

Open National Bidding

Upgrading Works of SIFB Building at Quartier Militaire

Procurement Reference No: [08/FY/2024]

**Sugar Insurance Fund Board (SIFB)
18, Sir Seewoosagur Ramgoolam, Street,
Port Louis.
Tel: 260 4700
Fax: 203 2634**

Date: 22 January 2024

Section I: Instruction to Bidders

1. Introduction

The **SIFB** also referred as the Employer, invites eligible local contractors to submit their bid for the works described in detail hereunder. Any resulting contract shall be subject to the terms and conditions referred to in this document.

The Works are “Upgrading Works of SIFB Building at New Road, Quartier Militaire”.

Participation is limited to citizens of Mauritius or entities incorporated in Mauritius. Joint Ventures should be among entities incorporated in Mauritius.

1.1 Clarifications, if any, should be addressed by email to: sifb@sifbmu.org

The *SIFB* will respond in writing to any request for clarification, provided that such request is received 14 days prior to the deadline for submission of bids.

The SIFB shall respond to such request at latest 7 days prior to the deadline set for submission of bids.

1.2 Bidders are advised to carefully read the complete Bidding document, including the Particular Conditions of Contract in Section IV, before preparing their bids. The standard forms in this document may be retyped for completion but the Bidder is responsible for their accurate reproduction.

2. Validity of Bids

The bid validity period shall be **90 days** from the date of bid submission deadline.

3. Works Completion Period

The Intended Completion period is **120 calendar days** from start date of works.

4. Site Visit/Pre-Bid Meeting

Bidders or their designated representatives are requested to carry out site visit to take cognizance of the works and site. The purpose of the site visit is for bidders to know the site, its difficulties and to ask any clarification if any. A pre-Bid meeting is scheduled for **Thursday 08 February 2024, at 11.00hrs.**

5. Sealing and Marking of Bids

Bids should be sealed in a single envelope, clearly marked with the Procurement Reference Number, addressed to the Officer in Charge, SIFB, with the Bidder's name at the back of the envelope.

6. Submission of Bids

Bids (one original and soft copy on CD) should be deposited in the Bid Box located at **18, Sir Seewoosagur Ramgoolam Street, Port Louis, not later than 22 February 2024, 14hrs**, at latest. Bids by post or hand delivered should reach the above-mentioned address by the same date and time at latest. Late bids will be rejected. Bids received by e-mail will not be considered.

7. Bid Opening

Bids will be opened by the SIFB at 18, Sir Seewoosagur Street, Port Louis, on **22 February 2024 at 14:15 hrs.** Name of Bidders who have responded and their respective total quoted amount shall be affixed at the reception area of the SIFB in Port Louis.

8. Evaluation of Bids

The SIFB shall have the right to request for clarification during evaluation. Offers that are substantially responsive shall be compared on the basis of evaluated cost to determine the lowest evaluated bid.

9. Eligibility Criteria

To be eligible to participate in this bidding exercise, Bidder should:

- (a) have the legal capacity to enter into a contract to execute the works;
- (b) be duly registered with the CIDB under the grade that would allow him to perform the value of works for which he is submitting his bid. (Note 1)
- (c) not be insolvent, in receivership, bankrupt, subject to legal proceedings for any of these circumstances or in the process of being wound up;
- (d) not have had your business activities suspended;
- (e) not be under a declaration of ineligibility by the Government of Mauritius in accordance with applicable laws at the date of the deadline for bid submission or appearing on the ineligibility lists of African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank Group and World Bank Group;
- (f) not have a conflict of interest in relation to this procurement requirement; and
- (g) have a Business Registration Card.

Note 1 Sub-contractors undertaking works are also subject to registration with CIDB as applicable to Contractors.

10. Qualification and Experience Criteria

Bidders should have the following minimum qualifications and experience:

- (a) valid registration certificate with the CIDB in **Building Construction works** or **Civil Engineering Construction works** under the grade that will enable the contractor to perform the works quoted for.
- (b) Specific experience in two works of a similar nature over the last 5 years, each of value not less than MUR 2.5M that have been successfully completed as a **main contractor**. Out of the two works one should be a new building and the other a renovation/upgrading one. **To submit proof for the specific works such as letter of acceptance, completion certificates etc as completed by the main contractor. Failure to submit same may result in the disqualification of the bidder.**
- (c) A full time Site Agent having as minimum qualification: A diploma in construction related field and 5 years' experience as site agent in the construction sector as; or any equivalent qualifications acceptable to the SIFB.
- (d) Minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the Bidder of the amount of MUR 1.0M. **Failure to submit same may result in the disqualification of the bidder.**
- (e) certified copies of Financial Statements or Audited account as filed at the Registrar of Companies before the deadline set for submission of bids over the **last three years**
- (f) A full-time foreman with at least 10 years' experience in the construction field.
- (g) A health and safety officer having a minimum of 3 years as experience.
- (h) One Electrical Engineer registered with the Council of Registered Engineers of Mauritius having at least 5 years post registration experience to attend all site meetings, to supervise all electrical works, to submit all shop drawings and technical datasheet, to reply to queries on technical issues and to act as the representative of the Contractor for Electrical Works.

To submit recent signed CV and undertaking for proposed Site Agent, Foreman, Health and Safety Officer and Electrical Technician. All signatures shall be original and no copies.

11. Contents of bid

The Bid shall comprise the following:

- (a) duly filled Bid Submission Form;
- (b) duly filled Priced Bill of Quantities
- (c) duly filled Qualification Information Form and attachments required
- (d) report on the financial standing of the Bidder for the last three years, such as certified copies of Financial Statements or Audited Accounts as filed at the Registrar of Companies before the deadline set for submission of bids
- (e) Valid Registration certificate with the CIDB, as applicable
- (f) **Signed C.V and undertaking of the proposed Site Agent, Foreman, Electrical Technician and Health and Safety Officer**
- (g) Documentary evidence of liquid assets and/or credit facilities (**Note 1**);
- (h) Any other documents deemed necessary as per the requirements of this bidding document

Note 1:

Bidders to demonstrate access to, or availability of, financial resources such as liquid assets, lines of credit, and other financial means, other than any contractual advance payments to meet the overall cash flow requirements for the contract and its current commitments. Documentary evidence may comprise but not limited to Bank certificate, Certificate from Auditors, Certificate from a Professional Accountant registered with MIPA, Certificate from Insurance companies.

12. Joint Venture

Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements:

- i. The Bid shall include all the information required as per the Qualification Information form for each joint venture partner;
- ii. The Bid shall be signed so as to be legally binding on all partners;
- iii. The Bid shall include a copy of the agreement entered into by the joint venture partners defining the division of assignments to each partner and establishing that all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms; **alternatively**, a Letter of Intent to execute a joint venture agreement in the event of a successful bid shall be signed by all partners and submitted with the bid, together with a copy of the proposed agreement;
- iv. One of the partners shall be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
- v. the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

13. Prices and Currency of Payment

Bidders should quote for the whole works. Prices for the execution of works shall be quoted and fixed in Mauritian Rupees. Items for which no rate or price is entered by Bidders, shall not be paid for by the Public Body when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

Bids shall cover all costs of labour, materials, equipment, overheads, profits and all associated costs for performing the works, and shall include all duties. The whole cost of performing the works shall be included in the items stated, and the cost of any incidental works shall be deemed to be included in the prices quoted.

14. Bid Securing Declaration

Bidders are required to subscribe to a Bid Securing Declaration in the Bid Submission Form.

15. Margin of Preference

15.1 A Margin of Preference for employment of local manpower shall be applicable for National Bidding as follows:

- (a) A local Small and Medium enterprise, having an annual turnover not exceeding Rs 100million or a joint venture consisting of local Small and Medium Enterprises having an aggregate annual turnover not exceeding Rs 100 million who undertakes to employ local manpower for 80% or more of the total man-days deployed for the execution of the works contract referred hereto, shall be eligible for a Margin of Preference of 20%.
- (b) Any bidder incorporated in the Republic of Mauritius not satisfying all the conditions mentioned in (a) above but undertakes to employ local manpower for 80% or more of the total man-days deployed for the execution of the works contract referred hereto, shall be eligible for a Margin of preference of 10%.

Note: Local manpower shall mean employees on the payroll of the Contractor as well as those for subcontractors for executing the works contract on the site.

