test reports.

### **1.3 Quality Assurance**

A. NSF Compliance: NSF 14, "Plastics Piping Components and Related Materials," and NSF 61, "Drinking Water System Components-Health Effects." Include appropriate NSF marking.

## **PART 2 EXECUTION**

### **2.1 Concrete Bases**

A. Install concrete bases of dimensions indicated for tanks. Refer to Division 3 Section "Cast-in-Place Concrete" and Division 15 Section "Basic Mechanical Materials and Methods."

### **2.2 Water Storage Tank Installation**

A. Install water storage tanks on concrete bases, level and plumb, firmly anchored. Arrange so devices needing servicing are accessible.

1. Install horizontal tanks on concrete piers and factory-fabricated saddles.

2. Install horizontal tanks on fabricated steel supports and saddles.

B. Anchor tank supports and tanks to substrate.

### **2.3 Connections**

A. Install piping adjacent to water storage tanks to allow service and maintenance.

B. Install thermometers and pressure gages on water storage tanks and piping, if indicated. Thermometers and pressure gages are specified in Division 15 Section "Meters and Gages."

C. Connect water piping to water storage tanks with unions or flanges and with shutoff valves. Connect tank drains with shutoff valves and discharge over closest floor drains.

1. General-duty valves are specified in Division 15 Section "Valves."

2. Valves NPS 2 (DN50) and Smaller: Gate or ball.

3. Valves NPS 2-1/2(DN65) and Larger: Gate or butterfly.

4. Drain Valves: NPS 3/4 (DN20) gate or ball valve. Include outlet with, or nipple in outlet with, ASME B1.20.7, 3/4-11.5NH thread for garden-hose service, threaded cap, and chain.

5. Water Piping Connections: Make connections to dissimilar metals with dielectric fittings.

D. Connect air piping to hydropneumatic tanks with unions or flanges and gate or ball valves. Make connections to dissimilar metals with dielectric fittings.

- E. Install the following devices on tanks:
1. Pressure relief valves.
  2. Temperature-and-pressure relief valves.
  3. Vacuum relief valves. Include on tanks with copper interior lining unless tank has no valve.
  4. Tank vents on nonpressure tanks.
  5. Connections to accessories.

## **2.4 Field Quality Control**

- A. Pressure Testing: Hydrostatically test non-ASME code, pressure water storage tanks to ensure structural integrity and freedom from leaks at pressure of 50 psig (345 kPa) above system operating pressure, but not less than 150 psig (1035 kPa). Fill tanks with water, vent air, pressurize tanks, disconnect test equipment, hold pressure for two hours with no drop in pressure, and check for leaks. Repair or replace tanks that fail test with new tanks and repeat until test is satisfactory.
- B. No pressure Testing: Fill no pressure water storage tanks to water operating level to ensure structural integrity and freedom from leaks. Hold water level for two hours with no drop in water level.
- C. Repair leaks and defects with new materials and retest system until results are satisfactory.
- D. Prepare written reports for specified tests.

## **PLUMBING PUMPS**

### **PART 1 GENERAL**

#### **1.1 Related Documents**

- A. Drawings and general provisions of Contract, including General and Special Conditions and Division-1 Specification sections, apply to work of this section.
- B. The requirements specified in this section apply to all related sections in this Division, The requirements of all related sections, elsewhere in this division also apply to this section unless specified to the contrary.

#### **1.2 Description Of Work**

- A. Work includes providing all labor, supervision, materials, equipment, accessories, services and tests necessary to complete, make ready and set to work for acceptance by the Owner, all pumps for the plumbing systems in accordance with Drawings and Specifications.
- B. Provide factory start-up for domestic water booster system, sewage ejectors and sump pumps.

#### **1.3 Quality Assurance**

- A. Acceptable manufacturers: Firms regularly engaged in manufacture of products of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years. Provide products produced by a manufacturer listed as an Acceptable Manufacturer in this section as approved by the Architect/Engineer.

#### **1.4 Submittals**

- A. Product Data: Submit manufacturer's data including printed technical literature, installation instructions, and catalogue cuts for materials, parts, devices, finish, dimensions, detail of valving and piping arrangements, wiring diagrams of prewired controllers, required control wiring and power wiring diagrams. Written description of sequence of operation, pump curves indicating service conditions, written operating instructions including start-up and shut-down. Maintenance data including written instructions on items requiring periodic maintenance and parts list and certification that pumps have been hydraulically tested for pressure and flow.

## **PART 2 PRODUCTS**

### **2.1 Domestic Water Booster Pumping Systems**

- A. Furnish and install factory packaged pumps constant pressure variable speed booster system with all controls, motors, valves, etc., mounted on a common concrete base. The system shall be capable of automatically providing a constant system pressure with a flow rate range as indicated on the plans. System shall require only bolting in place to housekeeping pad and installation of the shaft columns. The system will include space and blind tee on both suction and discharge manifolds for future addition of a pump. Pump construction shall be of the bronze fitted type with cast-iron casing.

Ship system premounted onto positioning top, rails connected to the base flange and companion flange, all with required lifting lugs to aid in installation.

- B. Pump Description: variable speed vertical multi stage diffuser.

1. Motor: Ball Bearing squirrel cage induction type
2. Casing: Cast Iron
3. Casing wear rings: Bronze
4. Impeller: Bronze end suction Type
5. Shaft: Stainless steel 416SS
6. Seal: Mechanical, Ni-resist and carbon faces
7. Bearings: Grease lubricated cartridge type

- C. Each pump to have vibration-isolating mounts and be fitted with a separate prewired temperature probe and approved electrical purge valve installed immediately upstream of each pressure reducing valve.

- D. Each pump shall be equipped with thermal safety valve which will open and discharge water to drain when temperature exceeds 38°C. Contractor shall run lines to drain. Sequence of Operation:

1. The lead pump will operate continuously for flows from 0 to 50% of system capacity.
2. As system flow increases, the pump designated lag pump will start, and operate with the lead pump.
3. As system flow decreases, the sequence of pump operation will automatically reverse.
4. Manual or automatic alternation shall make it possible to switch lead/lag and standby between pumps.
5. A low cistern water level switch will automatically cut out all pumps.

- E. Provide a spring loaded, non-slam silent check valve combination on each pump discharge line with feed line piping and isolation valves. Suction and discharge headers shall be same material as connecting piping. Provide dielectric couplings between dissimilar materials.

- F. Power and Control Panel Furnish a single enclosure power and control panel NEMA 1. Enclosure shall be steel and furnished with an industrial grade enamel. It shall house all control components including:

- Circuit breaker disconnect switches through door with door interlock.
- Magnetic across-the-line starter with 3 phase overload protection
- Pump running lights
- H-O-A selector switches
- 220 volt control transformer
- Alarm indicating lights
- Audible alarm with silencing button, and remote trouble alarm contacts
- Set of necessary control relays and other accessory devices required to permit the system to operate in conformance with specification
- Mercoid adjustable deadband pressure switches
- Low suction level cut-out circuit to interface with suction tank controls
- Variable speed converter.

All of the above to be factory internally prewired and tested in accordance with the provisions of the National Electrical Code.

All control wires shall be individually numbered and each component shall be labeled accordingly. All internal wiring shall be copper stranded, A.W.G. with a minimum insulation of 90 degrees C. The complete assembly shall have a UL listing mark for industrial control panels.

### **2.3 Transfer Domestic Pumping Systems & Water Tank Circulating Pumping System**

- A. Furnish and install factory packaged end suction transfer – pump set constant pressure variable speed with all controls, motors, valves, etc., mounted on a common concrete base. The system shall be capable of automatically providing a flow rate range as indicated on the plans. System shall require only bolting in place to housekeeping pad and installation of the shaft columns. The system will include space and blind tee on both suction and discharge manifolds for future addition of another pump. Pump construction shall be of the bronze fitted type with cast-iron casing.
- B. Pump Description: centerifugal end suction pump
1. Motor: Ball Bearing squirrel cage end suction type
  2. Casing: Cast Iron
  3. Casing wear rings: Bronze
  4. Impeller: Bronze end suction Type
  5. Shaft: Stainless steel 416SS
  6. Seal: Mechanical, Ni-resist and carbon faces
  7. Bearings: Grease lubricated cartridge type
- C. Each pump to have vibration-isolating mounts and be fitted with a separate prewired temperature probe and approved electrical purge valve installed immediately upstream of each pressure reducing valve.
- D. Each pump shall be equipped with thermal safety valve which will open and discharge water to drain when temperature exceeds 38°C. Contractor shall run lines to drain. Sequence of Operation:
1. Manual or automatic alternation shall make it possible to switch working and standby between pumps.
  2. A low & height potable water cistern water level switch will automatically start & stop pumps.

3. A low & height domestic water central water level suction will automatically cut out the pumps.
- E. Power and Control Panel Furnish a single enclosure power and control panel NEMA 1. Enclosure shall be steel and furnished with an industrial grade enamel. It shall house all control components including:
- Circuit breaker disconnect switches through door with door interlock.
  - Magnetic across-the-line starter with 3 phase overload protection
  - Pump running lights
  - H-O-A selector switches
  - Automatic pump alternator with manual override selector switch, reading adaptable to pumps alternation
  - 220 volt control transformer
  - Alarm indicating lights
  - Audible alarm with silencing button, and remote trouble alarm contacts
  - Set of necessary control relays and other accessory devices required to permit the system to operate in conformance with specification
  - Mercoïd adjustable deadband pressure switches
  - Low suction level cut-out circuit to interface with suction tank controls

All of the above to be factory internally prewired and tested in accordance with the provisions of the National Electrical Code.

All control wires shall be individually numbered and each component shall be labeled accordingly. All internal wiring shall be copper stranded, A.W.G. with a minimum insulation of 90 degrees C. The complete assembly shall have a UL listing mark for industrial control panels.

#### **2.4 Instrumentation And Controls:**

1. On and Off delays factory set to system operating characteristics to prevent short cycling of pumps.
2. Low suction pressure shutdown.
3. Alarm light, horn and reset button.
4. Automatic restart after alarm condition has returned to normal, with alarm indicating light remaining lit until manually reset.
5. High system pressure indication and shutdown logic.
6. Low system pressure indication.
7. ASA Grade A pressure gauges 110mm for indication of system, suction and each pump's discharge pressure

#### **2.5 Factory Test And Certification**

The factory shall certify in writing that the water pressure pump system and its component parts have undergone a complete electric and hydraulic test prior to shipment. The test shall include a system operating flow test from zero to 100% design flow rate under the specified suction and net system pressure conditions using each pump as lead and lag. The certification shall include copies of the test data as recorded by X-Y Plotter. The system test may be witnessed by the owner, architect, or Project Manager by reporting intent to do so to the factory. System to be tested to 1380 kpa WWP.

Certification shall include copies of the test data as recorded by MProcessor Base System certifying the following:

1. Flow rate of each pump

2. Dynamic head
3. Starting torque
4. Revolutions per minute
5. KW
6. Pump efficiency
7. Main pump alternation by 24-hour time clock

## **2.6 Guarantee**

The water pressure booster system shall be guaranteed in writing by the manufacturer for a period of one year from date of issuance of certificate of practical completion against defects in design, materials, or construction.

## **2.7 Start-Up Service**

The service of a factory trained representative shall be made available on the job site to check installation and start-up and instruct operating personnel.

## **PART 3 EXECUTION**

### **3.1 Inspection**

Verify that structures, piping and equipment are compatible.

### **3.2 Adjustments**

- A. Pump Operation
- B. Control Operation
- C. Alarm Operation
- D. Alignment

### **3.3 Installation**

- A. Completely align and level pumps, motors and bases. Where pumps and motors are shipped as a unit, realign them in the field.
- B. Grout base plates completed to provided to rigid non-deflecting support.
- C. Secure pumps to bases with proper size anchor bolts
- D. Install and align mechanical seals in accordance with the manufacturer's recommendations.
- E. Construct all apparatus of materials and pressure ratings suitable for the conditions encountered during continuous operation.
- F. Provide casing connections for vent, drain, suction and discharge pressure gauges.
- G. Balance impellers and all other moving components statically and dynamically.
- H. Match centrifugal pump impellers and casings so that at specified operating conditions, the impeller diameter is not more than 90% of the maximum diameter impeller which can satisfactorily operate in the casing.

## FIRE EXTINGUISHERS AND CABINETS

### PART 1 GENERAL

#### 1.1 Related Documents

- A. Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.
- B. The requirements specified in this section apply to all related sections in the fire fighting division. The requirements of all related sections, elsewhere in this division also apply to this section unless specified to the contrary.

#### 1.2 Description of Work

This section covers the work of fire extinguishers, cabinets and accessories as required by standard codes. Sizes and contents of each cabinet are listed in Section 15300 of fire fighting division.

“Fire extinguishers” as used in this section refers to units which can be hand-carried, equipped with wheels or to fixed fire extinguishing systems.

Types of products required include:

- Fire cabinets if required
- Fire extinguisher
- Mounting brackets

Extent of fire extinguishers and fire cabinets is indicated on Drawings.

Fire hose reels (size and length) are specified in Section 15300 “Fire Protection System”.

#### 1.3 quality assurance

1. **1.3.1 Single-source Responsibility:**
2. **1.3.2 Acceptable manufacturers:**

Obtain products in this section from one Manufacturer.

Firms regularly engaged in the manufacturer of Fire equipment required, whose products have been in satisfactory use in similar service for not less than 5 years.

#### 1.3.3 Standards Compliance:

Comply with the requirements of National Fire Protection Association (NFPA), VDE/DIN, IEC, Underwriters Laboratories Inc. (UL), and Factory Mutual (FM), Local Building and Fire Department (civil defense) rules and regulations.

#### 1.3.4 Coordination:

Verify that cabinets are sized to accommodate type and capacity of extinguishers, hose reels, valves and accessories as indicated.

#### **1.4 Submittals**

The following items should be submitted:

##### **1.4.1 Product Data**

Submit product data for each type of product included in this section. For fire cabinets include roughing-in dimensions and details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, and panel style and materials. For fire extinguisher include dimensions, capacities, discharge and discharge time.

##### **1.4.2 Samples**

Submit for verification and approval, samples of each item in this section in its finished form and color as it will be used. For any changes in item specifications (Dimensions, capacity, color...etc) resubmits two samples, one before and the other with the new modifications.

### **PART 2 PRODUCTS**

#### **2.1 Available manufacturers**

Manufacturers offering products which may be incorporated in the Works shall be experienced Manufacturers in producing extinguishers and cabinets to that indicated for this project with sufficient production capacity to produce required units without delaying the work.

#### **2.2 mounting brackets**

Provide Manufacturer's standard brackets designed to carry extinguishers, of sizes required for type and capacity of extinguisher indicated, in manufacture's standard plated finish.

Provide brackets for extinguishers not located in cabinets

#### **2.3 Portable Fire Extinguishers**

##### **2.3.1 General:**

Provide fire extinguisher for each location indicated on drawings as indicated, in colors and finishes approved by the Engineer from Manufacturer's standard, which comply with requirements of governing authority.

##### **2.3.2 Dry Powder Fire Extinguisher:**

Stored pressure Dry Powder Type, all pounds capacity for hand type and for wheeled type with a working temperature range of -65 °F to 120 °F in a cylinder of mild steel and zinc die-cast operating head with stainless steel fittings and

components. The minimum range is 5 m or larger.

### **2.3.3 CO2 Fire Extinguisher:**

Carbon dioxide extinguishers, all pounds capacity for a working temperature range of -40 °F to -120 °F. Extinguishers are listed for use on a Class B and Class C fire.

### **2.3.4 Foam Fire Extinguisher:**

AFFF foam extinguisher ANSI/UL standard, 6 Lit. capacity for a working temperature range of 40 °F to 40 °F. Extinguishers are listed for use on a Class A and Class B fire.

## **PART 3 EXECUTION**

### **3.1 installation**

Examine walls or columns for thickness and framing for mounting bracket or cabinet. Cabinets or brackets shall be built into walls unless otherwise indicated on Drawings.

Install items included in this section in locations and at mounting heights indicated here or in drawings, or if not indicated, at heights to comply with applications of governing authorities.

Maintain integrity of fire rated walls where fire cabinets or brackets are installed with the use of fire rated cabinet type.

## **HYDRANT AND HOSE REEL SYSTEM**

### **1. General Requirements**

The general requirements of the hydrant and hose reel system and the individual equipment installations shall comply with local administrative authorities and Circular Letters. The fire service inlets, hydrant outlet valves and hose reels shall comply with local standards

## **2. Fire Service Inlets and Hydrant Outlets**

Fire service inlets shall be of twin type comprising screw-down globe type stop valve with male screwed outlet of suitable bore and two 65 mm horizontal male instantaneous inlet connections complete with integral spring loaded resilient seated non-return valves.

Hydrant outlets shall be single or double type comprising screw-down globe type stop valve for each outlet branch and with male screwed inlet of suitable bore and 65 mm female instantaneous outlets. Outlet branches shall incline at 70° from the centre line of the hand wheel, and at 90° to each other where applicable. The coupling control shall be located at the side of each outlet branch. A bronze blanking cap held captive by a suitable chain shall be fitted to each female outlet.