15.2 Bidders applying for the Margin of Preference shall submit, **upon request**, evidence of:

- (a) their incorporation in the Republic of Mauritius;
- (b) their Joint Venture Agreement or intention to legally enter into a Joint Venture Agreement to be incorporated in the Republic of Mauritius, where applicable;
- (c) the percentage of the total man-days to be deployed by local manpower with break-down indicating type of works to be entrusted to local manpower.
- (d) A financial statement signed by a certified Accountant vouching that the annual turn-over of the local Small and Medium Enterprise (where applicable) does not exceed Rs 100M
- (e) their deployment of manpower to demonstrate how they will undertake to employ the local manpower for the project. The evidence may include the number of existing employees that will be involved in the project and the number of workers that may be hired temporarily.

Non-submission of the evidence may entail non-eligibility of the bidder for margin of preference.

16. Award of Contract

The Bidder having submitted the **lowest evaluated responsive bid** and qualified to perform the works shall be selected for award of contract. Award of contract shall be by issue of a Letter of Acceptance in accordance with terms and conditions contained in Section IV: General Conditions of Contract and Particular Conditions of Contract.

17. Performance Security and signing of contract

Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the *Employer*, the **successful Bidder shall furnish a Performance Security from a bank**, in the amount equal to **10% of the Bid price (inclusive of VAT)**, in accordance with the conditions of contract, using for that purpose the Performance Security Form included in Section V Contract Forms.

The contract agreement shall be signed within 28 days after the successful bidder receives the letter of acceptance unless the parties agree otherwise.

Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the contract within the required time may constitute sufficient grounds for the annulment of the award.

18. Notification of Award and Debriefing

Prior to the expiration of the period of bid validity, the Employer shall, for contract amount above Rs 15 million, notify the selected bidder of the proposed award and accordingly notify unsuccessful bidders. Subject to Challenge and Appeal, the Employer shall notify the selected Bidder, in writing, by a Letter of Acceptance for

award of contract. Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.

The SIFB shall after award of contract, exceeding Rs 1 million and up to Rs 15 million, promptly inform all unsuccessful bidders in writing of the name and address of the successful bidder and the contract amount.

Furthermore, the SIFB shall attend to all requests for debriefing for contract exceeding Rs 1 million, made in writing within 30 days the unsuccessful bidders are informed of the award.

19. Advance Payment

The SIFB shall provide an Advance Payment on the Contract Price as stipulated in the General Conditions of Contract. The Advance Payment shall be guaranteed by an Advance Payment Security as per the format contained in Section V.

The Advance Payment shall be limited to 10% percent of the Contract Price, less any provisional and contingencies sums.

20. Integrity Clause

The SIFB commits itself to take all measures necessary to prevent corruption and ensures that none of its staff, personally or through his/her close relatives or through a third party, will in connection with the bid for, or the execution of a contract, demand, take a promise for or accept, for him/herself or third person, any material or immaterial benefit which he/she is not legally entitled to.

21. Rights of SIFB

The SIFB reserves the right:

- (a) to split the contract as per the lowest evaluated cost per lot; and
- (b) to accept or reject any bid or to cancel the bidding process and reject all bids at any time prior to contract award without incurring any liability to the SIFB.

22. Challenge and Appeal

Unsatisfied bidders shall follow procedures prescribed in Regulations 48, 49 and 50 of the Public Procurement Regulations 2008 to challenge procurement proceedings and award of procurement contracts or to file application for review at the Independent Review Panel.

- (a) The address, Tel. No. & Email address to file Challenges in respect of this procurement is:

The Officer in Charge.
Sugar Insurance Fund Board
18, Sir Seewoosagur Street,
Port Louis
Tel: +230 260 4700
E-Mail address: sifb@sifbmu.org

- (b) The address to file Application for Review is:

The Chairperson
Independent Review Panel,
5th Floor,
Belmont House, Intendence Street, Port Louis
Tel : +230 260 2228
Email : irp@govmu.org

Section II: Bid Submission Form

Note: Bidders are required to fill all the forms in this section and submit as part of their bid. Non-submission of any form may lead to rejection of the bid

Date: _____

Bid's Reference No: _____

Procurement Reference No: _____

To:

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued;
- (b) We offer to execute in conformity with the Bidding Documents the following Works: Upgrading works of the SIFB Sub-Office at New Road, Quartier Militaire;
- (c) The total price of our Bid including VAT is: -----

(MUR):
- (d) Our bid shall be valid for a period of 90 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents or up to 21 May 2024 whichever is later, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (e) We hereby confirm that we have read and understood the content of the Bid Securing Declaration attached hereto and subscribe fully to the terms and conditions contained therein, if required. We understand that non-compliance to the conditions mentioned may lead to disqualification.
- (f) If our bid is accepted, we commit to obtain a Performance Security in accordance with the Bidding Document;
- (g) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 8;
- (h) We are not participating, as a Bidder in more than one bid in this bidding process;
- (i) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible under the laws of Mauritius;
- (j) We have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption as per the principles described hereunder, during the bidding process and contract execution:
 - i. We shall not, directly or through any other person or firm, offer, promise or give to any of the Public Body's employees involved in the bidding process or the execution of the contract or to any third person any material or immaterial benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
 - ii. We shall not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the bidding process.
 - iii. We shall not use falsified documents, erroneous data or deliberately not disclose requested facts to obtain a benefit in a procurement proceeding.

We understand that transgression of the above is a serious offence and appropriate actions will be taken against such bidders.

- (k) We understand that this bid, together with your written acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

- (l) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive; and
- (m) If awarded the contract, the person named below shall act as Contractor's Representative:

Name:

.....

In the capacity of:

.....

Signed:

.....

**Duly authorized to sign the
Bid for and on behalf of:**

.....

Date:

.....

Seal of Company

.....

BID SECURING DECLARATION

By subscribing to the undertaking in the Bid Submission Form:

I/We accept that I/we may be disqualified from bidding for any contract with any Public Body for the period of time that may be determined by the Procurement Policy Office under section 35 of the Public Procurement Act, if I am/we are in breach of any obligation under the Bid conditions, because I/we:

- (a) have modified or withdrawn my/our bid after the deadline for submission of bids during the period of bid validity specified by the Bidder in the Bid Submission Form; or
- (b) have refused to accept a correction of an error appearing on the face of the bid; or
- (c) having been notified of the acceptance of our bid during the period of bid validity,
 - (i) have failed or refused to execute the Contract, if required, or
 - (ii) have failed or refused to furnish the Performance Security, in accordance with the Instructions to Quote.

I/We understand this Bid Securing Declaration shall cease to be valid

- (a) in case I/we am/are the successful bidder, upon our receipt of copies of the contract signed by you and the Performance Security issued to you by me/us ; or
- (b) if I am/we are not the successful Bidder, upon the earlier of
 - (i) the receipt of your notification of the name of the successful Bidder; or
 - (ii) thirty days after the expiration of the validity of my/our bid.

In case of a Joint Venture, all the partners of the Joint Venture shall be jointly and severally liable.

Qualification Information

1. Individual Bidders or Individual Members of Joint Ventures

1.1 Constitution or legal status of Bidder: *[attach copy]*

Place of registration: *[insert]* _____

Principal place of business: *[insert]* _____

1.2 Bidder shall provide *[insert number]* of works of a nature and amount similar to the Works performed as Contractor over the last 5 years.

| Project/Contract name and country | Name of client and contact person | Type of work performed and year of completion | Value of contract (national currency) |
|-----------------------------------|-----------------------------------|---|--|
| (a) | | | |
| (b) | | | |

1.3 Proposed subcontracts and firms involved. Refer to General Conditions of Contract Clause 7.

| Sections of the Works | Value of subcontract | Subcontractor (name and address) | Experience in similar work |
|-----------------------|----------------------|----------------------------------|----------------------------|
| (a) | | | |
| (b) | | | |

[Bidders have to ascertain that sub-contractors executing works are duly registered with the CIDB in accordance with CIDB Act 2008.

1.4 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the SIFB.