The fire service inlets and hydrant outlets shall be of all gunmetal construction except for the handwheel which shall be of cast iron or hard aluminium alloy. The inlet and outlets fittings shall be supplied and manufactured to the quality of material, construction, and dimensions as detailed in the following British Standard Specification: -

- a) Hydrant assembly to BS 5041 Part 1.
- b) Major valve components of gunmetal to BS EN 1982.
- c) Globe & check valve of service rating 1000 kPa to BS 5154.
- d) Male and female instantaneous terminals of 65 mm diameter to BS 336.
- e) All fittings shall be tested to at least 2000 kPa.

## **3. Venting and Draining**

All hydrant risers shall be supplied and installed with automatic air vents of 25 mm size at the highest points and drain valves at the lowest points of the systems.

## **4. Pressure Reducing Hydrant Outlets**

Pressure-reducing hydrant outlet shall be supplied and installed at outlet locations where the static and pump pressure exceeds 700 kPa.

The pressure reducing hydrant outlet shall be in the form of a parity valve incorporated in the hydrant outlet and valve assembly and connected to a drain pipe not less than 40 mm in diameter. Alternatively, where specified, the pressure reducing hydrant outlet can be in the form of a self-contained type without the use of the parity valve and drain pipe. It shall be capable of reducing the running pressure and satisfy the flow test requirements. The pressure-reducing mechanism of the valve shall be located at downstream of the valve seat. Pressure reduction shall be achieved by means of hydraulic pressure balancing with metal diaphragm. An 100% effectiveness pressure reducing performance shall be maintained at all times of operation.

## **5. Hose Reels**

Hose reels shall be of a fixed or swing-out type to suit the site installation conditions of the site. The construction, testing, performance, working pressure, etc. shall be to local standards. The length of the hose shall be 30 m and the bore 19 mm. Drums shall be constructed of diecast light alloy, hydraulically balanced, free from denting and twisting, and finished in red enamel. The hub and shaft shall be of brass, fitted with a device to prevent overrun of the hose, having a glandless centre seal.

The entire assembly shall be drip free. Hoses shall be of reinforced rubber or P.V.C. tubing complying with local standards and shall be fitted with a copper alloy nozzle having slow closure type lever-operated cock.

A hose guide complete with nylon or similar runners shall be supplied and installed adjacent to fixed type hose reels to enable the hose to be run out in any direction as required.

For the wall fixed pattern, wall-mounting brackets of substantial construction capable of supporting the entire weight of the hose reel and tubing under all operating conditions are required.

For the swing-out pattern, the support brackets and the swing-out arm shall be so designed as to enable the whole hose reel assembly be swung through 180 ° in a horizontal plan.

Each hose reel nozzle shall be housed inside a glass fronted metal box. The box shall be fabricated from sheet metal not less than 0.8 mm thick with a hinged door with front break glass and padlocking facility. The metal box shall be painted and finished to the satisfaction of the Engineer. The break glass shall be of fragile type not more than 1.5 mm thick. The break glass shall be easily replaced. Common key shall be used for the padlocks. Five common keys shall be provided. A metal or plastic striker

## **6. Cabinets**

Cabinets for the housing of fire service inlets, hydrant outlets and hose reels will be provided by the Building Contractor unless otherwise specified. The Contractor shall furnish all necessary information to enable these cabinets to be designed and constructed including proposed dimensions for the cabinets and the dimensions, weights, etc. of the equipment supplied by him. All information supplied shall be based on BS 5041 Part 4.

Where hose reels are located in cabinets or recesses to which doors are fitted, the doors shall bear the words "FIRE HOSE REEL ( )" in both English and Swahili characters prominently and easily identifiable from all lines of sight in the surrounding. In the case of doors which can only be opened by pushing in first, they shall also be annotated "PUSH TO OPEN ( )" in both English and Swahili. Hose reel cabinets fitted with doors shall not be locked and shall be easily identified and opened at time of emergency. All doors and markings will be provided by the Building Contractor unless otherwise specified.

## **HVAC-UNITARY AIR CONDITIONERS (MINI SPLIT)**

### **PART - 1 GENERAL**

#### **1.01 DESCRIPTION**

##### **A. General:**

1. Furnish all labour, materials, tools, equipment, and services for Unitary Air Conditioners, in accordance with provisions of Contract Documents.
2. Completely coordinate with work of all other trades.
3. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation.
4. See Division 1, for General Requirements

**B. Work Included:** This section covers the furnishing, installation, testing and balancing of Unitary Air Conditioners in satisfactory conditions, location, as shown on the drawings.

##### **C. Related work specified elsewhere:**

1. Section 15050 Basic Mechanical Requirements
2. Section 15140 Hangers and Supports.
3. Section 15240 Mechanical Vibration and Seismic Control.

4. Section 15990 Testing, Adjusting and Balancing.

### **1.02 APPLICABLE CODES AND STANDARDS**

- A. ASHRAE - American Society of Heating Refrigeration and Air-Conditioning Engineers.
- B. AMCA - Air Moving and Conditioning Association.
- C. ANSI - American National Standard Institute.
- D. ARI - Air-Conditioning and Refrigeration Institute.
- E. ASTM - American Society for Testing and Material.
- F. NEMA - National Electrical Manufacturers Association.
- G. NFPA - National Fire Protection Association.
- H. SMACNA - Sheet Metal and Air-Conditioning Contractors National Association.
- I. UL - Underwriter Laboratories.

### **1.03 SUBMITTALS**

The Contractor shall submit to Client the following items for review before commencing work:

- A. Shop drawings showing materials, principal dimensions, supports, and manufacturing and installation details.
- B. A schedule of all equipment indicating performance, location, types, capacities and sound power level values.
- C. Copies of manufacturer's technical specifications including detailed installation instruction for unitary air conditioning equipment.
- D. Certificate of compliance stating that the material used and construction conform to all requirements of this specification.
- E. Operation and maintenance manuals including recommended spare parts list.

### **1.04 PRODUCT HANDLING**

- A. All products shall be delivered in manufacturer's original, protective packaging.
- B. All products shall be inspected at time of delivery for damage and for compliance with specifications.
- C. Any products that are damaged or found not to be in accordance with the specifications shall be immediately repaired or replaced.
- D. All products shall be handled and stored as recommended by the manufacturer to prevent damage and deterioration.

### **1.05 QUALITY CONTROL**

- A. The Contractor shall maintain a qualified representative on-site during all works.
- B. Guarantees: guarantee for whole equipment shall be for two years from the date of initial handing over. Guarantee for compressors shall be 5 years from the date of initial handing over..

## **PART - 2 PRODUCTS**

### **2.01 MINI - SPLIT AIR CONDITIONERS**

- A. General
  - 1. Mini-split air conditioners shall consist of indoor evaporator-blower unit (FCU) and outdoor remote air-cooled condensing unit (CU).
  - 2. The two components shall be designed to be used together and ratings shall be based on the use of the matched assemblies.
  - 3. The units shall be constructed and rated in accordance with ARI Standards.

4. Performance diagrams shall be provided for units with capacities not certified by ARI to demonstrate that the components of the air conditioning system furnished will satisfy the capacity requirement specified or indicated on the drawings.
5. Each unit shall be provided with a factory operating charge of refrigerant and oil or a holding charge.
6. Where units are shipped without refrigerant holding charge, the system shall be completely charged in the field.
7. The outdoor and indoor units shall conform to the requirements of ARI 210 and UL 465.
8. The (EER) of the units shall meet the latest ASHRAE standard (2001).

**B. Evaporator - Blower Section (Indoor Component - FCU):**

1. The evaporator- blower section shall include a cooling coil, expansion device, three speed blower, washable air filter, condensate drain pan and controls. The exposed unit shall have enamelled finish casing.
2. Blower shall be quiet conform to AMCA 210, specifically designed to be suitable for the operating pressure, and shall have either greaseable or permanently lubricated ball or roller bearings.
3. Fans assemblies shall be both statically and dynamically balanced in the fan housing and final assembly.
4. Fan motors shall conform to NEMA MG2. Motor starters shall conform to NEMA ICS 1, and shall be magnetic across-the-line type with weather resistance enclosed. Motors shall be totally enclosed type.
5. The controller shall be wireless remote controller with liquid crystal display window, automatic fan speed, fan/cool/heat operating modes, sleeping operating circuit, thermostat, remote temperature setting, 24-hour full timer (timer ON and timer OFF), automatic air swing and three minutes delay circuit (to prevent fuse blowing).

**C. Condensing Section(Outdoor Component - CU):**

The condensing section shall be a complete packaged, factory assembled electrically operated unit, consisting of a weather proof housing and vibration mounting hermetic type compressor, air cooled condenser with Spine fin coil, circulating fan and motor, and the necessary structural frame, valves, wiring, internal overload protection, internal pressure relief valve and controls. The unit shall be rated at outdoor dry and wet bulb temperatures as indicated in the drawings.

The unit shall have an anti-corrosion coating (guaranteed for 5 years).

**2.02 REFRIGERANT PIPING, FITTINGS AND ACCESSORIES**

- A. Pipe shall be type "K" or "L" (ASTM B-88) Copper Tubing.
- B. Insulation shall be 40 mm thickness - rigid, closed cell polyurethane with minimum  $30 \text{ kg / m}^3$  density and a maximum thermal conductivity of 0.025 W/m.K at 24 °C mean temperature.
- C. Jacket shall be a type I grade I polyvinyl chloride with a minimum wall thickness of 1.5 mm.
- D. Couplings shall be machine grooved for O-Ring seals. Coupling shall be insulated, jacketed and sealed.
- E. All fittings shall be ASA B16.22 wrought copper fittings, solder joints shall be made with silver solder.

**PART - 3 EXECUTION**

**3.01 INSPECTION**

The Contractor shall inspect all products for damage immediately before installation. any products that are damaged or not in accordance with the specifications shall immediately be repaired or removed from site and replaced.

**3.02 INSTALLATION**

**A. General:**

1. The Unitary air conditioners shall be installed in strict accordance with the manufacturer's recommendations and in accordance with all applicable Codes and Standards.
2. The Unitary air conditioners shall be installed as shown on the drawings and on the approved shop drawings.
3. The installation of all units shall be such that no vibrations may be generated, whether through the roof or the ducts.
4. System leak testing, evacuation, dehydration, and charging with refrigerant shall conform with ARI 260.

## B. Leak Testing:

Upon completion of installation of the Unitary air conditioners, all factory and field refrigerant piping shall be tested with an electronic - type leak detector to acquire a leak tight refrigerant system. If leaks are detected at the time of installation or during the warranty period the entire refrigerant charge shall be removed from the system, the leaks repaired and the system re-tested.

## C. Evacuation, Dehydration, and Charging:

After system is found to be without leaks, the system shall be evacuated using a reliable gauge and a vacuum pump capable of pulling a vacuum of at least 1 mm Hg absolute. The system shall be evacuated in strict accordance with equipment manufacturer's printed instructions.

## D. Start-up and Operation Tests:

The unitary air conditioner and its components shall be started and initially placed under operation and checked to see that it is functioning correctly. Safety and automatic control instruments shall be adjusted as necessary to place them in proper operation and sequence. The operational test shall be not less than eight hours.

# LIFT SERVICES INSTALLATION

## 1. GENERAL SPECIFICATION

### 1.1 GENERAL

The Sub-Contractor shall fully comply with the requirements and recommendation of the following:-

- (a) The Electric Power Act and the Rules made thereunder.
- (b) The Kenya Power & Lighting Company Limited's by-laws.
- (c) The current edition of the Regulations for the Electrical Equipment of Building issued by the Institution of Electrical Engineers of Great Britain and any Kenya amendments there to except where compliance with these regulations would cause contravention of the requirements and recommendations of item (a) and (b) above.
- (d) British Standard Code of Practice, C.P. 407.1972 on Electric, Hydraulic and Hand powered lifts issued by the British Standards Institution on behalf of the Council of Codes of Practice, and all British Standard Specifications recommended by that code of practice.
- (e) British Standard Code of Practice 2655 Parts 1, 2, 3, 6, 7, 9 and 10 issued by the British Standard Institution.
- (f) The requirements of the Chief Inspector of Factories for the Government of Kenya.

### 1.2 Builder's Works

All chasing, cutting away and making good will be done by the Contractor. The Sub-Contractor shall be responsible for making out in advance and for ensuring that the Builder's work has been carried out accurately and in accordance with the Sub-Contractor's requirements.

The Sub-Contractor shall drill and plug holes in the floors, walls, ceilings and roofs for securing services and equipment requiring screw or bolt fixing purpose. Fixing brackets shall not constitute Builder's work and shall be provided and installed by the Sub-Contractor.

### 1.3 Landing Door Key

It shall be possible to open every landing door by use of secret key whether or not the lift is in the landing zone. The key hole shall be unobtrusive and located at high level.

### 1.4 Painting

All parts of the control equipment, switch gear, trunking, bed plates and closed section of metal works parts which will not be accessible for painting after erection shall be given three coats of paints at the manufacturer's works.

All bright services shall be coated with lacquer or other protective coating before leaving the manufacturer's works.

Metal work in the lift shaft shall be painted on site with three coats of best quality oil paint.

### 1.5 Tests and Examination

Tests and examination of the entire lift installation and all incorporated equipment and materials shall be carried out in accordance with all the requirements of BS 2655 Part 7, 1970.

### **1.6 Interference Suppression**

Lift motors associated control equipment shall be suppressed so as not to interfere with local radio and television reception or local radio paging and closed circuit television systems or electro-medical equipment within the building. Suppression shall be carried out in accordance with B.S. 800 and all suppression devices incorporated shall comply with B.S. 613.

### **1.7 Wall Switches**

All operating switches in the lift shaft shall be of the totally enclosed drip-proof type.

### **1.8 Protective Pads**

The Sub-Contractor shall supply one set of protective quilted over pads to approval for each size of passenger lift car specified.

### **1.9 Manual Operation**

Provision shall be made for manual operation of lifts and lowering of the lifts by means of spokeless wheel. This shall be mounted on the drive motor. The Sub- Contractor shall provide a brake release key and landing door emergency key which shall be supplied and fixed by the Sub-Contractor.

### **2.0 Base Frame**

The complete hoisting equipment shall be mounted on a frame of fabricated steel which when stalled shall be insulated from the building structure by means of rubber or other approved sound and vibration isolating material provided and fixed in an approved manner between the base frame and supporting beams.

### **Work by others**

The following provision shall be made by others free of charge to the Sub-Contractor: -

- (a) Lift wells, machine rooms and supporting steel work and lifting beams, ladders to shaft pit.
- (b) All builder's work such as cutting away and making good.
- (c) Enclosure work, concrete floors, concrete foundations, temporary guarding of lift wells.
- (d) Provision and maintenance of temporary lighting and power supplies for tools and testing of lift equipment.
- (e) Permanent power and lighting supplies to lift machine rooms and shafts controlled by fused switches.
- (f) Provision of clear access to working areas.
- (g) Painting of the lift wells and motor rooms with two coats of white emulsion paint



**KEY PERSONNEL**

Qualifications and experience of key personnel proposed for administration and execution of the Contract.

<b>POSITION</b>	<b>NAME</b>	<b>HIGHEST QUALIFICATION <i>(Attach proof)</i></b>	<b>YEARS OF EXPERIENCE (GENERAL)</b>	<b>YEARS OF EXPERIENCE IN PROPOSED POSITION</b>

I certify that the above information is correct.

.....  
.....  
Title

.....  
Signature

.....  
.....  
Date

**CONTRACTS COMPLETED IN THE LAST FIVE (5) YEARS**

Work performed on works of a similar nature, complexity and volume over the last 5 years.

PROJECT NAME	NAME OF CLIENT	TYPE OF WORK AND YEAR OF COMPLETION	VALUE OF CONTRACT (Kshs.)

I certify that the above works were successfully carried out and completed by ourselves.

.....

.....

.....

Title

Signature

Date

**SCHEDULE OF ON-GOING PROJECTS**

Details of on-going or committed projects, including expected completion date.

PROJECT NAME	NAME OF CLIENT	CONTRACT SUM	% COMPLETE	COMPLETION DATE

I certify that the above works are currently being carried out by ourselves.

.....

Title

.....

Signature

.....

Date

**SCHEDULE OF MAJOR ITEMS OF CONTRACTOR'S EQUIPMENT PROPOSED FOR  
CARRYING OUT THE WORKS (Attach proof of ownership)**

ITEM OF EQUIPMENT	DESCRIPTION, MAKE AND AGE (Years)	CONDITION (New, good, poor) and number available	OWNED, LEASED (From whom?), or to be purchased (From whom?)

**DETAILS OF LITIGATION OR ARBITRATION PROCEEDINGS IN WHICH THE TENDERER HAS BEEN INVOLVED AS ONE OF THE PARTIES IN THE LAST 5 YEARS**

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10.

---

**PART III - THE CONDITIONS OF CONTRACT AND CONTRACT**

---

**KONZA TECHNOPOLIS DEVELOPMENT AUTHORITY**

NAME OF CONTRACT- PROPOSED DEVELOPMENT OF ICT DIGITAL HUBS AND ASSOCIATED FACILITIES KIAMBU COUNTY,  
KENYA.

[Architect Name and Address]-TBD

*General Conditions of Contract*

---

**1 GENERAL PROVISIONS**

**1.1 Definitions**

In this Contract, except where context otherwise requires, the following terms shall be interpreted as indicated below. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

**“Accepted Contract Amount”** means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.

**“Base Date”** means a date 30 day prior to the submission of tenders.

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

**“Completion Date”** means the date of completion of the Works as certified by the Engineer.

**“Contract Price”** means the price defined in the contract and there after as adjusted in accordance with the provisions of the Contract.

**“Contract”** means the agreement entered into between the Procuring Entity and the Contractor as recorded in the Agreement Form and signed by the parties including all attachments and appendices thereto and all documents incorporated by reference therein to execute, complete, and maintain the Works.

**“Contractor's Documents”** means the calculations, computer programs and other software, progress reports, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.

**“Contractor's Equipment”** means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor's Equipment excludes Temporary Works, Procuring Entity's Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.

**“Contractor's Personnel”** means the Contractor's Representative and all personnel whom the Contractor utilizes on Site, who may include the staff, labor and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works.

**“Contractor's Representative”** means the person named by the Contractor in the Contractor appointed from time to time by the Contractor who acts on behalf of the Contractor.

**“Contractor”** means the person(s) named as contractor in the Form of Tender accepted by the Procuring Entity.

**“Cost”** means expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.

**“Day”** means a calendar day and **“year”** means 365 days.

**“Dayworks”** means Work inputs subject to payment on a time basis for labour and the associated materials and plant.

**“Defect”** means any part of the Works not completed in accordance with the Contract.

**“Defects Liability Certificate”** means the certificate issued by Architect upon correction of defects by the Contractor.

**“Defects Liability Period”** means the period named in the Special Conditions of Contract and calculated from the Completion Date, within which the contractor is liable for any defects that may develop in the handed over works.

**“Defects Notification Period”** means the period for notifying defects in the Works or a Section(as the case may be) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], which extends over the days stated in the Special Conditions of Contract.

**“Drawings”** means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Procuring Entity in accordance with the Contract.

**“Final Payment Certificate”** means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].

**“Final Statement”** means the statement defined in Sub-Clause 14.11 [Application for Final Payment Certificate].

**“Force Majeure”** is defined in Clause 19 [Force Majeure].

**“Foreign Currency”** means a currency of another country (not Kenya) in which part (or all) of the Contract Price is payable, but not the Local Currency.

**“Goods”** means Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.

**“Interim Payment Certificate”** means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.

**“Laws”** means all national legislation, statutes, ordinances, and regulations and by-laws of any legally constituted public authority.

**“Letter of Acceptance”** means the letter of formal acceptance of a tender, signed by Procuring Entity, including any annexed memoranda comprising agreements between and signed by both Parties.

**“Local Currency”** means the currency of Kenya.

**“Materials”** means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.

**“Notice of Dissatisfaction”** means the notice given by either Party to the other under Sub-Clause 20.3 indicating its dissatisfaction and intention to commence arbitration.

**“Special Conditions of Contract”** means the pages completed by the Procuring Entity entitled Special Conditions of Contract which constitute Part A of the Special Conditions.

**“Party”** means the Procuring Entity or the Contractor, as the context requires.

**“Payment Certificate”** means a payment certificate issued under Clause 14 [Contract Price and Payment].

**“Performance Certificate”** means the certificate issued under Sub-Clause 11.9 [Performance Certificate].

**“Performance Security”** means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security].

**“Permanent Works”** means the permanent works to be executed by the Contractor under the Contract.

**“Plant”** means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works,

including vehicles purchased for the Procuring Entity and relating to the construction or operation of the Works.

**“Procuring Entity's Equipment”** means the apparatus, machinery and vehicles (if any) made available by the Procuring Entity for the use of the Contract or in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Procuring Entity.

**“Procuring Entity's Personnel”** means the Engineer, the Engineer, the assistants and all other staff, labor and other employees of the Architect and of the Procuring Entity; and any other personnel notified to the Contractor, by the Procuring Entity or the Engineer, as Procuring Entity's Personnel.

**“Procuring Entity”** means the Entity named in the Special Conditions of Contract.

**“Engineer”** is the person named in the Appendix to Conditions of Contract (or any other competent person appointed by the Procuring Entity and notified to the Contractor, to act in replacement of the Engineer) 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.

**“Engineer”** means the person appointed by the Procuring Entity to act as the Architect for the purposes of the Contract and named in the Special Conditions of Contract, or other person appointed from time to time by the Procuring Entity and notified to the Contractor

**“Provisional Sum”** means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].

**“Retention Money”** means the accumulated retention moneys which the Procuring Entity retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].

**“Schedules”** means the document(s) entitled schedules, completed by the Contractor and submitted with the Form of Tender, as included in the Contract.

**“Section”** means a part of the Works specified in the Special Conditions of Contract as a Section (if any)

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

**“Site”** means the places where the Permanent Works are to be executed, including storage and working areas, and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.

**“Specification”** means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.

**“Start Date” or “Commencement 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).

**“Statement”** means a statement submitted by the Contractor as part of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.

**“Subcontractor”** means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works.

**“Taking-Over Certificate”** means a certificate issued under Clause 10 [Procuring Entity's Taking Over].

**“Temporary Works”** means all temporary works of every kind (other than Contractor's Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.

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

**“Tender”** means the Form of Tender and all other documents which the Contractor submitted with the Form of Tender,

as included in the Contract.

**“Tests after Completion”** means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Procuring Entity.

**“Tests on Completion”** means the tests which are specified in the Contract agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Procuring Entity.

**“Time for Completion”** means the time for completing the Works or a Section (as the case may be) as stated in the Special Conditions of Contract (with any extension calculated from the Commencement Date.

**“Unforeseeable”** means not reasonably foreseeable by an experienced contractor by the Base Date.

**“Variation”** means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].

**“Works”** means the items the Procuring Entity requires the Contractor to undertake as defined in the Appendix to Conditions of Contract. **“Works” may** also mean the Permanent Works and the Temporary Works, or either of them as appropriate.

## **12** *Interpretation*

In the Contract, except where the context requires otherwise:

- a) Words indicating one gender include all genders;
- b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- c) provisions including the word “agree”, “agreed” or “agreement” require the agreement to be recorded in writing;
- d) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

## **13** *Communications*

**13.1** Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- a) In writing and delivered by hand (against receipt), sent by mail or courier, or \_\_\_\_\_ transmitted using any of the agreed systems of electronic transmission as stated in the Special Conditions of Contract; and
- b) delivered, sent or transmitted to the address for the recipient’s communications as stated in the Special Conditions of Contract. However:
  - i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
  - ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which there quest was issued.

**13.2** Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Architect or the other Party, as the case may be.

## **14** *Law and Language*

**14.1** The Contract shall be governed by the laws of **Kenya**.

**14.2** The ruling language of the Contract shall be **English**.

## **15** *Priority of Documents*

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of

interpretation, the priority of the documents shall be in accordance with the following sequence:

- a) The Contract Agreement,
- b) The Letter of Acceptance,
- c) The Special Conditions – Part A,
- d) the Special Conditions – Part B
- e) the General Conditions of Contract
- f) the Form of Tender,
- g) the Specifications and Bills of Quantities
- h) the Drawings, and
- i) the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the Architect shall issue any necessary clarification or instruction.

#### 1.6 *Contract Agreement*

The Parties shall enter into a Contract Agreement within 14 days after the Contractor receives the Contract Agreement, unless the Special Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Special Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Procuring Entity.

#### 1.7 *Assignment*

The Contractor shall not assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, the contractor:

- a) May assign the whole or any part with the prior consent of the Procuring Entity, and
- b) may, as security in favor of a bank or financial institution, assign its right to moneys due, or to become due, under the Contract.

#### 1.8 *Care and Supply of Documents*

1.8.1 The Specifications and Drawings shall be in the custody and care of the Procuring Entity. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawings and Bills of Quantities shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.

1.8.2 Each of the Contractor's Documents shall be in custody and care of the Contractor, unless and until taken over by the Procuring Entity. Unless otherwise stated in the Contract, the Contractor shall supply to the Architect two copies of each of the Contractor's Documents.

1.8.3 The Contractor shall keep on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Procuring Entity's Personnel shall have the right of access to all these documents at all reasonable times.

1.8.4 If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

#### 1.9 *Timely provision of Drawings or Instructions*

1.9.1 The Contractor shall give notice to the Architect whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.

1.9.2 If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Architect to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

b) payment of any other associated costs accrued, which shall be included in the Contract Price.

1.93 After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

1.94 However, if and to the extent that the Architect failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, or costs accrued.

#### 1.10 *Procuring Entity's Use of Contractor's Documents*

1.10.1 As agreed between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

1.10.2 The Contractor shall be deemed (by signing the Contract) to give to the Procuring Entity a non-terminable transferable non-exclusive royalty-free license to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This license shall:

- a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
- b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
- c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

1.10.3 The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Procuring Entity for purposes other than those permitted under Sub-Clause 1.10.2.

#### 1.11 *Contractor's Use of Procuring Entity's Documents*

As agreed between the Parties, the Procuring Entity shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Procuring Entity. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Procuring Entity's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

#### 1.12 *Confidential Details*

1.12.1 The Contractor's and the Procuring Entity's Personnel shall ensure confidentiality at all times. The confidentiality shall survive termination or completion of the contract. They shall disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.

1.12.2 The Contractor's and the Procuring Entity's Personnel shall also treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

#### 1.13 *Compliance with Laws*

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Special Conditions of Contract:

- a) The Procuring Entity shall have obtained (or shall obtain) the planning, zoning, building permit or similar

permission for the Permanent Works, and any other permissions described in the Specifications as having been (or to be) obtained by the Procuring Entity; and the Procuring Entity shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and

- b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licenses and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Procuring Entity harmless against and from the consequences of any failure to do so, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

#### 1.14 *Joint and Several Liability*

If the Contractor constitutes (under applicable Laws) a joint venture, consortium or other unincorporated grouping of two or more persons:

- a) These persons shall be deemed to be jointly and severally liable to the Procuring Entity for the performance of the Contract;
- b) these persons shall notify the Procuring Entity of their leader who shall have authority to bind the Contractor and each of these persons; and
- c) the Contractor shall not alter its composition or legal status without the prior consent of the Procuring Entity.

#### 1.15 *Inspections and Audit by the Procuring Entity*

Pursuant to paragraph 2.2(e). of Appendix B to the General Conditions, the Contractor shall permit and shall cause its subcontractors and sub-consultants to permit, the Public Procurement Regulatory Authority, Procuring Entity and/or persons appointed or designated by the Government of Kenya to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by the Procuring Entity if requested by the Procuring Entity. The Contractor's and its Subcontractors' and sub-consultants' attention is drawn to Sub-Clause 15.6 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Procuring Entity's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Procuring Entity's prevailing sanctions procedures).

## 2 *THE PROCURING ENTITY*

### 21 **Right of Access to the Site**

21.1 The Procuring Entity shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the **Special Conditions of Contract**. The right and possession may not be exclusive to the Contractor. If, under the Contract, the Procuring Entity is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Procuring Entity shall do so in the time and manner stated in the Specification. However, the Procuring Entity may withhold any such right or possession until the Performance Security has been received.

21.2 If no such time is stated in the Special Conditions of Contract, the Procuring Entity shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to proceed without disruption in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

21.3 If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Procuring Entity to give any such right or possession within such time, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

21.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

2.15 However, if and to the extent that the Procuring Entity's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

## 22 *Permits, Licenses or Approvals*

22.1 The Procuring Entity shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

- a) Copies of the Laws of Kenya which are relevant to the Contract but are not readily available, and
- b) any permits, licenses or approvals required by the Laws of Kenya:
  - i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],
  - ii) for the delivery of Goods, including clearance through customs, and
  - iii) for the export of Contractor's Equipment when it is removed from the Site.

## 23 *Procuring Entity's Personnel*

The Procuring Entity shall be responsible for ensuring that the Procuring Entity's Personnel and the Procuring Entity's other contractor son the Site:

- a) co-operate with the Contractor's efforts under Sub-Clause 4.6 [Co-operation], and
  - b) take action similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

## 24 *Procuring Entity's Financial Arrangements*

The Procuring Entity shall make and maintain all necessary financial arrangements which will enable the Procuring Entity to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment].

## 3 THE ENGINEER

### 31 **Architect Duties and Authority**

3.1.1 The Procuring Entity shall appoint the Architect who shall carry out the duties as signed to him in the Contract. The Architect staff shall include suitably qualified Assistants and other professionals who are competent to carry out these duties. The Architect Name and Address shall be provided in the **Special Conditions of Contract**.

3.1.2 The Architect shall have no authority to amend the Contract.

3.1.3 The Architect May exercise the authority attributable to the Architect as specified in or necessarily to be implied from the Contract. If the Architect is required to obtain the approval of the Procuring Entity before exercising a specified authority, the requirements shall be as stated in the **Special Conditions of Contract**. The Procuring Entity shall promptly inform the Contractor of any change to the authority attributed to the Engineer.

3.1.4 However, whenever the Architect exercises a specified authority for which the Procuring Entity's approval is required, then (for the purposes of the Contract) the contractor shall require the Architect to provide evidence of such approval before complying with the instruction.

3.1.5 Except as otherwise stated in these Conditions:

- a) Whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Architect shall be deemed to act for the Procuring Entity;
- b) the Architect has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract;
- c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Architect (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies

and non-compliances; and

- d) anyact by the Architect in response to a Contractor's request shall be notified in writing to the Contractor within 14 days of receipt.

3.16 The following provisions shall apply:

The Architect shall obtain the specific approval of the Procuring Entity before taking action under the -following Sub-Clauses of these Conditions:

- a) Sub-Clause 4.12: agreeing or determining an extension of time and/or additional cost.
- b) Sub-Clause 13.1: instructing a Variation, except;
  - i) In an emergency situation as determined by the Engineer, or
  - ii) If such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the **Special Conditions of Contract**.
- c) Sub-Clause 13.3: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 or 13.2.
- d) Sub-Clause13.4: Specifying the amount payable in each of the applicable three currencies.

3.17 Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forth with comply, despite the absence of approval of the Procuring Entity, with any such instruction of the Engineer. The Architect shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Procuring Entity.

**32** *Delegation by the Engineer*

3.21 The Architect may from time to time assign duties and delegate authority to assistants and may also revoke such assignment or delegation. These assistants may include a resident Engineer, and/or independent inspectors appointed to inspect and/ or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Architect shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations].

3.22 Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:

- a) Any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Architect to reject the work, Plant or Materials;
- b) If the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

**33** *Instructions of the Engineer*

3.31 The Architect may issue to the Contractor (at anytime) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under Clause 3.2.1.

3.32 The Contractor shall comply with the instructions given by the Architect or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Architect for a delegated assistant:

- a) Gives an oral instruction,
- b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and
- c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation,

Then the confirmation shall constitute the written instruction of the Architect or delegated assistant (as the case may be).

### **34** *Replacement of the Engineer*

If the Procuring Entity intends to replace the Engineer, the Procuring Entity shall, in not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the intended person to replace the Engineer.

### **35** *Determinations*

3.5.1 Whenever these Conditions provide that the Architect shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter, the Architect shall consult with each Party in an endeavor to reach agreement. If agreement is not achieved, the Architect shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.

3.5.1 The Architect shall give notice to both Parties of each agreement or determination, with supporting particulars, within 30 days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

## **4** *THE CONTRACTOR*

### **4.1** **Contractor's General Obligations**

4.1.1 The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Architect instructions, and shall remedy any defects in the Works.

4.1.2 The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

4.1.3 All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country.

4.1.4 The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design or specification of the Permanent Works.

4.1.5 The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

4.1.6 If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Special Conditions:

- a) The Contractor shall submit to the Architect the Contractor's Documents for this part in accordance with the procedures specified in the Contract;
- b) these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Architect to add to the Drawings for co-ordination of each Party's designs;
- c) the Contractor shall be responsible for this part and it shall, when the Works are completed, befit for such purposes for which the part is intended as are specified in the Contract; and

- d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Architect the “as-built” documents and, if applicable, operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Procuring Entity to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

#### 42 *Performance Security*

- 421 The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount stated in the **Special Conditions of Contract** and denominated in the currency (ies) of the Contract or in a freely convertible currency acceptable to the Procuring Entity. If an amount is not stated in the Special Conditions of Contract, this Sub-Clause shall not apply.
- 422 The Contractor shall deliver the Performance Security to the Procuring Entity within 30 days after receiving the Notification of Award and shall send a copy to the Engineer. The Performance Security shall be issued by a reputable bank selected by the Contractor and shall be in the form annexed to the Special Conditions, as stipulated by the Procuring Entity in the Special Conditions of Contract, or in another form approved by the Procuring Entity.
- 423 The Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 30 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.
- 424 The Procuring Entity shall not make a claim under the Performance Security, except for amounts to which the Procuring Entity is entitled under the Contract.
- 425 The Procuring Entity shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Procuring Entity was not entitled to make the claim.
- 426 The Procuring Entity shall return the Performance Security to the Contractor within 14 days after receiving a copy of the Taking-Over Certificate.
- 427 Without limitation to the provisions of the rest of this Sub-Clause, whenever the Architect determines an addition or a reduction to the Contract Price as a result of a change in cost and/ or legislation, or as a result of a Variation, amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Architect request promptly increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

#### 43 *Contractor's Representative*

- 431 The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract. The Contractor's Representative's Name and Address shall be provided in the **Special Conditions of Contract**.
- 432 Unless the Contractor's Representative **is named in the Contract**, the Contractor shall, prior to the Commencement Date, submit to the Architect for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of an other suitable person for such appointment.
- 433 The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.
- 434 The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Architect prior consent, and the

Architect shall be notified accordingly.