2. Additional

2.1 Bidders should provide any additional information Requirements requested in the Bidding Document.

BILL OF QUANTITIES

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|--|------|-----|--------------|----------------|
| A.1 | <p>Preliminaries and General Costs</p> <p>The Contractor is to allow for costs related to Preliminaries and General Conditions of Contract requirements including the following but not limited to: setting out of the works, site management, Contractor's office, overheads, tools, plants, scaffolding, store, stacking and storage of materials, Project Manager's facilities, Transport facilities for inspection for Project Manager, insurances, watchmen, light, electricity, signboard, protection, security of workmen, etc. and works on site, temporary hoardings and gantries. Bidders are required to submit their bid on a fixed price basis which is to include for all possible increase in costs of Labour, materials, freight, transport, fuel, changes in exchange rates, taxes excluding VAT, all cost related to insurances as per GCC13.1.</p> <p>Note 1: The Bidder is advised to visit and inspect the site for which he is tendering and to make his own assessment of the true extent and nature of works required, prior to submission of his offer as no claims will be allowed on the grounds of ignorance of the Conditions under which the works will be executed.</p> <p>To clean building of all existing debris etc and cart away.</p> <p>Furthermore, shall allow in his tender for taking all necessary measures to protect all existing sign posts, electric/ telephone poles during the works. In addition, all precautions should be taken during the works in order not to damage any overhead electric/telephone cables/antennas etc. The bidder should ensure that necessary measures are taken at his level so as to protect his labour force from any dangers with respect to adjacent electric/telephone cables/antennas etc.</p> <p>To submit Health and Safety report duly prepared and signed by an authorised Health and safety officer for approval prior to start works.</p> | Sum | 1 | | |
| Sub-Total 1 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|--|----------------|-----|--------------|----------------|
| B Civil Works | | | | | |
| B1 | <p>Supply and fixing Aluminum openings fully functional incl all handle, locking devises for doors, compass, 6mm glass, tinted/frozen glass, door stoppers etc as per specifications (design pattern to be as per existing or to Engineer's instruction)</p> <p><i>Rate shall include removal of exiting timber/aluminium/metal door and metal and glass naco window and carting away, Supply of all necessary materials, make good to all jams, cills etc on both sides incl. all edges prior to fixing of opening. Provision of scaffolding as require and any miscellaneous cost which may arise.</i></p> | m ² | 135 | | |
| B2 | <p><i>Removal of existing roller shutter and carting away. Works shall include making good to all edges.</i></p> | m ² | 8 | | |
| B3 | <p>Supply and Fixing of Hot dipped Galvanised Burglar proofing to existing openings with vertical metal circular/rectangular solid sections of 12mm diameter spaced at 125mm c/c with 50x8mm thick flat horizontal sections spaced at 500mm fixed with M12 bolts.</p> <p><i>Rate shall include painting works with 1 coat of primer, 2 coats of hard Gloss Enamel (Color to Engineer's Approval), all breaking and making good of concrete, Provision of scaffolding as required and any miscellaneous cost which may arise.</i></p> | m ² | 76 | | |
| B4 | <p>Removal of Existing Waterproofing Membrane.</p> <p><i>The price quoted for this item shall include:- Removal of existing waterproofing membrane and cart away, Provision of scaffolding as required and, Any miscellaneous cost which may arise.</i></p> | m2 | 700 | | |
| Sub-Total 2 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|---|------------------|-----|--------------|----------------|
| B5 | <p>New double layer Waterproofing Membrane of total thickness 4.2mm or more</p> <p><i>The price quoted for this item shall include: - New Mixing and placing new screed adequate thickness for a proper slope (1:3 mix), with approved bonding agent, preparation of surface to receive new waterproofing membrane; Supply of all necessary materials and plant, Provision of scaffolding as required, Submission of samples of waterproofing and technical literature to Engineer for approval prior to laying (refer paragraph 1.10 of the General Specifications); Laying of waterproofing membrane to specifications including closing over parapet walls, at rainwater pipes; new rainwater pipe where required, Carry out no-ponding test to verify adequacy of screed slope; Carry-out 24 hours water test to verify leakage; Submission of 10 years guarantee certificate and; Any miscellaneous cost which may arise.</i></p> | m2 | 700 | | |
| B6 | <p>BITUMINOUS CONCRETE 0/10 FOR RESHAPING</p> <p><i>The price quoted for this item shall include:- Preparation of existing surface, including levelling and compaction, to receive bituminous concrete; Provision of prime/tack coat; Supply, laying and compacting of bituminous concrete 0/10 (5.5% bitumen content) and; Any miscellaneous cost which may arise. Allow for crusher run 0/20 to level the surface as directed by Project Manager.</i></p> | m ² . | 400 | | |
| B7 | <p>Construct new worktop made up of aluminium frames with sink and granite on top and on wall as per specifications. To make provision for at least 3 Nos drawers and remaining doors. Also to provide tap for sink, angle valves, and other fittings. (design pattern to be as per existing or to Engineer's instruction)</p> <p><i>Rate shall include removal of existing timber cabinet and carting away, Supply of granite, sink, all necessary materials, preparation of surface prior to fixing of opening, fixing to block wall including rendering of block wall on all 4 sides to secure opening, Supply and fixing of door handles/door lock, 6 mm thick clear, tinted or frosted glazing, Provision of scaffolding as required and any miscellaneous cost which may arise.</i></p> | m ² . | 2 | | |
| Sub-Total 3 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|--|------------------|------|-----------|-------------|
| B8 | PAINTING CONCRETE SURFACE- Internal EMULSION PAINT <i>The price quoted for this item shall include:- Removal of loose paint including washing with high pressure jet and repair of minor cracks with crack filler; Prepare surface as required prior to painting works including any treatment required; Supply of paint as per specification; Apply one coat of undercoat and two coats of paint, Provision of scaffolding as required and; Any miscellaneous cost which may arise.</i> | m ² | 1100 | | |
| B9 | PAINTING CONCRETE SURFACE- External ANTI-FUNGUS PAINT <i>The price quoted for this item shall include:- Removal of loose paint including washing with high pressure jet and repair of minor cracks with crack filler; Prepare surface as required prior to painting works including any treatment required; Supply of paint as per specification; Apply one coat of undercoat and two coats of paint, Provision of scaffolding as required and; Any miscellaneous cost which may arise.</i> | m ² | 600 | | |
| B10 | Removal of existing vinyl flooring and wall tiles including screed and cart away, Cleaning; Provision of scaffolding as required and Any miscellaneous cost which may arise | m ² . | 450 | | |
| B11 | Supply and Fix of Homogeneous Non-Skid Ceramic Tiles 10 Mm Thick To En 176 or Latest. Including skirting 100mm using same tiles <i>Rate shall preparation of the surface to receive new tiles including levelling; Removal of furniture and re-placing; new floor screed, Removal of flush doors, raising as required and re-fixing; Supply of all necessary materials and plant including tilefix cement; Laying of tiles 300x300 or 400x400 or 600x600 or equivalent of thickness 8mm or 10mm as specified (sample to be submitted for approval –Filling of joints with cement based grout to Engineer's approval; floor drains with pvc pipe 50mm diameter concealed in floor/floor screed, Carting away excess materials and cleaning; and Any miscellaneous cost which may arise.</i> | m ² . | 450 | | |
| Sub-Total 4 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|---|------------------|-----|--------------|----------------|
| B14 | Supply and Fix of Homogeneous Ceramic Tiles 8-10 Mm Thick. <i>The price quoted for this item shall include: Preparation of the surface to receive new ceramic tiles; Supply of all necessary materials and plant including tilefix cement; Laying of coloured glazed ceramic tiles (200x200 or bigger size as approved by Engineer) (sample to be submitted for approval – pvc corner strips to be provided to all vertical & horizontal edges; Filling of joints with cement based grout to Engineer's approval; Provision of scaffolding as required; Carting away excess materials and cleaning; and Any miscellaneous cost which may arise.</i> | m ² . | 60 | | |
| B15 | Supply and install/fix disabled toilet with all frames, support, Wash hand basin, taps, pressure wash, pipes for supply and discharge, angle valves, pan adaptor etc. To also include mirror, soap dispenser, tower rail etc, The disabled toilet should be fully functional and as per norm. | No. | 1 | | |
| B16 | Supply and Fixing of WC Pan European Style with Closed Coupled Cistern <i>The price quoted for this item shall include: - Supply, installation and connection of a WC pan and cistern at location specified including all accessories and fittings required; Disinfection and cleaning of the tank prior to use; toilet paper holder, hose spray, Provision of scaffolding as required; Testing and commissioning and; Removal of damaged pipes and fittings and associated plumbing elements and carting away, if applicable, supply, installation and connection of pipes and fittings PVC/Brass (Elbow, Tee, Cross, Nipple, Plug, Sockets, Reducers, Adaptors, Connector) arrangement complete with all accessories (angle valves, non-return valve) and fittings required; Provision of scaffolding as required and Any miscellaneous cost which may arise. Works to include removal and carting away of existing one with all its piping, fittings and making good prior to receive new one.</i> | No. | 3 | | |
| Sub-Total 5 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|---|------|------|--------------|----------------|
| B17 | <p>Supply and Fixing of Hand Wash Basin on top of concrete vanity table of size 1mx0.6m with granite slab on concrete table and wall to the approval of Project Manager. Works shall be complete with all taps etc.</p> <p><i>The price quoted for this item shall include: Supply, installation and connection of a Hand wash basin at location specified including all accessories (mirror, soap holder, towel holder and stainless-steel tap single type) and fittings (waist, bottle trap, etc...) required; Disinfection and cleaning prior to use; Testing and commissioning and; Removal of damaged pipes and fittings and associated plumbing elements and carting away, if applicable, supply, installation and connection of pipes and fittings PVC/Brass (Elbow, Tee, Cross, Nipple, Plug, Sockets, Reducers, Adaptors, Connector) arrangement complete with all accessories (angle valves, non-return valve) and fittings required; Provision of scaffolding as required and Any miscellaneous cost which may arise.</i></p> | No. | 5 | | |
| B18 | <p>CLEARING OF SITE/YARD AND GRASS/PLANT PLANTING</p> <p><i>The price quoted for this item shall include:- Clearing of site from bushes, bambous hedges, vegetation, wastes, rocks, debris, etc...Loading, carting away and disposal of all materials, and; Picking up top soil from spoil tip or from natural ground, identified by contractor, and transport to any distance to area required Spreading, levelling and light compaction of top soil to a depth of at least 300mm;Trimming and shaping to levels and contours; Reducing soil to a tilth immediately prior to grassing; Fertilising; Supply, transport and planting of grass and decorative plants ;Raking, watering and herbicide treatment; Cutting grass twice during maintenance period ;Carting away of grass cuttings during maintenance period; and any miscellaneous costs which may arise.</i></p> | M2 | 1000 | | |
| Sub-Total 6 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|--|------|-----|--------------|----------------|
| B19 | <p>BOUNDARY WALL- (Reinforced concrete wall of 2m high and 1.2m blockwall with columns Razor Blade on top) as per drawing no....</p> <p><i>The price quoted for this item shall include: - Excavation in any material including rock and removal of water for dry work; Supply of all necessary materials and plant ;Provision of scaffolding as required; Mixing and placing of mortar and concrete; Supply and placing of 200 mm concrete blocks as indicated on drawing, except that the effective height of the walls shall be measured on the external side, unless directed otherwise by the Engineer; Supply and fixing of razor blades, Placing blinding concrete, concrete base , R.C. wall and above 2m columns at 3m spacing as indicated on drawing, concrete copping; Rendering of all surfaces; Construction of expansion joints; Testing at MPI, MSB, University of Mauritius or other approved laboratory and submission of test results (including concrete cubes, slump, sieve analysis, test certificates of materials, etc) upon request of the Engineer Backfilling, carting away excess materials and cleaning; and Any miscellaneous costs which may arise..</i></p> | m | 26 | | |
| B20 | <p>Make good to existing stone wall at entrance. Works to include all mortar, jointing etc <i>Provision of scaffolding as required and; Any miscellaneous cost which may arise</i></p> <p>.</p> | M2 | 25 | | |
| Sub-Total 7 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|--|------|-----|--------------|----------------|
| B21 | ENTRANCE GATE <i>Make good/repair to existing gate. Works to include any repair of the metal gate prior to; apply one coat of primer, undercoat and two coats hard gloss paint to internal and external surfaces; Provision of scaffolding as required; Any miscellaneous cost which may arise.</i> | M2 | 12 | | |
| B22 | BOUNDARY WALL- (Low blockwall with fencing and Razor Blade) as per drawing no. <i>The price quoted for this item shall include: - Excavation in any material including rock and removal of water for dry work; Supply of all necessary materials and plant ;Provision of scaffolding as required; Mixing and placing of mortar and concrete; Supply and placing of 150 mm concrete blocks as indicated on drawing, except that the effective height of the walls shall be measured on the external side, unless directed otherwise by the Engineer; Supply and fixing of razor blades, Placing blinding concrete, strip footing, R.C. column and foundations at 3m spacing as indicated on drawing, concrete copping; Rendering of all surfaces; Construction of expansion joints; Testing at MPI, MSB, University of Mauritius or other approved laboratory and submission of test results (including concrete cubes, slump, sieve analysis, test certificates of materials, etc) upon request of the Engineer Backfilling, carting away excess materials and cleaning; and Any miscellaneous costs which may arise..</i> | m | 75 | | |
| Sub-Total 8 Carried forward to Summary Sheet | | | | | |