- 4.35 The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].
- 4.36 The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Architect has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.
- 4.37 The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

#### **44** *Sub-contractors*

- 4.41 The Contractor shall not subcontract the whole of the Works. The contractor may however subcontract the works as provided in Clause 34.2.
- 4.42 The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Special Conditions:
- a) The Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract;
  - b) The prior consent of the Procuring Entity shall be obtained to other proposed Subcontractors;
  - c) the Contractor shall give the Procuring Entity not less than 14 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and
  - d) each subcontract shall include provisions which would entitle the Procuring Entity to require the subcontract to be assigned to the Procuring Entity under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity].
- 4.43 The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.
- 4.44 Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from Kenya to be appointed as Subcontractors.

#### **45** *Assignment of Benefit of Subcontract*

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Procuring Entity, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Procuring Entity for the work carried out by the Subcontractor after the assignment takes effect.

#### **46** *Co-operation*

- 4.61 The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:
- a) The Procuring Entity's Personnel,
  - b) Any other contractors employed by the Procuring Entity, and
  - c) The personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract.
- 4.62 Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.
- 4.63 If, under the Contract, the Procuring Entity is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit

such documents to the Architect in the time and manner stated in the Specification.

#### **47** *Setting Out of the Works*

4.7.1 The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contractor notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

4.7.2 The Procuring Entity shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

4.7.3 If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/ or Cost, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such costs accrued, which shall be included in the Contract Price.

4.7.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to these.

#### **48** *Safety Procedures*

The Contractor shall:

- a) Comply with all applicable safety regulations,
- b) Take care for the safety of all persons entitled to be on the Site,
- c) Use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
- d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Procuring Entity's Taking Over], and
- e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.

#### **49** *Quality Assurance*

4.9.1 The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Architect shall be entitled to audit any aspect of the system.

4.9.2 Details of all procedures and compliance documents shall be submitted to the Architect for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer, evidence of the prior approval by the Contractor itself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

#### **4.10** *Site Data*

4.10.1 The Procuring Entity shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Procuring Entity's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Procuring Entity shall similarly make available to the Contractor all such data which come into the Procuring Entity's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

4.10.2 To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and

examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

- a) The form and nature of the Site, including sub-surface conditions,
- b) the hydrological and climatic conditions,
- c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- d) the Laws, procedures and labour practices of Kenya, and
- e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

#### 4.11 *Sufficiency of the Accepted Contract Amount*

4.11.1 The Contractor shall be deemed to:

- a) Have satisfied itself as to the correctness and sufficiency of the Accepted Contract Amount, and
- b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

4.11.2 Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

#### 4.12 *Unforeseeable Physical Conditions*

4.12.1 In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.

4.12.2 If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Architect as soon as practicable.

4.12.3 This notice shall describe the physical conditions, so that they can be inspected by the Architect and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Architect may give. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

4.12.4 If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to notice under Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost, which shall be included in the Contract Price.

4.12.5 Upon receiving such notice and inspecting and/or investigating these physical conditions, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

4.12.6 However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Architect may also review whether other physical conditions in similar parts of the Works (if any) were more favorable than could reasonably have been foreseen when the Contractor submitted the Tender. If and to the extent that these more favorable conditions were encountered, the Architect may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in

similar parts of the Works, shall not result in a net reduction in the Contract Price.

4.12.7 The Architect shall take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor's interpretation of any such evidence.

#### 4.13 *Rights of Way and Facilities*

Unless otherwise specified in the Contract the Procuring Entity shall provide effective access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities outside the Site which he may require for the purposes of the Works.

#### 4.14 *Avoidance of Interference*

4.14.1 The Contractor shall not interfere unnecessarily or improperly with:

- a) The convenience of the public, or
- b) The access to and use and occupation of all roads and foot paths, irrespective of whether they are public or in the possession of the Procuring Entity or of others.

4.14.2 The Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

#### 4.15 *Access Route*

4.15.1 The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.

4.15.2 Except as otherwise stated in these Conditions:

- a) The Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;
- b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;
- c) the Procuring Entity shall not be responsible for any claims which may arise from the use or otherwise of any access route;
- d) the Procuring Entity does not guarantee the suitability or availability of particular access routes; and
- e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

#### 4.16 *Transport of Goods*

Unless otherwise stated in the Special Conditions:

- a) the Contractor shall give the Architect not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
- b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
- c) the Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods and shall negotiate and pay all claims arising from their transport.

#### 4.17 *Contractor's Equipment*

The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However,

consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

#### 4.18 *Protection of the Environment*

4.18.1 The contractor shall comply with the applicable environmental laws, regulations and policies.

4.18.2 The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

4.18.3 The Contractors shall ensure that emissions, surfaced is charges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

#### 4.19 *Electricity, Water and Gas*

4.19.1 The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.

4.19.2 The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Specifications. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

4.19.3 The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Architect in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

#### 4.20 *Procuring Entity's Equipment and Free-Issue Materials*

4.20.1 The Procuring Entity shall make the Procuring Entity's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

- a) The Procuring Entity shall be responsible for the Procuring Entity's Equipment, except that
- b) the Contractor shall be responsible for each item of Procuring Entity's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.

4.20.1 The appropriate quantities and the amounts due (at such stated prices) for the use of Procuring Entity's Equipment shall be agreed or determined by the Architect in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Procuring Entity.

4.20.2 The Procuring Entity shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Specification. The Procuring Entity shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them and shall promptly give notice to the Architect of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Procuring Entity shall immediately rectify the notified shortage, defect or default.

4.20.3 After this visual inspection, the free-issue materials shall come under the care, custody and control of the Contractor. The Contractor's obligations of inspection, care, custody and control shall not relieve the Procuring Entity of liability for any shortage, defect or default not apparent from a visual inspection.

#### 4.21 *Progress Reports*

4.21.1 Unless otherwise stated in the Special Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Architect in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

4.21.2 Reporting shall continue until the Contractor has completed all work which is known to be outstanding at

the completion date stated in the Taking-Over Certificate for the Works. Each report shall include:

- a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- b) photographs showing the status of manufacture and of progress on the Site;
- c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:
  - i) commencement of manufacture,
  - ii) Contractor's inspections,
  - iii) tests, and
  - iv) shipment and arrival at the Site;
- d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
- e) copies of quality assurance documents, test results and certificates of Materials;
- f) list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];
- g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- h) comparison so factual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

#### 4.22 *Security of the Site*

Unless otherwise stated in the Special Conditions:

- a) The Contractor shall be responsible for keeping unauthorized persons off the Site, and
- b) authorized persons shall be limited to the Contractor's Personnel and the Procuring Entity's Personnel; and to any other personnel notified to the Contractor, by the Procuring Entity or the Engineer, as authorized personnel of the Procuring Entity's other contractors on the Site.

#### 4.23 *Contractor's Operations on Site*

4.23.1 The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Architect as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.

4.23.2 During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.

4.23.3 Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.

#### 4.24 *Fossils*

4.24.1 All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Procuring Entity. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

4.24.2 The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the

instructions, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost, which shall be included in the Contract Price.  
After receiving this further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

## 5 NOMINATED SUBCONTRACTORS

### 5.1 Definition of "nominated Subcontractor"

In this Contract, "nominated Subcontractor" means a Subcontractor:

- a) Who is nominated by the Procuring Entity, or
- b) Contractor has nominated as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

### 5.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Procuring Entity as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Procuring Entity agrees in writing to indemnify the Contractor against and from the consequences of the matter:

- a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;
- b) the nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or
- c) the nominated Subcontractor does not accept to enter into a subcontract which specifies that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:
  - i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge his obligations and liabilities under the Contract;
  - ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities, and
  - iii) be paid only if and when the Contractor has received from the Procuring Entity payments for sums due under the Subcontract referred to under Sub-Clause 5.3 [Payment to nominated Subcontractors].

### 5.3 Payments to nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor which the Architect certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with sub-paragraph

(b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

### 5.4 Evidence of Payments

5.4.1 Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Architect may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

- (a) Submits this reasonable evidence to the Engineer, or
- (b)
  - i) Satisfies the Architect in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and
  - ii) Submits to the Architect reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement, then the Procuring Entity may (at his sole discretion) pay, directly to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay,

to the Procuring Entity, the amount which the nominated Subcontractor was directly paid by the Procuring Entity.

## 6 STAFF AND LABOR

### 61 Engagement of Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, feeding, transport, and, when appropriate, housing. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labor with appropriate qualifications and experience from sources within Kenya.

### 62 Rates of Wages and Conditions of Labor

62.1 The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by Procuring Entity's whose trade or industry is similar to that of the Contractor.

62.2 The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in Kenya in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of Kenya for the time being in force, and the Contractor shall perform such duties in regard to such deductions there of as may be imposed on him by such Laws.

### 63 Persons in the Service of Procuring Entity

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Procuring Entity's Personnel.

### 64 Lab or Laws

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, employment of children, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights. The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

### 65 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the **Special Conditions of Contract**, unless:

- a) Otherwise stated in the Contract,
- b) The Architect gives consent, or
- c) The work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer, provided that work done outside the normal working hours shall be considered and paid for as overtime.

### 66 Facilities for Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities on site for the Contractor's Personnel. The Contractor shall also provide facilities for the Procuring Entity's Personnel as stated in the Specifications. The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

### 67 Health and Safety

67.1 The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Procuring Entity's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

6.72 The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide what ever is required by this person to exercise this responsibility and authority.

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

6.74 The Contractor shall conduct an awareness programme on HIV and other sexually transmitted diseases via an approved service provider and shall undertake such other measures taken to reduce the risk of the transfer of these diseases between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

#### **6.8** *Contractor's Superintendence*

6.81 Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary super intendence to plan, arrange, direct, manage, inspect and test the work.

6.82 Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

#### **6.9** *Contractor's Personnel*

6.91 The Contractor's Personnel shall be appropriately qualified, skilled and experienced in their respective trades or occupations. The Contractor's Key personnel shall be named in the Special Conditions of Contract. The Architect may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative if applicable, who:

- a) Persists in any misconduct or lack of care,
- b) Carries out duties in competently or negligently,
- c) fails to conform with any provisions of the Contract,
- d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment, or
- e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works.

6.92 If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

#### **6.10** *Records of Contractor's Personnel and Equipment*

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

#### **6.11** *Disorderly Conduct*

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

#### **6.12** *Foreign Personnel*

6.12.1 The Contractor shall not employ foreign personnel unless the contractor demonstrates that there are no Kenyans with the required skills.

6.12.2 The Contractor shall be responsible for the return of any foreign personnel to the place where they were recruited or to their domicile. In the event of the death in Kenya of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return

or burial.

**6.13** *Supply of Water*

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

**6.14** *Measures against Insect and Pest Nuisance*

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

**6.15** *Alcoholic Liquor or Drugs*

The Contractor shall not, otherwise than in accordance with the Laws of Kenya, onsite, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereof by Contractor's Personnel.

**6.16** *Prohibition of Forced or Compulsory Labour*

The Contractor shall not employ forced labor, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

**6.17** *Prohibition of Harmful Child Labor*

The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where the relevant labour laws of Kenya have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.

**6.18** *Employment Records of Workers*

The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Engineer. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment].

**6.19** *Workers' Organizations*

The Contractor shall comply with the relevant labor laws that recognize workers' rights to form and to join workers' organizations of their choosing without interference.

**6.20** *Non-Discrimination and Equal Opportunity*

The Contractor shall base the labour employment on the principle of equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline.

**7** *PLANT, MATERIALS AND WORKMANSHIP*

**7.1** **Manner of Execution**

The Contractor shall carry out the manufacture/assembly of plant, the production and manufacture of Materials, and all other execution of the Works:

- a) In the manner (if any) specified in the Contract,
- b) in a proper workmanlike and careful manner, in accordance with recognized good practice, and
- c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the

## Contract.

### 72 *Samples*

The Contractor shall submit the following samples of Materials, and relevant information, to the Architect for consent prior to using the Material sin or for the Works:

- a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and
- b) additional samples instructed by the Architect as a Variation.

Each sample shall be labeled as to origin and intended use in the Works.

### 73 *Inspection*

7.3.1 The Procuring Entity's Personnel shall at all reasonable times:

- a) Have full access to all parts of the Site and to all places from which natural Materials are being obtained, and
- b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

7.3.2 The Contractor shall give the Procuring Entity's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

7.3.3 The Contractor shall give notice to the Architect whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Architect shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Architect does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and there after reinstate and make good, all at the Contractor's cost.

### 74 *Testing*

7.4.1 This Sub-Clause shall apply to all tests specified in the Contract.

7.4.2 Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labor, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

7.4.3 The Architect may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

7.4.4 The Architect shall give the Contractor not less than 24 hours' notice of the Architect intention to attend the tests. If the Architect does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Architect presence.

7.4.5 If the Contractor suffers delay and/ or incurs Cost from complying with these instructions or as a result of a delay for which the Procuring Entity is responsible, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

7.4.6 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to

agree or determine these matters.

7.4.7 The Contractor shall promptly forward to the Architect duly certified reports of the tests. When the specified tests have been passed, the Architect shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Architect has not attended the tests, he shall be deemed to have accepted the readings as accurate.

#### **7.5** *Rejection*

7.5.1 If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Architect may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

7.5.2 If the Architect requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Procuring Entity to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity.

#### **7.6** *Remedial Work*

7.6.1 Notwithstanding any previous test or certification, the Architect may instruct the Contractor to:

- a) Remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
- b) remove and re-execute any other work which is not in accordance with the Contract, and
- c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseen event or otherwise.

7.6.2 The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).

7.6.3 If the Contractor fails to comply with the instruction, the Procuring Entity shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity all costs arising from this failure.

7.6.4 If the contractor repeatedly delivers defective work, the Procuring Entity may consider termination in accordance with Clause 15.

#### **7.7** *Ownership of Plant and Materials*

Except as otherwise provided in the Contract, each item of Plant and Materials shall become the property of the Procuring Entity at whichever is the earlier of the following times, free from liens and other encumbrances:

- a) When it is incorporated in the Works;
- b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

#### **7.8** *Royalties*

Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

- a) Natural materials obtained from outside the Site, and
- b) The disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.

### **8** *COMMENCEMENT, DELAYS AND SUSPENSION*

#### **8.1** *Commencement of Works*

8.1.1 Except as otherwise specified in the Special Conditions of Contract, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Architect notification recording the

agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:

- a) Signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of Kenya;
- b) except if otherwise specified in the Special Conditions of Contract, effective access to and possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.13 [Compliance with Laws] as required for the commencement of the Works.
- c) Receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor.

8.12 If the said Architect instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 16.2 [Termination by Contractor].

8.13 The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date and shall then proceed with the Works with due expedition and without delay.

## **82** *Time for Completion*

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

- a) Achieving the passing of the Tests on Completion, and
- b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

## **83** *Programme*

8.31 The Contractor shall submit a detailed time programme to the Architect within 14 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

- a) The order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,
- b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- c) the sequence and timing of inspections and tests specified in the Contract, and
- d) a supporting report which includes:
  - i) a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and
  - ii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

832 Unless the Engineer, within 14 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Procuring Entity's Personnel shall be entitled to rely upon the programme when planning their activities.

833 The Contractor shall promptly give notice to the Architect of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works.

834 If, at anytime, the Architect gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contractor to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Architect in accordance with this Sub-Clause.

#### 84 *Extension of Time for Completion*

84.1 The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:

- a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,
- b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
- c) exceptionally adverse climatic conditions,
- d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or
- e) any delay, impediment or prevention caused by or attributable to the Procuring Entity, the Procuring Entity's Personnel, or the Procuring Entity's other contractors.

84.2 If the Contractor considers itself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Architect in accordance with Sub-Clause 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Architect shall review previous determinations and may increase, but shall not decrease, the total extension of time.

#### 85 *Delays Caused by Authorities*

If the following conditions apply, namely:

- a) The Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in Kenya,
- b) These authorities delay or disrupt the Contractor's work, and
- c) the delay or disruption was Unforeseeable, then this delay or disruption will be considered as a cause of delay under subparagraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

#### 86 *Rate of Progress*

86.1 If, at anytime:

- a) Actual progress is too slow to complete within the Time for Completion, and/or
- b) Progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3 [Programme], other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Architect may instruct the Contractor to submit, under Sub-Clause 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

86.2 Unless the Architect notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Procuring Entity to incur additional costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay these costs to the Procuring Entity, in addition to delay damages (if any) under Sub-Clause 8.7 below.

86.3 Additional costs of revised methods including acceleration measures, instructed by the Architect to reduce delays resulting from causes listed under Sub-Clause 8.4 [Extension of Time for Completion] shall be paid by the Procuring Entity, without generating, however, any other additional payment benefit to the Contractor.

87 *Delay Damages*

87.1 If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay delay damages to the Procuring Entity for this default. These delay damages shall be the sum stated in the **Special Conditions of Contract**, which shall be paid for everyday which shall elapse between the relevant Time for Completion and the date stated in the taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Special Conditions of Contract.

87.2 These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Procuring Entity] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

88 *Suspension of Work*

88.1 The Architect may at anytime instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

88.2 The Architect may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

89 *Consequences of Suspension*

89.1 If the Contractor suffers delay and/or incurs Cost from complying with the Architect instructions under Sub-Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) Payment of any such Cost, which shall be included in the Contract Price.

89.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

89.3 The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 8.8 [Suspension of Work].

810 *Payment for Plant and Materials in Event of Suspension*

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/ or Materials which have not been delivered to Site, if:

- a) The work on Plant or delivery of Plant and/ or Materials has been suspended for more than 30 days, and
- b) the Contractor has marked the Plant and/or Materials as the Procuring Entity's property in accordance with the Architect instructions.

811 *Prolonged Suspension*

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Architect permission to proceed. If the Architect does not give permission within 30 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

After the permission or instruction to proceed is given, the Contractor and the Architect shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Architect an instruction to this effect under Clause 13 [Variations and Adjustments].

**9 TESTS ON COMPLETION**

**9.1 Contractor's Obligations**

9.1.1 The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [Contractor's General Obligations].

9.1.2 The Contractor shall give to the Architect not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Architect shall instruct.

9.1.3 In considering the results of the Tests on Completion, the Architect shall make allowances for the effect of any use of the Works by the Procuring Entity on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Engineer.

**9.2 Delayed Tests**

9.2.1 If the Tests on Completion are being unduly delayed by the Procuring Entity, Sub-Clause 7.4 [Testing] (fifth paragraph) and/ or Sub-Clause 10.3 [Interference with Tests on Completion] shall be applicable.

9.2.2 If the Tests on Completion are being unduly delayed by the Contractor, the Architect may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Engineer.

9.2.3 If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Procuring Entity's Personnel may proceed with the Test at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

**9.3 Retesting of related works**

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [Rejection] shall apply, and the Architect or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

**9.4 Failure to Pass Tests on Completion**

9.4.1 If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Architect shall be entitled to:

- a) Order further repetition of Tests on Completion under Sub-Clause 9.3; or
- b) if the failure deprives the Procuring Entity of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Procuring Entity shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause 1.4 [Failure to Remedy Defects].

**10 PROCURING ENTITY'S TAKING OVER**

**10.1 Taking Over of the Works and Sections**

10.1.1 Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Procuring Entity when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii)

a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.

- 10.1.2 The Contractor may apply by notice to the Architect for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.
- 10.1.3 The Architect shall, within 30 days after receiving the Contractor's application:
- a) Issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
  - b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under his Sub-Clause.
- 10.1.4 If the Architect fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 30 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.

## **10.2** *Taking Over of Parts of the Works*

- 10.2.1 The Architect may, at the sole discretion of the Procuring Entity, issue a Taking-Over Certificate for any part of the Permanent Works.
- 10.2.2 The Procuring Entity shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Architect has issued a Taking-Over Certificate for this part. However, if the Procuring Entity does use any part of the Works before the Taking-Over Certificate is issued:
- a) The part which is used shall be deemed to have been taken over as from the date on which it is used,
  - b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Procuring Entity, and
  - c) if requested by the Contractor, the Architect shall issue a Taking-Over Certificate for this part.
- 10.2.3 After the Architect has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.
- 10.2.4 If the Contractor incurs Cost as a result of the Procuring Entity taking over and/or using a part of the Works, other than such use as is specified in the Contract agreed by the Contractor, the Contractor shall (i) give notice to the Architect and (ii) be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to payment of any such accrued costs, which shall be included in the Contract Price. After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this accrued cost.
- 10.2.5 If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages there after for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages] and shall not affect the maximum amount of these damages.

## **10.3** *Interference with Tests on Completion*

- 10.3.1 If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Procuring Entity is responsible, the Procuring Entity shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been

completed.

- 10.3.2 The Architect shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Architect shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.
- 10.3.3 If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:
- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
  - b) payment of any such accrued costs, which shall be included in the Contract Price.
- 10.3.4 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

#### **10.4** *Surfaces Requiring Reinstatement*

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

## **II. DEFECTS LIABILITY**

### **11.1 Completion of Outstanding Work and Remedying Defects**

- 11.1.1 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable there after, the Contractor shall:
- a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and
  - b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Procuring Entity on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).
- 11.1.2 If a defect appears or damage occurs, the Contractor shall be notified accordingly by the Engineer.

#### **11.2** *Cost of Remedying Defects*

- 11.2.1 All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:
- a) Any design for which the Contractor is responsible,
  - b) Plant, Materials or workmanship not being in accordance with the Contract, or
  - c) Failure by the Contractor to comply with any other obligation.
- 11.2.2 If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Procuring Entity, and Sub-Clause 13.3 [Variation Procedure] shall apply.

#### **11.3** *Extension of Defects Notification Period*

- 11.3.1 The Procuring Entity shall be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.
- 11.3.2 If delivery and/ or erection of Plant and/ or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this

Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/ or Materials would otherwise have expired.

#### **11.4** *Failure to Remedy Defects*

11.4.1 If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by the Engineer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

11.4.2 If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Procuring Entity may (at his option):

- (a) Carry out the work itself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity the costs reasonably incurred by the Procuring Entity in remedying the defect or damage;
- (b) Require the Architect to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or
- (c) if the defect or damage deprives the Procuring Entity of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract otherwise, the Procuring Entity shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

#### **11.5** *Removal of Defective Work*

If the defect or damage cannot be remedied expeditiously on the Site and the Procuring Entity gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.

#### **11.6** *Further Tests*

11.6.1 If the work of remedying of any defect or damage may affect the performance of the Works, the Architect may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 14 days after the defect or damage is remedied.

11.6.2 These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.

#### **11.7** *Right of Access*

Until the Completion Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Procuring Entity's reasonable security restrictions.

#### **11.8** *Contractor to Search*

The Contractor shall, if required by the Engineer, search for the cause of any defect or parts of the works that have already accepted, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Architect in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.

#### **11.9** *Completion Certificate*

11.9.1 Performance of the Contractor's obligations shall not be considered to have been completed until the Architect has issued the Completion Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

11.9.2 The Architect shall issue the Completion Certificate within 30 days after the latest of the expiry dates of the

Defects Liability Period, or as soon there after as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. A copy of the Completion Certificate shall be issued to the Procuring Entity.

11.9.3 Only the Completion Certificate shall be deemed to constitute acceptance of the Works.

#### **11.10** *Unfulfilled Obligations*

After the Completion Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

#### **11.11** *Clearance of Site*

11.11.1 Upon receiving the Completion Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.

11.11.2 If all these items have not been removed within 30 days after receipt by the Contractor of the Completion Certificate, the Procuring Entity may sell or otherwise dispose of any remaining items. The Procuring Entity shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.

11.11.3 Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Procuring Entity's costs, the Contractor shall pay the outstanding balance to the Procuring Entity.

### **12** *MEASUREMENT AND DEVALUATION*

#### **121** **Works to be Measured**

12.1.1 The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement on Completion] and 14.11 [Application for Final Payment Certificate] the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.

12.1.2 Whenever the Architect requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

- a) promptly either attend or send another qualified representative to assist the Architect in making the measurement, and
- b) supply any particulars requested by the Engineer.

12.1.3 If the Contractor fails to attend or send a representative, the measurement made by the Architect shall be accepted as accurate.

12.1.4 Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agree her records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

12.1.5 If the Contractor examines and disagrees the records, and/ or does not sign them as agreed, then the Contractor shall give notice to the Architect of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Architect shall review the records and either confirm or vary them and certify the payment of the undisputed part. If the Contractor does not so give notice to the Architect within 14 days after being requested to examine the records, they shall be accepted as accurate.

#### **122** *Method of Measurement*

Except as otherwise stated in the Contract:

- a) Measurement shall be made of the net actual quantity of each item of the Permanent Works, and
- b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

## **123**     *Evaluation*

- 123.1     Except as otherwise stated in the Contract, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of work one by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 and 12.2 and the appropriate rate or price for the item.
- 123.2     For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contractor, if there is no such item, specified for similar work.
- 123.3     Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.
- 123.4     However, for a new item of work, a new rate or price shall be appropriate for such item of work if:
- a)     The work is instructed under Clause 13 [Variations and Adjustments],
  - b)     no rate or price is specified in the Contract for this item, and
  - c)     no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.
- 123.5     Each new rate or price shall be derived from any relevant rates or prices in the Contract. If no rates or prices are relevant for the new item of work, it shall be derived from the reasonable Cost of executing such work, prevailing market rates, together with profit, taking account of any other relevant matters.
- 123.6     Until such time as an appropriate rate or price is agreed or determined, the Architect shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned work commences.
- 123.7     Where the contract price is different from the corrected tender price, in order to ensure the contractor is not paid less or more relative to the contract price (*which would be the tender price*), payment valuation certificates and variation orders on omissions and additions valued based on rates in the Bill of Quantities or schedule of rates in the Tender, will be adjusted by a plus or minus percentage. The percentage already worked out during tender evaluation is worked out as follows:  $(\text{corrected tender price} - \text{tender price}) / \text{tender price} \times 100$ .

## **124**     *Omissions*

Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:

- a)     The Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
- b)     The omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- c)     this cost is not deemed to be included in the evaluation of any substituted work; then the Contractor shall give notice to the Architect accordingly, with supporting particulars. Upon receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

## **13**     *VARIATIONS AND ADJUSTMENTS*

### **131**     **Right to Vary**

- 13.1.1     Variations may be initiated by the Architect at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal. No Variation instructed by the Architect under this Clause shall in any way vitiate or invalidate the Contract.
- 13.1.2     The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Architect stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Architect shall cancel, confirm or vary the instruction.
- 13.1.3     Each Variation may include:
- a)     changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
  - b)     changes to the quality and other characteristics of any item of work,

- c) changes to the levels, positions and/ or dimensions of any part of the Works,
- d) omission of any work unless it is to be carried out by others,
- e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- f) changes to the sequence or timing of the execution of the Works.

13.1.4 The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Architect instructs after obtaining approval of the Procuring Entity.

### **13.2** *Variation Order Procedure*

13.2.1 Prior to any Variation Order under Sub-Clause 13.1.4 the Architect shall notify the Contractor of the nature and form of such variation. As soon as possible after having received such notice, the Contractor shall submit to the Engineer:

- a) A description of work, if any, to be performed and a programme for its execution, and
- b) the Contractor's proposals for any necessary modifications to the Programme according to Sub-Clause 8.3 or to any of the Contractor's obligations under the Contract, and
- c) the Contractor's proposals for adjustment to the Contract Price.

Following the receipt of the Contractor's submission the Architect shall, after due consultation with the Employer and the Contractor, decide as soon as possible whether or not the variation shall be carried out. If the Architect decides that the variation shall be carried out, he shall issue a Variation Order clearly identified as such in accordance with the Contractor's submission or as modified by agreement.

If the Architect and the Contractor are unable to agree the adjustment of the Contract Price, the provisions of Sub-Clause 13.2.2 shall apply.

### **13.2.2** *Disagreement on Adjustment of the Contract Price*

If the Contractor and the Architecture unable to agree on the adjustment of the Contract Price, the adjustment shall be determined in accordance with the rates specified in the Bills of Quantities or Schedule of Daywork Prices. If the rates contained in the Bills of Quantities or Dayworks Prices are not directly applicable to the specific work in question, suitable rates shall be established by the Architect reflecting the level of pricing in the Dayworks Prices. Where rates are not contained in the said Prices, the amount shall be such as is in all the circumstances reasonable, reflecting a market price. Due account shall be taken of any over-or under-recovery of overheads by the Contractor in consequence of the variation. The Contractor shall also be entitled to be paid:

- a) The cost of any partial execution of the Works rendered useless by any such variation,
- b) The cost of making necessary alterations to Plant already manufactured or in the course of manufacture or of any work done that has to be altered in consequence of such a variation,
- c) any additional costs incurred by the Contractor by the disruption of the progress of the Works as detailed in the Programme, and
- d) the net effect of the Contractor's finance costs, including interest, caused by the variation.

The Architect shall on this basis determine the rates or prices to enable on-account payment to be included in certificates of payment.

### **13.2.3** *Contractor to Proceed*

On receipt of a Variation Order, the Contractor shall forth with proceed to carry out the variation and be bound to these Conditions in so doing as if such variation was stated in the Contract. The work shall not be delayed pending the granting of an extension of the Time for Completion or an adjustment to the Contract Price under Sub-Clause 13.3.

### **13.3** *Value Engineering*

13.3.1 The Contractor may, at anytime, submit to the Architect written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Procuring Entity of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Procuring Entity of the completed Works, or

(iv) otherwise be of benefit to the Procuring Entity.

13.3.2 The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].

13.2.3 If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

- a) The Contractor shall design this part,
- b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
- c) if this change results in a reduction in the contract value of this part, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
  - i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.8 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and
  - ii) the reduction (if any) in the value to the Procuring Entity of the varied works, taking account of any improvement in quality, anticipated life or operational efficiencies.

13.3.4 However, if the amount established in item 13.2.3 (c) (i) is less than amount established in item 13.2.3 (c) (ii), there shall not be a fee. However, if the amount established in item 13.2.3 (c) (i) is more than amount established in item 13.2.3 (c) (ii), it shall result in a price variation to the Procuring Entity.

#### **13.4** *Variation Procedure for Value Engineering proposal*

13.4.1 If the Architect requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

- a) A description of the proposed work to be performed and a programme for its execution,
- b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
- c) the Contractor's proposal for evaluation of the Variation.

13.4.2 The Architect shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Project Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst waiting a response.

13.4.3 Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Architect to the Contractor, who shall acknowledge receipt.

13.4.4 Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Architect instructs or approves otherwise in accordance with this Clause.

#### **13.5** *Payment in Applicable Currencies*

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

#### **13.6** *Provisional Sums*

13.6.1 Each Provisional Sum shall only be used, in whole or in part, in accordance with the Architect instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Architect shall have instructed. For each Provisional Sum, the Architect May instruct:

- a) Work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or
- b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:

- i) The actual amounts paid (or due to be paid) by the Contractor, and
- ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in **the Special Conditions of Contract** shall be applied.

13.6.2 The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

### **13.7** *Dayworks*

13.7.1 For work of a minor or incidental nature, the Architect may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this Sub-Clause shall not apply.

13.7.2 Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.

13.7.3 Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver reach day to the Architect accurate statements induplicate which shall include the following details of the resources used in executing the previous day's work:

- a) The names, occupations and time of Contractor's Personnel,
- b) the identification, type and time of Contractor's Equipment and Temporary Works, and
- c) the quantities and types of Plant and Materials used.

13.7.4 One copy of each statement will, if correct, or when agreed, be signed by the Architect and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

### **13.8** *Adjustments for Changes in Legislation*

13.8.1 The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of Kenya (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

13.8.2 If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) payment of any such Cost, which shall be included in the Contract Price.

13.8.3 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

13.8.4 Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the table of adjustment data in accordance with the provisions of Sub-Clause 13.8 [Adjustments for Changes in Cost].

### **13.9** *Adjustments for Changes in Cost*

13.9.1 In this Sub-Clause, "table of adjustment data" means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

13.9.2 If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labor, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not

covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included a mounts to cover the contingency of other rises and falls in costs.

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

### **Price Adjustment Formula**

Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies:

$$P = A + B \frac{I_m}{I_o}$$

where:

**P** is the adjustment factor for the portion of the Contract Price payable.

**A** and **B** are coefficients **specified in the SCC**, representing then on adjustable and adjustable portions, respectively, of the Contract Price payable and

**I<sub>m</sub>** is the index prevailing at the end of the month being invoiced and **I<sub>o</sub>** is the index prevailing 30 days before Bid opening for inputs payable.

**NOTE:** The sum of the two coefficients A and B should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A, for the non adjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.

- 13.9.4 The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. Forth is purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.
- 13.9.5 Incases where the "currency of index" is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the Central Bank of Kenya, of this relevant currency on the above date for which the index is required to be applicable.
- 13.9.6 Until such time as each current cost index is available, the Architect shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.
- 13.9.7 If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices there after shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price, whichever is more favorable to the Procuring Entity.
- 13.9.8 The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or in applicable, as a result of Variations.