| Item No | Brief Description of Works | Unit | Qty | Rate (Rs) | Amount (Rs) |
|---|---|------|-----|--------------|----------------|
| C- Electrical Works | | | | | |
| C1 | Supply, install, test and commission Type A Lighting as per specifications c/w electrical wiring and switch | No. | 40 | | |
| C2 | Supply, install, test and commission double sockets as per specifications and c/w electrical wiring | No. | 40 | | |
| C3 | Supply, install, test and commission supply/extraction fans as per specifications incl. of electrical wiring (Toilet and Kitchen) | No. | 3 | | |
| C4 | Supply, install, test and commission electrical distribution boards, with RCD, breakers, surge protector, etc as specifications | Sum | 1 | | |
| C5 | Earthing System all complete | Sum | 1 | | |
| C6 | Testing and Commissioning & as made drgs, Engineer's certificates for the whole works | Sum | 1 | | |
| Sub-Total 9 Carried forward to Summary Sheet | | | | | |

Note: The works above shall include all materials, scaffolding, general equipment and labour.

Cost Summary Table

| SUB TOTAL BROUGHT DOWN | AMOUNT (Rs) |
|--|----------------|
| Brought forward from Sub-Total 1 | |
| Brought forward from Sub-Total 2 | |
| Brought forward from Sub-Total 3 | |
| Brought forward from Sub-Total 4 | |
| Brought forward from Sub-Total 5 | |
| Brought forward from Sub-Total 6 | |
| Brought forward from Sub-Total 7 | |
| Brought forward from Sub-Total 8 | |
| Brought forward from Sub-Total 9 | |
| Net Total Excluding 15 % VAT | |
| Contingency Sum | 700,000 |
| NET TOTAL Amount excl VAT | |
| Add 15 % VAT | |
| Net Total Including 15% VAT & Contingencies | |

Authorised by:

| | | | |
|----------------------------------|---------|------------|--|
| Name: | | Signature: | |
| Position: | | Date: | |
| Authorised for and on behalf of: | Company | | |

Section III: Statement of Requirements

A. SCOPE OF WORKS, DRAWINGS, SPECIFICATIONS AND PERFORMANCE REQUIREMENTS

- The Scope of works for the civil works is as follows:
 - a) Remove timber door/metal/aluminium, naco (Metal and glass) and cart away.
 - b) New aluminium openings to doors, windows, top lights (impostes) with all locking devices such as lock, handle, hinges etc. The lock shall be cramon one with two-point locking for windows and all fittings to be stainless steel.
 - c) Remove existing Roller shutter and cart away.
 - d) Burglar-proofing to window.
 - e) Repair and painting of Entrance gate
 - f) Low block wall, fencing and razor blade (75m).
 - g) 2m high retaining wall + 1.2 m blockwall (26m).
 - h) Remove floor vinyl and cart away and place ceramic tiles.
 - i) Remove existing timber skirting and cart away and place ceramic one.
 - j) Remove existing WC and cart away and new one.
 - k) Remove wash basin and cart away and place New wash hand basin, toilet paper holder, taps, hose spray, mirror and soap holder with any repair of piping works 25mm, 50mm and 110mm with all fittings and valves like angle valve and non-return valve.
 - l) New granite and new sink with aluminium cabinet.
 - m) Internal and external Painting works including all repairs of cracks, washing with high jet pressure, filling of gaps, cracks etc. Min. 3 coat of paint on all wall surfaces as directed by the Project Manager.
 - n) Remove existing waterproofing.
 - o) New screed and new waterproofing.
 - p) Landscaping work.
 - q) Concrete asphalt of existing premises using min 30 to 40 mm concrete asphalt 0/10. Works to include all re-shaping, filling with crusher- run 0/20, compaction, etc. To ensure no ponding at all. To take at least 3 cores for testing.
 - r) Provision of disabled toilet and ramps.
- The scope of works for electrical and allied works shall consist of but not limited to the supply, installation, testing and commissioning of the following: -
 - a) new Distribution boards, control panels and electrical breakers, RCD and surge protector same shall be certified by a Registered Electrical Engineer.
 - b) Remove old sockets and switches and install New with new trunking and wiring.
 - c) Indoor lighting .
 - d) Civil Works icw Electrical Works.

Authorised by:

| | | | |
|----------------------------------|---------|------------|--|
| Name: | | Signature: | |
| Position: | | Date: | |
| Authorised for and on behalf of: | Company | | |

DRAWINGS

| | |
|------------|--|
| 1.0 | SB/23/ST01 – Location Plan |
| 2.0 | SB/S3/ST02 – Layout Plan |
| 3.0 | SB/S3/ST03 – Sections |
| 4.0 | SB/S3/ST04 – Elevation |
| 5.0 | SB/S3/ST05 – Boundary wall Reinforcement Detail |

SPECIFICATIONS

EXCAVATION

Inspection of Site

The Contractor is deemed to have visited the Site and to have ascertained the nature of the material to be excavated.

Dealing with water

The Contractor's attention is drawn to the depths below ground level of the foundations and the consequent possibility of having to deal with water. Unless otherwise specified the Contractor will be required by pumping or other means to keep the excavations dry during construction.

Shoring of existing structure

The Contractor's attention is drawn to the requirements for shoring parts of the structure of the existing building during construction and the consequent need to carry out the excavation in stages. He is not allowed to excavate within the proximity of the existing structure without the drawings and/or instructions by the Engineer to do so.

Excavation Dimensions

The excavations are to be executed to the widths and depths shown on the Drawings or to greater depths if instructed by the Engineer to obtain satisfactory foundations.

If the contractor excavates to any widths or depths greater than those shown on the Drawings, or as instructed by the Engineer he shall at his own expense fill in such widths or depths beyond that instructed or shown with concrete Grade "D" to the satisfaction of the Engineer.

Rock

"Rock" means any hard material, which in the opinion of the Engineer can be removed only by use of compressors or by wedging and the Engineer's opinion shall be final. Decomposed rock, tuff or other material which can be removed by pick, traxcavator or other mechanical plant will not be classed as rock. All material classified as rock may, if approved by the Engineer, be used as hardcore filling and the measured quantities of imported filling will be adjusted accordingly. All rock so used must be broken to the required size as hereafter described before being used.

Blasting

No blasting will be permitted.

Bottom of excavations to receive foundations

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 now work substituted after the excavations have been approved, all at the Contractor's expense.

The surface of the bottoms to excavations shall be levelled or graded to falls as required, with 50mm layer of concrete Grade “D” blinding (maximum 20mm gauge aggregate) and finished to a smooth surface with a wood float.

Hardcore filling

Hardcore for filling under float, etc, shall be good hard stone ballast 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 and graded so that it can be easily and thoroughly compacted by rolling.

The filling is to be laid in layers each of a consolidated thickness not exceeding 225mm and well watered and rolled with a vibrating roller (minimum 14 tons) or a ten ton roller. Where rolling is impossible, compaction shall be by hand or mechanical tampers. The top surface of the hardcore shall be levelled or graded to falls as required and blinded with similar material broken to 25mm gauge and surfaced with a 25mm layer of stone dust, well watered and rolled to receive concrete as described.

Materials found in excavations

No material found in the excavation is to be used in the works without the written permission of the Engineer.

CONCRETE WORK

Architect/Engineer

For the purpose of the concrete structure the Structural Engineer shall be deemed invested with the duties and be the representative of the Architect.

Code of Practice

All workmanship, materials, tests and performance in connection with the reinforced concrete work shall be in conformity with the latest edition of the British Standard Code of Practice (C.P. 110 “The Structural use of Concrete”) where not inconsistent with these Preambles.

Supervision

A competent person approved by the Engineer shall be employed by the Contractor, whose duty will be to supervise all excavation operations, making and erection of formwork, bending and fixing of reinforcement and all stages in the preparation and placing of the concrete. All cubes shall be made and site test carried out under his direct supervision, in consultation with the Engineer.

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 of concrete, the contractor shall submit drawings for approval by the Engineer, showing the proposed general plant arrangement, together with a general description of the equipment he proposes to use.

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

Where these Preambles, the Bills of Quantities or the Drawings require specific procedures to be followed, such requirements are not to be construed as prohibiting the use by the Contractor of alternative procedures if it can be demonstrated to the satisfaction of 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 provisions or requirements contained in these preambles governing the quality of the materials or of the finished work.

Levels and Foundations

The foundations of the works shall be carried down to depths as may be directed by the Engineer and they must be cut as nearly to the size of the concrete as possible and the vacant spaces between the concrete and the solid ground, excepting where otherwise shown, must be carefully filled in as instructed by the Engineer.

All temporary timbering shall be removed but should any timber be left in or should any other work be done beyond that specified, it will be at the Contractor's own cost.

Tolerances

On all setting out dimensions of 7.5m and over a maximum non-cumulative tolerance of plus or 6mm will be allowed, and for those under 6m the allowable maximum non-cumulative tolerance will be plus or minus 3mm. On the cross sectional dimensions of structural members, unless otherwise required by the Drawings, a maximum tolerance of plus or minus 3mm will be permitted.

The top surface of concrete floor slabs and beams shall be within 6mm of the normal level and line shown on the Drawings. Walls and columns shall be truly plumb and non-cumulative tolerance of 3mm in each storey and not more than 12mm 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 within the tolerances set out above.

Materials generally

All materials which have been damaged, contaminated or have deteriorated or do not comply in any way with the requirements of these Preambles shall be rejected and shall be removed immediately from the site at the Contractor's own expense.

No materials shall be stored or stacked on suspended floors without the Engineer's prior approval.

Samples and Testing

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 does not comply with the requirements of these Preambles, the Contractor will be responsible for the costs of the tests and the replacement of defective materials and/or construction.

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, and 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 shall be stored in a weatherproof 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 stacked more than 1.5m in height.

If delivered in bulk the cement shall be stored in a waterproof 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.

Aggregates:

Aggregates shall conform with the requirements of B.S. 882 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. 882 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, crushed rock sand and coral sand, of hard quality and shall be free from lumps of

stone, earth, loam, dust, salt, organic matter and any other deleterious substances. Coral sand shall be washed in running water to the satisfaction of the Engineer. It shall be graded within the limits of zone 1 or 2 of Table 2 of B.S 882.

Coarse aggregate for concrete Grade 'A', 'B' and 'C' shall be crushed blue basalt stones to the approval of the Engineer. It shall be hard, clean and roughly cubical in shape, non-porous, 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. 882 for its respective nominal size. If in the opinion of the Engineer the aggregate meets with the above requirements but is dirty or adulterated in any manner it shall be screened and/or washed with clean water, if he so instructs at the Contractor's expense.

Aggregates shall be delivered to the site in their prescribed sizes or gradings and shall be stock-piled separately on paved areas or boarded platforms in separate units to avoid intermixing, excessive segregation and contamination with other materials. On no account shall aggregates be stock-piled on the ground. Fine aggregates shall be allowed to drain until it has reached uniform moisture content before it is used.

Water

The water used for mixing concrete shall be from an approved source, clean, fresh and free from harmful matter.

Admixtures

No admixtures except the ones specified for waterproof concrete shall be allowed. The Contractor may use an approved "plasticiser" which will be added to the mixing water in the proportion recommended by the manufacturer and strictly in accordance with their written instructions, to achieve better workability. No additional cost will be paid for the use of the plasticiser.

CONCRETE STRENGTHS

Grades of Concrete:

Grades 'A', 'B' and 'C' concrete shall have the following minimum strengths as given by Works Cube Tests:

| | <u>Grade A</u> | <u>Grade B</u> | <u>Grade C</u> |
|--------------------------|-----------------------|-----------------------|-----------------------|
| Min. crushing) at 7 days | 21 | 17 | 14 |
| strength in) at 28 days | 30 | 25 | 20 |
| N/mm ²) | | | |

Grade 'D' and 'E' concrete shall be of the following nominal mixes and may be measured either by volume or by weight. No cube tests will be required for Grades 'D' and 'E' concrete. These grades will be used for unreinforced concrete, with a maximum slump of 50mm.

| <u>Grade</u> | <u>D</u> | <u>E</u> |
|--|-----------------|---|
| Nominal mix by concrete) | 1.10 | 1.10 (with plums not exceeding 20% by total volume of concrete) |
| Max. gauge of coarse aggregate | 40mm* | 40mm* |
| (* or 20mm for blinding concrete where described). | | |

Measuring of Concrete Materials

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.

Aggregate

- (i) For Grades 'A', 'B' and 'C' concrete, aggregates may be measured by weight in weigh batching machine as described hereafter.

- (ii) For Grades 'D' and 'E' concrete, aggregates shall be measured by weight or by volume. Where measured by volume, approved gauge boxes of such a size as will give the correct proportions shall be used.

Weigh batching machine

Weigh batching machine shall be of an approved type and shall be properly maintained and checked for accuracy at weekly intervals.

Concrete Mixes 'A', 'B' and 'C'

As specified above.

The Contractor shall have two alternatives to achieve the specified concrete strengths.

Alternative 1 Design Mix

Contractor can use minimum amount of cement by weight per cubic metre of finished concrete as set out below, if he provides strict with CP 110 Clause 6.5. requirements for design mixes.