## **14 CONTRACT PRICE AND PAYMENT**

### **14.1 The Contract Price**

14.1.1 Unless otherwise stated in the Special Conditions:

- a) The value of the payment certificate shall be agreed or determined under Sub-Clause 12.3 [Evaluation]

and be subject to adjustments in accordance with the Contract;

- b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];
- c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:
  - i) of the Works which the Contractor is required to execute, or
  - ii) for the purposes of Clause 12 [Measurement and Evaluation]; and
- d) the Contractor shall submit to the Engineer, within 30 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Architect may take account of the break down when preparing Payment Certificates but shall not be bound by it.

14.1.2 Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts there for, imported by the Contractor for the sole purpose of executing the Contract shall not be exempt from the payment of import duties and taxes upon importation.

## **14.2** *Advance Payment*

**14.2.1** The Procuring Entity shall make an advance payment, as an interest-free loan for mobilization and cashflow support, when the Contractor submits a guarantee in accordance with this Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the **Special Conditions of Contract**.

14.2.2 Unless and until the Procuring Entity receives this guarantee, or if the total advance payment is not stated in the Special Conditions of Contract, this Sub-Clause shall not apply.

14.2.3 The Architect shall deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Procuring Entity receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment. This guarantee shall be issued by a reputable bank or financial institutions elected by the Contractor and shall be in the form annexed to the Special Conditions or in another form approved by the Procuring Entity.

14.2.4 The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 30 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

14.2.5 Unless stated otherwise in the **Special Conditions of Contract**, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Architect in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates], as follows:

- a) Deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent (30%) of the Accepted Contract Amount less Provisional Sums; and
- b) deductions shall be made at the amortization rate stated in the **Special Conditions of Contract** of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent (90%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.

14.2.6 If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Procuring Entity], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Procuring Entity], except for Sub-Clause 14.2.7 [Procuring Entity's Entitlement to Termination for Convenience], payable by the

Contractor to the Procuring Entity.

#### **143** *Application for Interim Payment Certificates*

14.3.1 The Contractor shall submit a Statement (in number of copies indicated in the **Special Conditions of Contract**) to the Architect after the end of each month, in a form approved by the Engineer, showing in detail the amounts to which the Contractor considers itself to be entitled, together with supporting documents which shall include there portion the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports].

14.3.2 The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

- a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);
- b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];
- c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in the **Special Conditions of Contract** to the total of the above amounts, until the amount so retained by the Procuring Entity reaches the limit of Retention Money (if any) stated in the **Special Conditions of Contract**;
- d) any amounts to be added for the advance payment and (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];
- e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];
- f) any other additions or deductions which may have become due under the Contract otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and
- g) the deduction of amounts certified in all previous Payment Certificates.

#### **144** *Schedule of Payments*

14.4.1 If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

- a) The instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];
- b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and
- c) If these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Architect may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less or more than that on which the instalments were previously based.

14.4.2 If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

#### **145** *Plant and Materials intended for the Works*

14.5.1 If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

14.5.2 If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Schedules, this Sub-Clause shall not apply.

14.5.3 The Architect shall determine and certify each addition if the following conditions are satisfied:

- a) The Contractor has:
  - i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
  - (ii) submitted statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;
 and either:
- b) the relevant Plant and Materials:
  - i) are those listed in the Schedules for payment when shipped,
  - ii) have been shipped to Kenya, enroute to the Site, in accordance with the Contract; and
  - iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Architect together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Procuring Entity in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration; or
- c) the relevant Plant and Materials:
  - i) are those listed in the Schedules for payment when delivered to the Site, and
  - ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration and appear to be in accordance with the Contract.

145.4 The additional amount to be certified shall be the equivalent of eighty percent (80%) of the Architect determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

145.5 The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials.

#### **146** *Issue of Interim Payment Certificates*

146.1 No amount will be certified or paid until the Procuring Entity has received and approved the Performance Security. Thereafter, the Architect shall, within 30 days after receiving a Statement and supporting documents, deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate which shall state the amount which the Architect fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Architect on the Statement if any.

146.2 However, prior to issuing the Taking-Over Certificate for the Works, the Architect shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated **in the Special Conditions of Contract**. In this event, the Architect shall give notice to the Contractor accordingly.

146.3 An Interim Payment Certificate shall not be withheld for any other reason, although:

- a) if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or
- b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

4.6.4 The Architect may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Architect acceptance, approval, consent or satisfaction.

#### **147** *Payment*

- 14.7.1 The Procuring Entity shall pay to the Contractor:
- a) The advance payment shall be paid within 60 days after signing of the contract by both parties or within 60 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub- Clause 14.2 [Advance Payment], whichever is later;
  - b) The amount certified in each Interim Payment Certificate within 60 days after the Architect Issues Interim Payment Certificate; and
  - c) the amount certified in the Final Payment Certificate within 60 days after the Procuring Entity Issues Interim Payment Certificate; or after determination of any disputed amount shown in the Final Statement in accordance with Sub-Clause 16.2 [Termination by Contractor].

14.7.2 Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (forth is currency) specified in the Contract.

#### **14.8** *Delayed Payment*

14.8.1 If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive financing charges (simple interest) monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b) of the date on which any Interim Payment Certificate is issued.

14.8.2 These financing charges shall be calculated at the annual rate of three percentage points above the mean rate of the Central Bank in Kenya of the currency of payment, or if not available, the inter bank offered rate, and shall be paid in such currency.

14.8.3 The Contractor shall be entitled to this payment without formal notice and certification, and without prejudice to any other right or remedy.

#### **14.9** *Payment of Retention Money*

14.9.1 When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Architect for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

14.9.2 Promptly after the latest of the expiry dates of the Defects Liability Periods, the outstanding balance of the Retention Money shall be certified by the Architect for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

14.9.3 However, if any work remains to be executed under Clause 11 [Defects Liability], the Architects shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

14.9.4 When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost].

14.9.5 Unless otherwise stated in the Special Conditions, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a Retention Money Security guarantee, in the form annexed to the Special Conditions or in another form approved by the Procuring Entity and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money.

14.9.6 The Procuring Entity shall return the Retention Money Security guarantee to the Contractor within 14 days after receiving a copy of the Completion Certificate.

#### **14.10** *Statement at Completion*

- 14.10.1 Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Architect three copies of a Statement at completion with supporting documents, in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates], showing:
- a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,
  - b) any further sums which the Contractor considers to be due, and
  - c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.
- 14.10.2 The Architect shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

#### **14.11** *Application for Final Payment Certificate*

- 14.11.1 Within 60 days after receiving the Completion Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement with supporting documents showing in detail in a form approved by the Engineer:
- a) The value of all work done in accordance with the Contract, and
  - b) Any further sums which the Contractor considers to be due to him under the Contractor otherwise.
- 14.11.2 If the Architect disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Architect may reasonably require within 30 days from receipt of said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Architect the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".
- 14.11.3 However, if, following discussions between the Architect and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Architect shall deliver to the Procuring Entity (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] or Sub-Clause 20.5 [Amicable Settlement], the Contractor shall then prepare and submit to the Procuring Entity (with a copy to the Engineer) a Final Statement.

#### **14.12** *Discharge*

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the out standing balance of this total, in which event the discharge shall be effective on such date.

#### **14.13** *Issue of Final Payment Certificate*

- 14.13.1 Within 30 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Architect shall deliver, to the Procuring Entity and to the Contractor, the Final Payment Certificate which shall state:
- a) The amount which he fairly determines is finally due, and
  - b) After giving credit to the Procuring Entity for all amounts previously paid by the Procuring Entity and for all sums to which the Procuring Entity is entitled, the balance (if any) due from the Procuring Entity to the Contractor or from the Contractor to the Procuring Entity, as the case may be.
- 14.13.2 If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Architect shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 30 days, the Architect shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

#### **14.14** *Cessation of Procuring Entity's Liability*

- 14.14.1 The Procuring Entity shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:
- a) in the Final Statement and also,
  - b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 14.10 [Statement at Completion].
- 14.14.2 However, this Sub-Clause shall not limit the Procuring Entity's liability under his in demnification obligations, or the Procuring Entity's liability in any case of fraud, deliberate default or reckless misconduct by the Procuring Entity.

#### **14.15** *Currencies of Payment*

The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

- a) If the Accepted Contract Amount was expressed in Local Currency only:
  - i) the proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;
  - ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and
  - iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub-paragraph (a) (i) above;
- b) payment of the damages specified in the Special Conditions of Contract, shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
- c) other payments to the Procuring Entity by the Contractor shall be made in the currency in which the sum was expended by the Procuring Entity, or in such currency as may be agreed by both Parties;
- d) if any amount payable by the Contractor to the Procuring Entity in a particular currency exceeds the sum payable by the Procuring Entity to the Contractor in that currency, the Procuring Entity may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
- e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the Central Bank of Kenya.

#### **15** *TERMINATION BY PROCURING ENTITY*

##### **15.1** *Notice to correct any defects or failures*

If the Contractor fails to carry out any obligation under the Contract, the Architect may by notice require the Contractor to make good the failure and to remedy it within 30 days.

##### **15.2** *Termination by Procuring Entity*

- 15.2.1 The Procuring Entity shall be entitled to terminate the Contract if the Contractor breaches the contract based on following circumstances which shall include but not limited to:
- a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
  - b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
  - c) without reasonable excuse fails:
    - i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
    - ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial

Work], within 30 days after receiving it,

- d) subcontracts the major part or whole of the Works or assigns the Contract without the consent of the Procuring Entity,
- e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or
- f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an induce mentor reward:
  - i) for doing or for bearing to do any action in relation to the Contract, or
  - ii) for showing or for bearing to show favor or disfavor to any person in relation to the Contract, or
  - iii) if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such induce mentor reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination, or
- g) If the contract or repeatedly fails to remedy delivers defective work,
- h) based on reasonable evidence, has engaged in Fraud and Corruption as defined in paragraph 2.2 of the Appendix B to these General Conditions, in competing for or in executing the Contract.

1522 In any of these events or circumstances, the Procuring Entity may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f) or (g) or (h), the Procuring Entity may by notice terminate the Contract immediately.

1523 The Procuring Entity's election to terminate the Contract shall not prejudice any other rights of the Procuring Entity, under the Contractor otherwise.

1524 The Contractor shall then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Engineer. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

1525 After termination, the Procuring Entity may complete the Works and/ or arrange for any other entities to do so. The Procuring Entity and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.

1526 The Procuring Entity shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Procuring Entity, these items may be sold by the Procuring Entity in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

### 153 *Valuation at Date of Termination*

As soon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.

### 154 *Payment after Termination*

After a notice of termination under Sub-Clause 15.2 [Termination by Procuring Entity] has taken effect, the Procuring Entity may:

- a) Proceed in accordance with Sub-Clause 2.5 [Procuring Entity's Claims],
- b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Procuring Entity, have been established, and/ or
- c) recover from the Contractor any losses and damages incurred by the Procuring Entity and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the

Procuring Entity shall pay any balance to the Contractor.

**155** *Procuring Entity's Entitlement to Termination for Convenience*

The Procuring Entity shall be entitled to terminate the Contract, at any time at the Procuring Entity's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 30 days after the later of the dates on which the Contractor receives this notice or the Procuring Entity returns the Performance Security. The Procuring Entity shall not terminate the Contract under this Sub-Clause in order to execute the Works itself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 16.2 [Termination by Contractor]. After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause 16.4 [Payment on Termination].

**156** *Fraud and Corruption*

The Contractor shall ensure compliance with the Kenya Government's Anti-Corruption Laws and its prevailing sanctions.

**157** *Corrupt gifts and payments of commission*

15.7.1 The Contractor shall not;

- a) Offer or give or agree to give to any person in the service of the Procuring Entity any gift or consideration of any kind as an inducement or reward for doing or for bearing to do or for having done or for borne to do any act in relation to the obtaining or execution of this or any other Contract for the Procuring Entity or for showing or for bearing to show favor or disfavor to any person in relation to this or any other contract for the Procuring Entity.
- b) Enter into this or any other contract with the Procuring Entity 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 is made particulars of any such commission and of the terms and conditions of any agreement for the payment there of have been disclosed in writing to the Procuring Entity.

15.7.2 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 and Asset Disposal Act (2015) and the Anti-Corruption and Economic Crimes Act (2003) of the Laws of Kenya.

**16** *SUSPENSION AND TERMINATION BY CONTRACTOR*

**16.1** **Contractor's Entitlement to Suspend Work**

16.1.1 If the Architect fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or Sub-Clause 14.7 [Payment], or not receiving instructions that would enable the contractor to proceed with the works in accordance with the program, the Contractor may, after giving not less than 30 days' notice to the Procuring Entity, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

16.1.2 The Contractor's action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Termination by Contractor].

16.1.3 If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

16.1.4 If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4

- [Extension of Time for Completion], and  
b) payment of any such Cost-plus profit, which shall be included in the Contract Price.

**162** After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

**163** *Termination by Contractor*

16.3.1 The Contractor shall be entitled to terminate the Contract if:

- a) the Architect fails, within 60 days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,
- b) the Contractor does not receive the amount due under an Interim Payment Certificate within 90 days after the expiry of the time stated in Sub-Clause 4.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Procuring Entity's Claims]),
- c) the Procuring Entity substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/or the ability of the Contractor to perform the Contract,
- d) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension], or
- e) the Procuring Entity becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events.
- f) the Contractor does not receive the Architect instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works].

16.3.2 In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Procuring Entity, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

16.3.3 The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract otherwise.

**164** *Cessation of Work and Removal of Contractor's Equipment*

After a notice of termination under Sub-Clause 15.5 [Procuring Entity's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

- a) cease all further work, except for such work as may have been instructed by the Architect for the protection of life or property or for the safety of the Works,
- b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and
- c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

**165** *Payment on Termination*

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Procuring Entity shall promptly:

- a) Return the Performance Security to the Contractor,
- b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and
- c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

## **17. RISK AND RESPONSIBILITY**

### **17.1 Indemnities**

- 17.1.1 The Contractor shall indemnify and hold harmless the Procuring Entity, the Procuring Entity's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:
- a) Bodily injury, sickness, disease or death, of any person what so ever arising out of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, willful actor breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and
  - b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.
- 17.1.2 The Procuring Entity shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property], unless and to the extent that any such damage or loss is attributable to any negligence, willful actor breach of the Contract by the contractor, the contractor's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

### **17.2 Contractor's Care of the Works**

- 17.2.1 The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Procuring Entity. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Procuring Entity.
- 17.2.2 After responsibility has accordingly passed to the Procuring Entity, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.
- 17.2.3 If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Procuring Entity's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.
- 17.2.4 The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

### **17.3 Procuring Entity's Risks**

The risks referred to in Sub-Clause 17.4 [Consequences of Procuring Entity's Risks] below, in so far as they directly affect the execution of the Works in Kenya, are:

- a) War hostilities (whether war be declared or not),
- b) rebellion, riot, commotion or disorder, terrorism, sabotage by persons other than the Contractor's Personnel,
- c) explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such explosives, radiation or radio-activity,

- d) pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds,
- e) use or occupation by the Procuring Entity of any part of the Permanent Works, except as may be specified in the Contract,
- f) design of any part of the Works by the Procuring Entity's Personnel or by others for whom the Procuring Entity is responsible, and
- g) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions.

#### **17.4** *Consequences of Procuring Entity's Risks*

17.4.1 If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Architect and shall rectify this loss or damage to the extent required by the Engineer.

17.4.2 If the Contractor suffers delay and/ or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Architect and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) Payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (e) and (g) of Sub-Clause 17.3 [Procuring Entity's Risks], Accrued Costs shall be payable.

17.4.3 After receiving further notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

#### **17.5** *Intellectual and Industrial Property Rights*

17.5.1 In this Sub-Clause, "infringement" shall refer to an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" shall refer to a claim (or proceedings pursuing a claim) alleging an infringement.

17.5.2 Whenever a Party does not give notice to the other Party of any claim within 30 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

17.5.3 The Procuring Entity shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

- a) An unavoidable result of the Contractor's compliance with the Contract, or
- b) A result of any Works being used by the Procuring Entity:
  - i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or
  - ii) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

17.5.4 The Contractor shall indemnify and hold the Procuring Entity harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

17.5.5 If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

17.5.6 For operation and maintenance of any plant or equipment installed, the contractor shall grant a non-exclusive and non-transferable license to the Procuring Entity under the patent, utility models, or other intellectual rights owned by the contractor or a third party from whom the contract or has received the rights to grant sub-licenses and shall also grant to the Procuring Entity a non-exclusive and non-transferable rights (without the rights to sub-license) to use the know how and other technical information disclosed to the contract or under the

contract. Nothing contained here-in shall be construed as transferring ownership of any patent, utility model, trademark, design, copy right, know-how or other intellectual rights from the contractor or any other third party to the Procuring Entity.

## **17.6** *Limitation of Liability*

17.6.1 Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contractor for any in director consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4(b) [Consequences of Procuring Entity's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].