6.5.1 Target mean strength.

6.5.2 Evidence of suitability of proper mix proportions.

6.5.3 Trial mixes.

6.5.4 Additional Trial Mixes

The copies of this clause is available from the Engineer's office on request by the contractor.

The minimum cement content by weight shall be

Minimum cement content

Per cubic metre of

| | | | |
|-------------------|--------|--------|--------|
| finished concrete | 450 kg | 360 kg | 250 kg |
|-------------------|--------|--------|--------|

Alternative 2

If the contractor fails to achieve the requirements of alternative 1 and/or prefers nominal volumetric mix, he shall use the following:

| | <u>Mix A</u> | <u>Mix B</u> | <u>Mix C</u> |
|------------------------|---------------------|---------------------|---------------------|
| | <u>1:13/16:2</u> | <u>1:1 ¾:3</u> | <u>1:2 ½:4</u> |
| Cement | 1 bag of 50 kg | 1 bag of 50 kg | 1 bag of 50 kg |
| Crushed rock sand | 1 cu. ft | 1 ¼ cu.ft | 1 7/8 cu.ft |
| Coral sand 10mm to 5mm | ½ cu. ft | 7/8 cu.ft | 1 1/4 cu.ft |
| Graded aggregates | 5/8 cu.ft | 7/8 cu.ft | 1 ¼ cu. ft |
| 20mm to 10mm | | | |
| Graded aggregates | 1 7/8 cu. ft. | 3 cu. ft | 3 ¾ cu ft |
| Maximum water | | | |
| Cement ratio | .45 | .50 | .60 |
| Maximum slump | 50mm | 50mm | 50mm |

Average works cube strength obtained from Work Cube Tests of nominal volumetric mixes shall be 10% higher than the minimum concrete strengths specified.

Ready Mix Concrete

Ready mixed concrete may be used subjects to the approval of the Engineer.

When it is used the contractor shall ensure that all the requirements of these specifications are complied with. The Engineer may at his discretion waive temporarily the requirements of preliminary trial mixes as required under the heading of trial mixes laid down for alternatives design mix.

Further to above requirements the contractor shall ensure that supply and delivery of ready mixed concrete comply with the recommendations of M.S. 1926.

The concrete shall be transported to the site in approved containers and shall be continuously agitated until it is delivered on site. The Contractor shall ensure that no water is added after it is delivered.

For plant mixed concrete the contractor shall check that the delivery note for each batch shows the time when water is first added to the concrete materials, and the time interval between the delivery and the mixing of water is 20 minutes less than the final setting time of cement.

Samples of work cube shall be taken at the place where concrete is finally placed in the structural members.

Waterproof Concrete

Where “waterproof concrete” is specified, sealcrete or other approved waterproofing material and plasticising agent shall be added to the mixing water in the proportion recommended by the manufacturers and strictly in accordance with their written instructions. Waterproof concrete shall be grade B mix and shall meet all the strength requirements of the specified grade, except that the fine aggregate shall consist solely of rock sand.

Changing proportion of Aggregates

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

Testing Equipment

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

- a) Straight edges 3m and 1.2m long for testing the accuracy of the finished concrete;
- b) A graduated glass cylinder for use in the silt test for organic impurities in the sand;
- c) Slump test apparatus;
- d) Six inches steel cube moulds with base plates and tamping rods to B.S. 1881.

Work Cube Tests

Work cubes are to be made at intervals as required by the Engineer and the Contractor 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.

Six cubes shall be made on each occasion, three from different batches, of the concrete at the place where it is deposited.

Each cube shall be marked with a distinguishing number (numbers to run consecutively) and the date on which it is made. 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 by the Contractor to an approved Testing Authority, in time to be tested two at 7 days and two at 28 days. The remaining two cubes shall be tested when necessary.

Copies of all work cube Test results shall be forwarded to the Engineer and one shall be retained on the site.

If the prescribed concrete strengths 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 Work Cube Tests.

The Contractor must allow in his rates for all expenses in connection with the preparation, conveyance to the Testing Laboratory, and testing of cubes.

MIXING and PLACING CONCRETE

Concrete Mixer:

The concrete shall be mixed only in approved power driven mixers of a type and capacity suitable for the work. Mixers shall be of a capacity sufficient to take one whole bag of cement per batch. Smaller size mixers shall not be used. The mixer shall be equipped with an accurate water measuring device which shall be checked weekly for accuracy. 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 a 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.

Consistency:

As a check on concrete consistency slump tests may be carried out and shall be in accordance with B.S 1881. The Contractor shall provide the necessary apparatus and allow for the costs of such tests. 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.

Conveying:

The concrete shall be mixed as near to the place where it is required as is practicable to avoid rehandling and flowing, and only as much as is required for a specified section of the work shall be mixed at one time, such section being concerned and finished in one operation without delay. All concrete must be efficiently skilled 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 segregation or loss of ingredients or otherwise impair the quality of the concrete. Approved mechanical means of handling will be provided they are not longer than 6m and their slope do not exceed 1 vertical to 2 horizontal is not less than 1 vertical to 3 horizontal.

Depositing

Placing of concrete in supported elements e.g slab, bed shall not be started until the concrete previously placed in top parts of columns is no longer plastic and has been in place at least for two hours.

Concrete shall be placed from a height not exceeding 1.3m 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 with beams and similar members. The Engineer shall allow concrete to be placed for walls exceeding 150mm thickness from a height approved system of formwork is used.

In addition, contractor will ensure that the concrete shall be deposited continuously such that no concrete shall be deposited on concrete which had hardened sufficiently to cause the formation of seams or places of weakness within the section. Placing shall be carried out at such a rate that the concrete which is being integrated with fresh concrete is still plastic.

Concrete in columns may be placed in a height of 3m with careful placing and vibration to achieve satisfactory results. Where the height of the column exceeds 3m suitable openings must be left in the shutters on 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 a construction joint of the form and in the positions hereinafter specified shall be made. A record of all such joints must be made by the contractor and a copy supplied to the Engineer.

CURING and PROTECTION

Periods and means of 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 massive sacking, polythene sheeting, or other approved means. The protective layer and the concrete itself must be kept continuously wet for at least seven days after the concrete has been placed. The Contractor must allow for the complete covering of all fresh concrete for a period of 7 days. Hessian or polythene sheeting shall be in the maximum widths obtainable and shall be secured against wind. The Contractor will not be permitted to use old cement bags, hessian or other material in small piece.

Protection of foundation concrete

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

Executive loads before curing

Traffic or loading shall not be allowed on the concrete except with the written permission of the engineer.

FAULTY CONCRETE

Any concrete which fails to comply with these preambles 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 was set, the concrete shall be out and replaced in accordance with the Engineer's instructions. On no account shall any faulty, honey combed, or otherwise defective concrete be repaired or matched 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.

REINFORCEMENTS

Type of Reinforcement:

The steel reinforcement shall comply with the latest requirement of the following British Standards:
Round mild, medium tensile and to B.S 765 (Imperial units) high tensile and steel bars.

| | |
|--|------------------------------|
| Hot rolled bars for the reinforcement of concrete | to B.S 1449 (metric units) |
| Cold twisted steel bars | to B.S 1144 (imported units) |
| Cold worked steel for the reinforcement of concrete | to B.S 4461 (metric units) |
| Fabric reinforcement | to B.S 1221 |
| It shall be in Imperial or Metric sizes as detailed on the drawings. | |

Testing of Reinforcement

If required by the Engineer the contractor shall submit a test certificate of the rollings, and/or shall arrange for testing by MOW or other approved authority. Reinforcement shall be free from loose mill scale or rust, grease, paint or other substance likely to reduce the bond between the steel and concrete.

Fixing and Reinforcement:

Reinforcement shall be accurately bent to the shapes and dimensions shown on the Drawings and/or schedule and in accordance with B.S. 1478. Reinforcement must be cut and bent sold and no welded joints will be permitted unless so detailed. Reinforcement shall be accurately placed in position as shown on the drawings and shall be secured against displacement by using No. 18 S.W.C annealed binding wire or suitable clips at inter-sections and laps, and shall be supported by concrete or metal supports, steel chairs, spacers or metal hangers to ensure the correct position and cover before concreting and shall be kept in the same position during concreting. However, such supports, chairs etc. shall have minimum 12mm cover made of concrete blocks where the concrete surface is exposed to weather and/or without finishes.

No laps shall be permitted except the places shown on the drawings without the prior approval of the engineer.

Spacing Blocks:

Spacing 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.C wires set into the spacer blocks or other approved means shall be provided where necessary to ensure that the requisite cover is obtained. The contractor is to include for providing sufficient such spacer blocks in his prices for steel reinforcement when such supplier has been nominated.

Where composite blocks or minor forms from construction are just spare block are to be provided. These will generally consist of concrete blocks as described above made to fit the width of the rib less 3 mm of reinforcement bars used per on the top surface with wire ties at each.

Concrete cover to reinforcement:

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

| | |
|-------------------------------|-----------|
| Foundations against each face | 3 (75mm) |
| Foundations against blinding | 2 (50mm) |
| Columns | 1½ (38mm) |
| Beams | 1 (25mm) |
| Slabs | ½ (13mm) |

Positions and correctness of reinforcement:

No concreting shall be commenced until the engineer has inspected the reinforcement in position and until he has approved the same. The contractor shall give two clear days notice of his intention to concrete.

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 schedule 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 failing or defect in any portion of the reinforced concrete structure and including any consequent claims, third party claims, etc, where it is shown that the reinforcement has been incorrectly positioned or is incorrect in size or quantity with respect to the detailed Drawings or schedules. Unless permitted by the Engineer, reinforcement shall not be after being embedded in hardened concrete.

Protection of exposed reinforcement

Where reinforcement projects frame concrete setting of the structure and this reinforcement is executed to remain exposed to more than a month it is to be with a cement to prevent rust staining on the finished concrete. This is to be brushed off the reinforcement prior to the continuation to converting.

The Contractor shall be responsible for the co-ordination with the Electrical and other sub-contractors for incorporating electrical conduit, pipes, fixing locks, chases, holes and the like in concrete members as required and must ensure that adequate notice is given to sub-contractors informing them when concrete members incorporating the above are to be poured. The contractor shall submit full details including position 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.

FORMWORK

Materials and Design

Formwork shall be constructed of timber or steel or precast concrete or other approved material with sufficient strength to withstand pressure resulting from placing and vibration of the concrete and with rigidity to achieve the specified tolerances.

The design and Engineering of the formwork as well as its construction shall be the responsibility of the contractor. The Formwork shall be designed for the loads, lateral pressure, pressure due to cyclonic winds and other loads likely to be encountered on site.

Shops drawings for formwork including the location and reshoring shall be submitted for approval by the Engineer before erection.

Construction

All formwork shall have joints close enough to prevent leakage of liquid from the concrete and formwork shall be jacked or dedged and clamped or bolted to permit adjustments before concreting and to permit easing and removal of formwork without jarring the concrete. Formwork shall be securely braced and struttged against lateral deflections and vertical movements. 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 is sufficiently propped from lower floors or portions of the frame to permit the load to be temporarily carried during construction.

Formwork shall be cambered to compensate for anticipated deflections prior to hardening of the concrete.

Preparation for Concreting

The Contractor's attention is drawn to the various surfaces textures and applied finishes required and the faces of the formwork next to the concrete must be of such material and construction and be sufficiently true to provide a concrete surface which will in each particular case permit the specified surface treatment or applied finish.

At construction points contact surface of the form squeating for flush surfaces shall overlap 300mm and shall held right against the hardened concrete to prevent effects or loss of mortar.

Methods of fixing and positioning of the formwork which results in holes through the concrete and/or left in metal ties or similar in the concrete shall require Engineer's approval.

All surfaces which will be in contact with concrete shall be piled 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.

Temporary openings shall be provided at the base of columns, wall and seam 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 the interior of the form shall be completely cleared of all extraneous materials including accumulated water.

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.

Defective Formwork:

Defective formwork shall be removed or strengthened and improved by the contractor according to the instructions by the Engineer.

Formwork to Construction Joints etc.

Formwork forming the construction joints and expansion joint shall be rigid, tight to avoid loss of mortar and true in square.

Formwork shall be inspected and passed by the Engineer before placing reinforcement and concreting.

Stripping Formwork:

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 side walls and columns (unloaded) | 2 days |
| Slab soffits (with props designed to left under) | 7 days |
| Beam soffits (with props designed to left under) | 10 days |

Subject to work cubes achieving the specified strengths and the loads due to construction on them being lighter than the designed loads. The props can be removed for:

| | |
|-------------|---------|
| Slab | 10 days |
| Beams | 21 days |

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

Contractor shall be responsible for consequent damage arising from early stripping of formwork.

Making good:

After removal of formwork all projections, 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”.

Fair-face etc.

Where fair-face is specified the contractor shall make a sample of area formed by sides not less than 1.2m for approval by the Engineer and the Architect. Same will apply to Board Marked. Tamped and finishes.

Related Uniformed Surfaces

Top of walls or buttresses, horizontal offsets and similar unformed surfaces occurring immediately adjacent to formed surfaced shall be struck smooth after the concrete is placed and shall be floated to a texture reasonably insistent with that of the formed surfaces.

CONCRETE BLOCKLAYER

Concrete blocks

Concrete blocks for walling shall comply with B.S 2028 Type A (for load bearing walls) and of compressive strength not less than:

Average of 12 blocks 500 lbs/sq. in. Gross area

Lowest individual block375 lbs/sq. in. Gross area

Blocks for non load-bearing walls are to be class B blocks.

Blocks shall be hollow two-hole type and shall be cured for not less than 28 days before they are used in the works. The Contractor shall supply a certificate from the supplier for each consignment of block received to the effect that the blocks meet the requirements and strength of the latest relevant B.S. Any block for which a certificate cannot be produced will be condemned and must be removed from site. All blocks supplied shall be of the same height and blocks of dissimilar dimensions will not be accepted. Half length blocks and specials shall also be provided as specified or required to break bond.

Mortar

Mortar to be used for all Type A blockwall shall be composed of 1 part of cement to 3 parts of sand. Mortar for Type B blockwork shall be composed of one part of Portland cement, one part lime, and five parts of sand. All mortar shall be measured in specially prepared gauge boxes and thoroughly mixed dry or clean and water tight mixing platforms, with water added from a fine rose until all parts are completely incorporated and brought to a proper consistency.

All mortar must be used within thirty minutes of mixing.

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

Setting and jointing

All blocks shall be lightly wetted immediately before being bedded and jointed to minimise absorption of water from the mortar.

Blocks are to be well buttered with mortar as previously specified. The blocks shall be laid fair-faces on the outside face, in stretcher bond with 10mm. thick, full, flushed up and grouted solid joints. The joints shall not vary by more than 3mm and four consecutive joints shall not exceed 38mm and four consecutive joints shall not exceed 38mm. Joints shall be raked out where surfaces of walling are to be plastered.

Laying of blocks

All walls throughout the work shall be carried up evenly in courses, no part being allowed to be carried up more than 900 mm. higher at one time than any other part and in such cases the joining shall be made in long steps so as to prevent cracks arising and all walls shall be levelled around at each floor.

All put-log holes shall be carefully, properly and completely filled up on completion of walling work.

All walling shall be properly protected while mortar is setting.

Walls shall be kept thoroughly wet for at least three days or for such longer period of time as the Architect may direct. Walls exposed to the sun shall be protected with a sacking which shall be kept wet.

Fair Face Blocks

Where walling is to be finished fairfaced, the blocks are to be selected free from defects. Joints shall be raked out as works proceed and pointed with a neat flush joint.

The work shall be carried out regularly with all horizontal joints truly horizontal and no part shall be more than 900mm above adjacent work during construction.

Sample Panel

The Contractor shall include in his tender for erecting a sample panel on site of 200mm blockwork, not less than 1 square metre in area and built off a suitable concrete foundation. The sample, when approved, to form the standard for all concrete blockwork in the contract.

The sample area and concrete foundation to be removed when ordered and the surface of the ground made good.

Horizontal and vertical joints shall be 10mm finished thickness, and raked out 12mm deep where face of wall is to be rendered and in other cases to be left finished flush or as otherwise instructed. The joint grooves between blocks shall be completely filled with cement, lime mortar. No portion of the wall during construction to be more than 900mm above adjoining work. All work to be executed truly level, perpendicular and properly bonded together without continuous upright joints.

Cement, sand and lime

Cement and aggregates for this trade except where separately specified for precast concrete blocks shall be as specified for “Concretor” and lime shall be dry hydrated lime to B.S 890 Class B.

Air bricks

Form and leave neat holes in walls and supply and build in approved louvred pattern concrete air bricks where shown. The opening shall be rendered on all sides, the bottom sloped towards external face.

Bedding and pointing

Bedding and pointing of timber door and window frames shall be in cement mortar. Where frames are in metal they shall be bedded and pointed in mastic. Lugs or ties shall be built into walls as described.

Fixing blocks and

Provide and build into walls all necessary fixing blocks and and leaving holes leave out or cut away as necessary holes for pipes, conduits and the like and make good after fixing by other trades and specialists.