17.6.2 The total liability of the Contractor to the Procuring Entity, under or in connection with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Procuring Entity's Equipment and Free-Issue Materials], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in **the Special Conditions of Contract**, or (if such multiplier or other sum is not so stated) the Accepted Contract Amount.

17.6.3 This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

## **17.7** *Use of Procuring Entity's Accommodation/Facilities*

17.7.1 The Contractor shall take full responsibility for the care of the Procuring Entity provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).

17.7.2 If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Procuring Entity is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer.

## **18** *INSURANCE*

### **18.1** **General Requirements for Insurances**

18.1.1 In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

18.1.2 Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Procuring Entity. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.3 Wherever the Procuring Entity is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Clause.

18.1.4 If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Procuring Entity shall act for Procuring Entity's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

18.1.5 Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or

damage.

- 18.1.6 The relevant insuring Party shall, within the respective periods stated in **the Special Conditions of Contract** (calculated from the Commencement Date), submit to the other Party:
- a) Evidence that the insurances described in this Clause have been affected, and
  - b) copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].
- 18.1.7 When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.
- 18.1.8 Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.
- 18.1.9 Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or at attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.
- 18.1.10 If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, the Contractor fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.
- 18.1.11 Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Procuring Entity, under the other terms of the Contract otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Procuring Entity.
- 18.1.12 Procuring Entity in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.
- 18.1.13 Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Procuring Entity's Claims] or Sub-Clause 20.1 [Contractor's Claims], as applicable.
- 18.1.14 The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 18) with insurers from any eligible source country.

**18.2** *Insurance for Works and Contractor's Equipment*

- 18.2.1 The insuring Party shall insure the Works, Plant, Material and Contractor's Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.
- 18.2.2 The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause 11 [Defects Liability]).
- 18.2.3 The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.
- 18.2.4 Unless otherwise stated in the Special Conditions, insurances under this Sub-Clause:

- a) Shall be effected and maintained by the Contractor as insuring Party,
- b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage,
- c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Procuring Entity's Risks],
- d) shall also cover, to the extent specifically required in the tendering documents of the Contract, loss or damage to a part of the Works which is attributable to the use or occupation by the Procuring Entity of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3 [Procuring Entity's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated in **the Special Conditions** of Contract (if an amount is not so stated, this sub-paragraph (d) shall not apply), and
- e) may however exclude loss of, damage to, and reinstatement of:
  - i) a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),
  - ii) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,
  - iii) a part of the Works which has been taken over by the Procuring Entity, except to the extent that the Contractor is liable for the loss or damage, and
  - iv) Goods while they are not in Kenya, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

18.2.5 If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Procuring Entity, with supporting particulars. The Procuring Entity shall then (i) be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

### **18.3** *Insurance against Injury to Persons and Damage to Property*

18.3.1 The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

18.3.2 This insurance shall be for a limit per occurrence of not less than the amount stated in **the Special Conditions of Contract**, with no limit on the number of occurrences. If an amount is not stated in the **Special Conditions of Contract**, this Sub-Clause shall not apply.

18.3.3 Unless otherwise stated in the Special Conditions, the insurances specified in this Sub-Clause:

- a) Shall be effected and maintained by the Contractor as insuring Party,
- b) shall be in the joint names of the Parties,
- c) shall be extended to cover liability for all loss and damage to the Procuring Entity's property (except things insured under Sub-Clause 18.2) arising out of the Contractor's performance of the Contract, and
- d) may however exclude liability to the extent that it arises from:
  - i) the Procuring Entity's right to have the Permanent Works executed on, over, under, in or
  - ii) through any land, and to occupy this land for the Permanent Works,
  - iii) damage which is an unavoidable result of the Contractor's obligations to execute the
  - iv) Works and remedy any defects, and
  - v) a cause listed in Sub-Clause 17.3 [Procuring Entity's Risks], except to the extent that cover is available at commercially reasonable terms.

**18.4** *Insurance for Contractor's Personnel*

- 18.4.1 The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.
- 18.4.2 The insurance shall cover the Procuring Entity and the Architect against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Procuring Entity or of the Procuring Entity's Personnel.
- 18.4.3 The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.

**19** *FORCE MAJEURE*

**19.1** **Definition of Force Majeure**

- 19.1.1 In this Clause, "Force Majeure" means an exceptional event or circumstance:
- a) Which is beyond a Party's control,
  - b) Which such Party could not reasonably have provided against before entering into the Contract,
  - c) which, having arisen, such Party could not reasonably have avoided or overcome, and
  - d) which is not substantially attributable to the other Party.
- 19.1.2 Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:
- a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
  - b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
  - c) riot, commotion, disorder, strike or lock out by persons other than the Contractor's Personnel,
  - d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
  - e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

**19.2** *Notice of Force Majeure*

- 19.2.1 If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.
- 19.2.2 The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.
- 19.2.3 Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.

**19.3** *Duty to Minimize Delay*

Each Party shall at all times use all reasonable endeavors to minimize any delay in the performance of the Contract as a result of Force Majeure. A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

**19.4** *Consequences of Force Majeure*

- 19.4.1 If the Contractor is prevented from performing his substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/ or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in sub-paragraphs (ii) to (iv), occurs in Kenya, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment].

19.4.2 After receiving this notice, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

**19.5** *Force Majeure Affecting Subcontractor*

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

**19.6** *Optional Termination, Payment and Release*

19.6.1 If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

19.6.2 Upon such termination, the Architect shall determine the value of the work done and issue a Payment Certificate which shall include:

- a) The amounts payable for any work carried out for which a price is stated in the Contract;
- b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Procuring Entity when paid for by the Procuring Entity, and the Contractor shall place the same at the Procuring Entity's disposal;
- c) other Cost or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;
- d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and
- e) the Cost of repatriation of the Contractor's staff and lab or employed wholly in connection with the Works at the date of termination.

**19.7** *Release from Performance*

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

- a) The Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and
- b) The sum payable by the Procuring Entity to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

## **20** SETTLEMENT OF CLAIMS AND DISPUTES

### **20.1 Contractor's Claims**

- 20.1.1 If the Contractor considers itself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give Notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 30 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- 20.1.2 If the Contractor fails to give notice of a claim within such period of 30 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.
- 20.1.3 The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
- 20.1.4 The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at an other location acceptable to the Engineer. Without admitting the Procuring Entity's liability, the Architect may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/ or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Architect to inspect all these records and shall (if instructed) submit copies to the Engineer.
- 20.1.5 Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Architect fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/ or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:
- a) This fully detailed claim shall be considered as interim;
  - b) The Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/ or amount claimed, and such further particulars as the Architect may reasonably require; and
  - c) The Contractor shall send a final claim within 30 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.
- 20.1.6 Within 42 days after receiving a Notice of a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Architect and approved by the Contractor, the Architect shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars but shall nevertheless give his response on the principles of the claim within the above defined time period.
- 20.1.7 Within the above defined period of 42 days, the Architect shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.
- 20.1.8 Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.
- 20.1.9 If the Architect does not respond within the time frame defined in this Clause, either Party may consider that the claim is rejected by the Architect and any of the Parties may refer the dispute for amicable settlement in accordance with Clause 20.3.
- 20.1.10 The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension

of time and/ or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause 20.3.

## **202** *Procuring Entity's Claims*

202.1 If the Procuring Entity considers itself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Procuring Entity or the Architect shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Procuring Entity's Equipment and Free-Issue Materials], or for other services requested by the Contractor.

202.2 The notice shall be given as soon as practicable and no longer than 30 days after the Procuring Entity became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

202.3 The particulars shall specify the Clause or other basis of the claim and shall include substantiation of the amount and/or extension to which the Procuring Entity considers itself to be entitled in connection with the Contract. The Architect shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Procuring Entity is entitled to be paid by the Contractor, and/ or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

202.4 This amount may be included as a deduction in the Contract Price and Payment Certificates. The Procuring Entity shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

## **203** *Amicable Settlement*

Where a notice of a claim has been given, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a notice of a claim in accordance with Sub-Clause 20.1 above should move to commence arbitration after 60 days from the day on which a notice of a claim was given, even if no attempt at an amicable settlement has been made.

## **204** *Matters that may be referred to arbitration*

Notwithstanding anything stated herein the following matters may be referred to arbitration before the practical completion of the Works or abandonment of the Works or termination of the Contract by either party:

- a) Whether or not the issue of an instruction by the Architect is empowered by these Conditions.
- b) Whether or not a certificate has been improperly withheld or is not in accordance with these Conditions.
- c) Any dispute arising in respect risks arising from matters referred to in Clause 17.3 and Clause 19.
- e) All other matters shall only be referred to arbitration after the completion or alleged completion of the Works or termination or alleged termination of the Contract, unless the Procuring Entity and the Contractor agree otherwise in writing.

## **205** *Arbitration*

205.1 Any claim or dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 20.3 shall be finally settled by arbitration.

205.2 No arbitration proceedings shall be commenced on any claim or dispute where notice of a claim or dispute has not been given by the applying party within ninety days of the occurrence or discovery of the matter or issue giving rise to the dispute.

205.3 Notwithstanding the issue of a notice as stated above, the arbitration of such a claim or dispute shall not commence unless an attempt has in the first instance been made by the parties to settle such claim or dispute amicably with or without the assistance of third parties. Proof of such attempt shall be required.

205.4 The Arbitrator shall, without prejudice to the generality of his powers, have powers to direct such measurements, computations, tests or valuations as may in his opinion be desirable in order to determine the rights of the parties and assess and award any sums which ought to have been the subject of or included in any certificate.

- 205.5 The Arbitrator shall, without prejudice to the generality of his powers, have powers to open up, review and revise any certificate, opinion, decision, requirement or notice and to determine all matters in dispute which shall be submitted to him in the same manner as if no such certificate, opinion, decision require mentor notice had been given.
- 205.6 The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Architect from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.
- 205.7 Neither Party shall be limited in the proceedings before the arbitrators to the evidence, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction.
- 205.7 Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, and the Architect shall not be altered by reason of any arbitration being conducted during the progress of the Works.
- 205.8 The terms of the remuneration of each or all the members of Arbitration shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.
- 206 *Arbitration with National Contractors*
- 206.1 If the Contract is with national contractors, arbitration proceedings will be conducted in accordance with the Arbitration Laws of Kenya. In case of any claim or dispute, such claim or dispute shall be notified in writing by either party to the other with a request to submit it to arbitration and to concur in the appointment of an Arbitrator within thirty days of the notice. The dispute shall be referred to the arbitration and final decision of a person to be agreed between the parties. Failing agreement to concur in the appointment of an Arbitrator, the Arbitrator shall be appointed, on the request of the applying party, by the Chairman or Vice Chairman of any of the following professional institutions;
- i) Architectural Association of Kenya
  - ii) Institute of Quantity Surveyors of Kenya
  - iii) Association of Consulting Engineers of Kenya
  - iv) Chartered Institute of Arbitrators (Kenya Branch)
  - v) Institution of Engineers of Kenya
- 206.2 The institution written to first by the aggrieved party shall take precedence over all other institutions.
- 207 *Arbitration with Foreign Contractors*
- 207.1 Arbitration with foreign contractors shall be conducted in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL); or with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules.
- 207.2 The place of arbitration shall be a location specified in the **SCC**; and the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language].
- 208 *Alternative Arbitration Proceedings*
- Alternatively, the Parties may refer the matter to the Nairobi Centre for International Arbitration (NCIA) which offers a neutral venue for the conduct of national and international arbitration with commitment to providing institutional support to the arbitral process.
- 209 *Failure to Comply with Arbitrator's Decision*
- 209.1 The award of such Arbitrator shall be final and binding up on the parties.
- 209.2 In the event that a Party fails to comply with a final and binding Arbitrator's decision, then the other Party may, without prejudice to any other rights it may have, refer the matter to a competent court of law.

2010 *Contract operations to continue*

Notwithstanding any reference to arbitration herein,

1.1.1 the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree;  
and

1.1.2 the Procuring Entity shall pay the Contractor any monies due to the Contractor.

Section IX - Special Conditions of Contract

The following Special Conditions shall supplement the GCC. Whenever there is a conflict, the provisions in shall prevail over those in the GCC.

here

Conditions	Sub- Clause	Data
<b>Part A - Contract Data</b>		
Procuring Entity's name and address	Heading	PRINCIPAL SECRETARY, STATE DEPARTMENT FOR ICT AND DIGITAL ECONOMY Through KONZA TECHNOPOLEIS DEVELOPMENT AUTHORITY <b>THROUGH</b> Konza Technopolis Development Authority, P.O Box 1-90150, KONZA TECHNOPOLEIS. <a href="http://www.konza.go.ke">www.konza.go.ke</a>
Name and Reference No. of the Contract	Heading and 1.1	Proposed Enhanced Development of ICT Digital Hub and associated facilities in Kikuyu, Kiambu County. TENDER NO. KoTDA/DIGITAL-HUB-KIKUYU/045/2025-26
Engineers Name and address	Heading and 3.1.1	TBC
Contractor's Representative's name	4.3.1	TBD
Key Personnel names	16.9.1	TBD
Time for Completion	1.1.	TBD
Defects Notification Period	1.1	<u>12 Months</u>
Sections	1.1	N/A
Electronic transmission systems	1.3	N/A
Time for the Parties entering into a Contract Agreement	1.6	Within 30days
Commencement Date	8.1.1	TBD
Time for access to the Site	2.1.1	No later than the Commencement Date, and not later than 7 Days days after Commencement Date
Architect Duties and Authority	3.1.6 (b) (ii)	N/A- Fixed Cost Contract
Performance Security	4.2.1	The performance security will be in the form of a Bank Guarantee in the amount(s) of 10% of the accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount.
Normal working hours	6.5	08AM to 5PM or otherwise approved.
Delay damages for the Works	8.7 & 14.15(b)	0.03 % of the Contract Price per day.
Maximum amount of delay damages	8.7.1	10% of the final Contract Price.
Provisional Sums	13.6. (b)(ii)	TBD
Adjustments for Changes in Cost	13.9	N/A
Total advance payment	14.2.1	TBD <u>% Percentage of the Accepted Contract Amount payable in the currencies and proportions in which the Accepted Contract Amount is payable</u> [Insert number and timing of installments if applicable].
Repayment amortization rate of advance payment	14.2.5 (b)	Upto 80%
Percentage of Retention	14.3.2 (c)	10%

Limit of Retention Money	14.3.2 (c)	5% of the Accepted Contract Amount
Plant and Materials	14.5.3(b)(i)	N/A

<b>Conditions</b>	<b>Sub- Clause</b>	<b>Data</b>
	14.5.3(c)(i)	N/A
Minimum Amount of Interim Payment Certificates	14.6.2	5% of the Accepted Contract Amount.
Maximum total liability of the Contractor to the Procuring Entity	17.6.2	The product of 0.1 times the Accepted Contract Amount
Periods for submission of insurance:  a. evidence of insurance.  b. relevant policies	18.1.6	Submitted by the 15 <sup>th</sup> day of the date of award letter  14 Days (Contractors All Risk Policy, Work Injury Benefits Act (WIBA) Insurance Cover and other relevant insurance policies necessary during the execution of the works)  14 Days (Contractors All Risk Policy, Work Injury Benefits Act (WIBA) Insurance Cover and other relevant insurance policies necessary during the execution of the works)
Maximum amount of deductibles for insurance of the Procuring Entity's risks	18.2.4 (d)	<i>[Insert maximum amount of deductibles]</i>
Minimum amount of third-party insurance	18.3.2	<i>1% of the Contract Sum</i>
The place of arbitration	20.7.2	<i>Konza Technopolis Development Authority</i>

SECTION X - CONTRACT FORMS

FORM No. 1 - NOTIFICATION OF INTENTION TO AWARD FORM NO. 2 –

REQUEST FOR REVIEW

FORM No. 3-LETTEROF AWARD

FORM No. 4 - CONTRACT AGREEMENT

FORM No. 5 - PERFORMANCE SECURITY [Option 1 - Unconditional Demand Bank Guarantee] FORM No. 6-

PERFORMANCE SECURITY [Option 2– Performance Bond] FORM

No. 7 - ADVANCE PAYMENT SECURITY FORM No. 8 -

RETENTION MONEY SECURITY

FORM No 1: NOTIFICATION OF INTENTION TOAWARD OF CONTRACT

This Notification of Award shall be sent to each Tenderer that submitted a Tender and was not successful. Send this Notification to the Tenderer's Authorized Representative named in the Tender Information Form on the format below. FORMAT

1. For the attention of Tenderer's Authorized Representative

- i) Name: *[insert Authorized Representative's name]*
- ii) Address: *[insert Authorized Representative's Address]*
- iii) Telephone: *[insert Authorized Representative's telephone/fax numbers]*
- iv) Email Address: *[insert Authorized Representative's email address]*

*[IMPORTANT: insert the date that this Notification is transmitted to Tenderers. The Notification must be sent to all Tenderers simultaneously. This means on the same date and as close to the same time as possible.]*

2. Date of transmission: *[email]* on *[date]* (local time)

This Notification is sent by (Name and designation) \_\_\_\_\_

3. Notification of Award

- i) Procuring Entity: *[insert the name of the Procuring Entity]*
- ii) Project: *[insert name of project]*
- iii) Contract title: *[insert the name of the contract]*
- iv) ITT No: *[insert ITT reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

4. Request a debriefing in relation to the evaluation of your tender by submitting a Procurement-related Complaint in relation to the decision to award the contracts.

a) The successful tenderers

i) Name of successful Tender \_\_\_\_\_

ii) Address of the successful Tender \_\_\_\_\_  
\_\_\_\_\_

iii) Contract price of the successful Tender Kenya Shillings \_\_\_\_\_  
(in words \_\_\_\_\_)

b) The reasons for your tender being unsuccessful are as follows:

c) Other Tenderers

Names of all Tenderers that submitted a Tender. If the Tender's price was evaluated include the evaluated price as well as the Tender price as read out.

SNo	Name of Tender	Tender Price as read out	Tender's evaluated price (Note a)	One Reason Why Not Evaluated
1				
2				
3				
4				
5				

(Note a) State NE if not evaluated

#### 5. How to request a debriefing

- a) DEADLINE: The dead line to request a debriefing expires at midnight on *[insert date]* (local time).
- b) You may request a debriefing in relation to the results of the evaluation of your Tender. If you decide to request a debriefing your written request must be made within three (5) Business Days of receipt of this Notification of Intention to Award.
- c) Provide the contract name, reference number, name of the Tenderer, contact details; and address the request for debriefing as follows:
  - i) Attention: *[insert full name of person, if applicable]*
  - ii) Title/position: *[insert title/position]*
  - iii) Agency: *[insert name of Procuring Entity]*
  - iv) Email address: *[insert email address]*
- d) If your request for a debriefing is received within the 3 Days deadline, we will provide the debriefing within five (3) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (3) Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.
- e) The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.
- f) If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Days from the date of publication of the Contract Award Notice.

#### 6. How to make a complaint

- a) Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, *[insert date]* (local time).
- b) Provide the contract name, reference number, name of the Tenderer, contact details; and address the Procurement-related Complaint as follows:
  - i) Attention: *[insert full name of person, if applicable]*
  - ii) Title/position: *[insert title/ position]*
  - iii) Agency: *[insert name of Procuring Entity]*
  - iv) Email address: *[insert email address]*
- c) At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.
- d) Further information: For more information refer to the Public Procurement and Disposals Act 2015 and its

You should read these documents before preparing and submitting your complaint.

- e) There are four essential requirements:
  - i) You must be an 'interested party'. In this case, that means a Tenderer who submitted a Tender in this tendering process and is the recipient of a Notification of Intention to Award.
  - ii) The complaint can only challenge the decision to award the contract.
  - iii) You must submit the complaint within the period stated above.
  - iv) You must include, in your complaint, all of the information required to support your complaint.

**7. Standstill Period**

- i) **DEADLINE:** The Standstill Period is due to end at midnight on *[insert date]* (local time).
- ii) The Standstill Period lasts ten (14) Days after the date of transmission of this Notification of Intention to Award.
- iii) The Standstill Period may be extended as stated in paragraph Section 5(d) above.

If you have any questions regarding this Notification please do not hesitate to contact us. On behalf of the Procuring Entity:

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

**Name:** \_\_\_\_\_

**Title/position:** \_\_\_\_\_

\_\_\_\_\_

**Telephone:** \_\_\_\_\_

\_\_\_\_\_

FORM FOR REVIEW (r.203(1))

PUBLIC PROCUREMENT ADMINISTRATIVE REVIEW BOARD

APPLICATION NO.....OF.....20.....

BETWEEN

..... APPLICANT

AND

.....RESPONDENT (Procuring Entity)

Request for review of the decision of the..... (Name of the Procuring Entity of .....dated the...day of .....20.....in the matter of Tender No.....of .....20..... for.....(Tender description).

REQUEST FOR REVIEW

I/We.....,the above named Applicant(s), of address: Physical address..... P. O. Box No..... Tel. No.....Email....., hereby request the Public Procurement Administrative Review Board to review the whole/part of the above mentioned decision on the following grounds, namely: 1.

2.

By this memorandum, the Applicant requests the Board for an order/orders that: 1.

2.

SIGNED .....(Applicant) Dated on.....day of ...../...20.....

FOR OFFICIAL USE ONLY Lodged with the Secretary Public Procurement Administrative Review Board on..... day of .....20.....

SIGNED

Board Secretary

**FORM NO 3: LETTER OF AWARD**

*letterhead paper of the Procuring Entity] [date]*

To: *[name and address of the Contractor]*

This is to notify you that your Tender dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Contract Data]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Tenderers, is here by accepted by... .....*(name of Procuring Entity)*.

You are requested to furnish the Performance Security within in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms included in Section VIII, Contract Forms, of the Tender Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Procuring Entity: .....

Attachment: *Contract Agreement:* .....

FORM NO 4: CONTRACT AGREEMENT

THIS AGREEMENT made the day of..... 20....., between.....  
.....of..... (hereinafter "the Procuring  
Entity"), of the one part, and \_\_\_\_\_ of \_\_\_\_\_ (hereinafter  
"the Contractor"), of the other part:

WHEREAS the Procuring Entity desires that the Works known as \_\_\_\_\_ should be  
executed by the Contractor, and has accepted a Tender by the Contractor for the execution and completion of these Works and the remedying of  
any defects there in,

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
  - a) The Notification of Award
  - b) the Form of Tender
  - c) the addenda Nos \_\_\_\_\_ (if any)
  - d) the Special Conditions of Contract
  - e) the General Conditions of Contract;
  - f) the Specifications
  - g) the Drawings; and
  - h) the completed Schedules and any other documents forming part of the contract.
3. In consideration of the payments to be made by the Procuring Entity to the Contractor as specified in this Agreement, the Contractor here by covenants with the Procuring Entity to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Procuring Entity here by covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects there in, 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.

INWITNESS where of the parties here to have caused this Agreement to be executed in accordance with the Laws of Kenya on the day, month and year specified above.

Signed and sealed by \_\_\_\_\_ (for the Procuring Entity)

Signed and sealed by \_\_\_\_\_ (for the Contractor).

[Option 1 - Unconditional Demand Bank Guarantee] [Guarantor letterhead]

**Beneficiary:** [insert name and Address of Procuring Entity]

**Date:** \_\_\_\_\_ [Insert date of issue]

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

1. We have been informed that \_\_\_\_\_ (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ dated \_\_\_\_\_ with (name of Procuring Entity) \_\_\_\_\_ (the Procuring Entity as the Beneficiary), for the execution of \_\_\_\_\_ (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.
3. At the request of the Contractor, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_ (in words),<sup>1</sup> such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.
4. This guarantee shall expire, no later than the ..... Day of .....<sup>2</sup>, and any demand for payment under it must be received by us at the office indicated above on or before that date.
5. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."  
.....

[Name of Authorized Official, signature(s) and seals/stamps]

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

---

<sup>1</sup>The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency of the Contract or a freely convertible currency acceptable to the Beneficiary.

<sup>2</sup>Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

FORM No. 6- PERFORMANCE SECURITY

[Option 2- Performance Bond]

[**Note:** Procuring Entities are advised to use Performance Security – Unconditional Demand Bank Guarantee in stead of Performance Bond due to difficulties involved in calling Bond holder to action]

[Guarantor letterhead or SWIFT identifier code] **Beneficiary:**

[insert name and Address of Procuring Entity] **Date:**

\_\_\_\_\_ [Insert date of issue] **PERFORMANCE**

**BOND No.:** \_\_\_\_\_

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

1. By this Bond \_\_\_\_\_ as Principal (hereinafter called “the Contractor”) and \_\_\_\_\_] as Surety (hereinafter called “the Surety”), are held and firmly bound unto \_\_\_\_\_] as Oblige (hereinafter called “the Procuring Entity”) in the amount of \_\_\_\_\_ for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.
2. WHEREAS the Contractor has entered into a written Agreement with the Procuring Entity dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, for \_\_\_\_\_ in accordance with the documents, plans, specifications, and amendments there to, which to the extent here in provided for, are by reference made part here of and are here in after referred to as the Contract.
3. NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Procuring Entity to be, in default under the Contract, the Procuring Entity having performed the Procuring Entity's obligations there under, the Surety may promptly remedy the default, or shall promptly:
  - a) Complete the Contract in accordance with its terms and conditions; or
  - b) Obtain a tender or tenders from qualified tenderers for submission to the Procuring Entity for completing the Contract in accordance with its terms and conditions, and upon determination by the Procuring Entity and the Surety of the lowest responsive Tenderers, arrange for a Contract between such Tenderer, and Procuring Entity and make a available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Procuring Entity to Contractor under the Contract, less the amount properly paid by Procuring Entity to Contractor; or
  - c) Pay the Procuring Entity the amount required by Procuring Entity to complete the Contract in accordance with its terms and conditions upto a total not exceeding the amount of this Bond.
4. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.
5. Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Procuring Entity named here in or the heirs, executors, administrators, successors, and assigns of the Procuring Entity.
6. In testimony whereof, the Contractor has here unto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly at tested by the signature of his legal representative, this

day \_\_\_\_\_ of \_\_\_\_\_ 20\_\_\_\_\_.

SIGNED ON \_\_\_\_\_ on behalf of \_\_\_\_\_

By \_\_\_\_\_ in the capacity of \_\_\_\_\_

In the presence of \_\_\_\_\_

SIGNED ON \_\_\_\_\_ on behalf of \_\_\_\_\_

By \_\_\_\_\_ in the capacity of \_\_\_\_\_

In the presence of \_\_\_\_\_

FORM NO. 7 - ADVANCE PAYMENT SECURITY

[Demand Bank Guarantee] [Guarantor  
letterhead]

**Beneficiary:** \_\_\_\_\_ [Insert name and Address of Procuring Entity] **Date:**  
\_\_\_\_\_ [Insert date of issue]

**ADVANCE PAYMENT GUARANTEE No.:** \_\_\_\_\_ [Insert guarantee reference number]

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

1. We have been informed that \_\_\_\_\_ (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ dated \_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_ (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum \_\_\_\_\_ (in words \_\_\_\_\_) is to be made against an advance payment guarantee.
3. At the request of the Contractor, we as Guarantor, here by irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_ (in words \_\_\_\_\_) <sup>1</sup> upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:
  - a) Has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
  - b) Has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.
4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Contractor on its account number \_\_\_\_\_ at \_\_\_\_\_.
5. The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, <sup>2</sup> whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.
6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

---

[Name of Authorized Official, signature(s) and seals/stamps]

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

---

<sup>1</sup>The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency of the advance payment as specified in the Contract.

<sup>2</sup>Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

FORM NO. 8 – RETENTION MONEY SECURITY

[Demand Bank Guarantee] [Guarantor  
letterhead]

**Beneficiary:** \_\_\_\_\_ [Insert name and Address of Procuring Entity]

**Date:** \_\_\_\_\_ [Insert date of issue]

**Advance payment guarantee no.** [Insert guarantee reference number]

**Guarantor:** [Insert name and address of place of issue, unless indicated in the letterhead]

1. We have been informed that \_\_\_\_\_ [insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture] (hereinafter called "the Contractor") has entered into Contract No. \_\_\_\_\_ [insert reference number of the contract] dated \_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_ [insert name of contract and brief description of Works] (hereinafter called "the Contract").
2. Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys upto the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, and payment of [insert the second half of the Retention Money] is to be made against a Retention Money guarantee.
3. At the request of the Contractor, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of [insert amount in figures] \_\_\_\_\_ ([insert amount in words \_\_\_\_\_])<sup>1</sup> upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or showgrounds for your demand or the sum specified there in.
4. A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the second half of the Retention Money as referred to above has been credited to the Contractor on its account number \_\_\_\_ at \_\_\_\_\_ [insert name and address of Applicant's bank].
5. This guarantee shall expire no later than the.....Day of.....<sup>2</sup> ....., and any demand for payment under it must be received by us at the office indicated above on or before that date.
6. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

---

[Name of Authorized Official, signature(s) and seals/stamps]

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

<sup>1</sup>The Guarantor shall insert an amount representing the amount of the second half of the Retention Money.

<sup>2</sup>Insert a date that is twenty-eight days after the expiry of retention period after the actual completion date of the contract. The Procuring Entity should note that in the event of an extension of this date for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

FORM NO. 9 BENEFICIAL OWNERSHIP DISCLOSURE FORM  
 (Amended and issued pursuant to PPRA CIRCULAR No. 02/2022)

**INSTRUCTIONS TO TENDERERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM**

*This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful tenderer pursuant to Regulation 13 (2A) and 13 (6) of the Companies (Beneficial Ownership Information) Regulations, 2020. In case of joint venture, the tenderer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.*

*For the purposes of this Form, a Beneficial Owner of a Tenderer is any natural person who ultimately owns or controls the legal person (tenderer) or arrangements or a natural person on whose behalf a transaction is conducted, and includes those persons who exercise ultimate effective control over a legal person (Tenderer) or arrangement.*

Tender Reference No.: \_\_\_\_\_ [insert identification no]

Name of the Tender Title/Description: \_\_\_\_\_ [insert name of the assignment] to:

\_\_\_\_\_ [insert complete name of Procuring Entity]

In response to the requirement in your notification of award dated [insert date of notification of award] to furnish additional information on beneficial ownership: \_\_\_\_\_ [select one option as applicable and delete the options that are not applicable]

1) We here by provide the following beneficial ownership information.

*Details of Beneficial ownership*

	Details of all Beneficial Owners		% of shares a person holds in the company Directly or indirectly	% of voting rights a person holds in the company	Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer (Yes / No)	Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)
1.	Full Name		Directly----- ----- % of shares	Directly..... .....% of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes ----No--- - 2. Is this right held directly or indirectly?:	1. Exercises significant influence or control over the Company body of the Company (tenderer)  Yes ----No---
	National identity card number or Passport number					
	Personal Identification Number (where applicable)		Indirectly--- - -----% of shares	Indirectly----- % of voting rights		
	Nationality					

Details of all Beneficial Owners		% of shares a person holds in the company Directly or indirectly	% of voting rights a person holds in the company	Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer (Yes / No)	Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)
Date of birth [dd/mm/yyyy]				Direct..... ...  Indirect..... ... ...	2. Is this influence or control exercised directly or indirectly?  Direct.....  Indirect.....
	Postal address				
	Residential address				
	Telephone number				
	Email address				
	Occupation or profession				
2.	Full Name	Directly----- ---- % of shares  Indirectly---- ----- % of shares	Directly..... .....% of voting rights  Indirectly----- % of voting rights	1. Having the right to appoint a majority of the board of the directors or an equivalent governing body of the Tenderer: Yes ----No---- 2. Is this right held directly or indirectly?:  Direct..... ...  Indirect..... ... ...	1. Exercises significant influence or control over the Company body of the Company (tenderer) Yes ----No----  2. Is this influence or control exercised directly or indirectly?  Direct.....  Indirect.....
	National identity card number or Passport number				
	Personal Identification Number (where applicable)				
	Nationality(ies)				
	Date of birth [dd/mm/yyyy]				
	Postal address				
	Residential address				
	Telephone number				
	Email address				
	Occupation or profession				

	Details of all Beneficial Owners		% of shares a person holds in the company Directly or indirectly	% of voting rights a person holds in the company	Whether a person directly or indirectly holds a right to appoint or remove a member of the board of directors of the company or an equivalent governing body of the Tenderer (Yes / No)	Whether a person directly or indirectly exercises significant influence or control over the Company (tenderer) (Yes / No)
<b>3. e.t .c</b>						

II) Am fully aware that beneficial ownership information above shall be reported to the Public Procurement Regulatory Authority together with other details in relation to contract awards and shall be maintained in the Government Portal, published and made publicly available pursuant to Regulation 13(5) of the Companies (Beneficial Ownership Information) Regulations, 2020.(Notwithstanding this paragraph Personally Identifiable Information in line with the Data Protection Act shall not be published or made public). *Note that Personally Identifiable Information (PII) is defined as any information that can be used to distinguish one person from another and can be used to deanonymize previously anonymous data. This information includes National identity card number or Passport number, Personal Identification Number, Date of birth, Residential address, email address and Telephone number.*

III) In determining who meets the threshold of who a beneficial owner is, the Tenderer must consider a natural person who in relation to the company:

- (a) holds at least ten percent of the issued shares in the company either directly or indirectly;
- (b) exercises at least ten percent of the voting rights in the company either directly or indirectly;
- (c) holds a right, directly or indirectly, to appoint or remove a director of the company; or
- (d) exercises significant influence or control, directly or indirectly, over the company.

IV) What is stated to herein above is true to the best of my knowledge, information and belief.

Name of the Tenderer: ..... \*[insert complete name of the Tenderer]\_\_\_\_\_

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

Designation of the person signing the Tender:..... [insert complete title of the person signing the Tender]

Signature of the person named above ..... [insert signature of person whose name and capacity are shown above]

Date this ..... [insert date of signing] day of..... [Insert month], [insert year]

Bidder Official Stamp