Build in lugs

Form or leave mortices in walls for, and build in lugs and and the like all necessary fixing for metal windows and doors, door frames and lining, sanitary fittings, rainwater pipes, clips and bearer of various types.

When building up the walls, the openings shall be made about 200mm wider than the external dimensions of the door's frames, and when the latter are placed, complete with lugs, the walling completed in concrete mix type C.

Damp-proof course Where indicated on drawings provide 2-ply felt damp-proof course. Felt to be of a manufacture approved by the Architect and to be laid on a 25mm thick bed of cement mortar (1:3 mix) on walls.
The damp-proof courses to stand the full thickness of walls, partitions and beams in one width and to be overlapped 6" at all jointings and corners.

Measurements The Contractor must allow in his prices for block walling, for plumbing angles, all straight and raking cuttings, cutting under soffits, waste, split courses necessary for bond, bonding at angles, intersections and junctions of walling of different thicknesses, cutting and fitting to columns, cutting and pinning to beam, cutting and fitting around end of cills and lintels, cutting and pinning ends of structural timber.

The rates of blockwork must also include for fixing all door, window and like openings, forming reveals to same and for cutting and waste to walling in short lengths to mullions and jamb of openings.

The rates of blockwork must also include for hoisting and building off beams and slab at any level, all necessary scaffolding and for work built overhead

1. MATERIALS

1.1. Aluminium

All materials shall be manufactured of extruded sections of aluminium alloy 6063 (T5) to BS EN 755-9 and shall comply with the requirements of BS 8118. All aluminium sections shall present clear straight and sharply defined lines, which shall be free from defects and imperfections that may impair their strength.

All screws, bolts and other necessary accessories shall be of aluminium or stainless steel or other non-corrodible material and shall match in colour and consistency of the finish of the anodization or the polyester powder coating or duranar coating as applicable.

1.2. Glass and Glazing

Windows shall be glazed in accordance with the recommendations given in BS 6262.

Attention is drawn to the glazing safety recommendations of BS 6262-4. Glass to be used is to comply to the requirements of BS 952 with minimum thickness of 6mm, unless stated otherwise. All glass should bear manufacturer's labels, indicating quality and thickness.

1.3. Approval

The Engineer's approval at the source of supply may be required prior to procurement. Such approval shall not prevent subsequent disapproval or rejection of materials by the Engineer if the quality is less than required by the Contract.

1.4. Steel

To comply with equivalent.

1.5. Weatherstripping

Mohair pile schlegel inserted into keyed grooves.

1.6. Glazing Tape

Vulcanized butyl tape with continuous neoprene spacer. Black colour 440 by Tremco Manufacturing Co., or approved equal.

1.7. Accessories

Shims, spacers, expansion bolts and screws, non-ferrous, clips, angles and fastening devices, galvanized steel, stainless steel.

2. DESIGN, MANUFACTURE, ERECTION & ADJUSTMENTS

The Contractor shall be responsible for the correctness and accuracy of the dimensions of the finished articles. All items shall be installed plumb, straight, square, level and in proper elevation, plane location and alignment with other work. All work shall be designed for

- (1) Adjusting to field variations, fitting with proper joints and intersections, adequately anchoring in place, strictly in accordance with best practice.
- (2) Allowing full expansion and contraction of window framing members without causing stress within the window assembly as a result of such expansion and contraction.
- (3) Tolerating structural deflection and distortion of structure, under design criteria conditions, without imposing load on window assembly.

He shall carefully check the dimensions indicated on the Drawing, verify any changes, and ascertain the sizes at Site which will enable him to prepare Final Working Drawings for fabrication and erection purposes. Such Drawings shall be submitted to the Engineer for his verification and approval.

Fabrication orders can only be placed after the contractor has obtained in writing the approval of the Engineer on the above Drawings.

Where aluminium surfaces come in contact with metals other than stainless steel, zinc, white bronze or small areas of other metals compatible with aluminium surfaces, they shall be kept from direct contact with such parts by providing one of the following systems to protect surfaces, in contact with dissimilar metals:

- (i) Paint the dissimilar metal with one coat of heavy-bodied bituminous paint.
- (ii) Apply a good quality elastomeric sealant between the aluminium and the dissimilar metal.
- (iii) Paint the dissimilar metal with one coat of primer and one coat of aluminium paint
- (iv) Use a no absorptive tape or gasket in permanently dry locations.

Moreover, steel anchors and connecting members shall be hot dip galvanized or zinc plated after fabrication.

Aluminium surfaces in contact with lime mortar, concrete, plaster or other masonry materials, shall be painted with alkaline- resistant coatings such as heavy-bodied bituminous paint or water- white methacrylate lacquer.

Aluminium in contact with wood or absorptive materials which may become repeatedly wet shall be painted with two coats of aluminium metal and masonry paint or a coat of heavy-bodied bituminous paint. Alternatively paint the wood or other absorptive material with two coats of aluminium house paint and seal joints with a good quality of caulking compound.

Where aluminium is in contact with treated wood, wood shall be treated with pentachlorophenol, 5% minimum concentration or approved equal, followed with the protective measures described for aluminium in contact with wood or other absorptive materials.

The aluminium work shall be designed and anchored so that the work will not be distorted nor the fasteners overstressed from the expansion and contraction of the metal.

The Contractor shall be responsible for the protection of all aluminium work until the completion of the works, and only units in perfect working order and in perfect condition shall be accepted.

Upon completion, the Contractor shall clean all aluminium work as required by removing protective tape or other coating, using mild soap or detergents and clear petroleum spirits.

Acids, caustics and abrasives shall not be used. Where cleaners are used to remove excess sealing compounds care shall be exercised to prevent damage to seals or staining or damage to adjacent work.

Upon completion of the project and just prior to the handing over of the building to the owner or at a time as directed inspect, test and adjust installation as follows:

- (1) Inspect all units for damage and correct same immediately.
- (2) Test and adjust all hardware and replace all faulty items.
- (3) Adjust all weatherstripping so as to leave each opening unit in its most weathertight position.
- (4) Test all operable elements and ensure easy and smooth operation.

3. SUBMITTALS

Prior to proceeding with any production, the following shall be submitted for review, approval, and selection by the Engineer:

- (1) Design Data: Structural calculations for the most adverse loading combination is to be submitted. All openings shall be design to resist a minimum 3s gust of 280km/h, as compatible with CP3: 1972: Chapter V-2:1972, as far as cyclonic loading is concerned. All Structural calculations shall bear the signature of a Registered Professional Engineer.
- (2) Catalogue of all aluminium sections to be used with their corresponding second moment of areas (I values).
- (3) Shop drawings: Drawings shall indicate elevations of doors, windows and frames, full-size sections, thickness and gages of metal, fastenings, proposed method of anchoring, size and spacing of anchors, details of construction, method of glazing, details of operating hardware, mullion details, method and materials for weather-stripping, material and method of attaching sub frames trim, installation details, and other related items. All the shop drawings shall be signed by a Registered Professional Engineer (Civil/Structural) of Mauritius for compliance with the specifications and submitted calculations.
- (4) Product Data: The Contractor shall submit manufacturer's specifications for materials and fabrication, installation instructions, and recommendations for maintenance for the approval of the Engineer. Certified test reports showing compliance with project requirements where test methods are indicated shall be included.
- (5) Finish Sample: 300 mm long pieces of frame material of each shape and finish specified for review before delivery of materials. 300 mm square samples of each type of glass indicated, and 300 mm long samples of each colour of gasket and sealant.
- (6) Quality Control Programme: Quality Control assurance programme covering production, assembly, and glazing procedure.
- (7) Certificate of origin and/or bill of lading.

4. DELIVERY AND STORAGE

- a. The aluminium and aluminium finishes shall be adequately protected to prevent damage thereto during fabrication, storage, shipping, handling and installation.
- b. The delivery, handling and storage of units shall be as per approved methods of manufacturer and protected from damage and staining.
- c. All sills and stools shall be protected after installation with boards, heavy paper or other suitable protection, secured in place, to prevent staining or scratching. No protection shall be removed after final cleaning.
- d. Glass and glazing materials shall be protected during delivery, storage and handling to comply with manufacturer's directions and to prevent damage to glass and glazing materials from moisture, temperature changes, direct exposure to sun and from other causes.

5. WARRANTY

1. The Contractor shall submit a written warranty of five years for any defects in manufacturing.
2. In addition to the above, insulating glass units shall carry manufacturer's standard warranty of minimum five years for defective materials and ten years for seals.
3. The Warranty shall include a statement that the openings shall resist cyclonic winds of not less than 280 km/h and shall be water tight.

6. TESTING

Performance test certificates should be submitted giving air and water infiltration figures taken at specified loadings.

As and when required by the Engineer, the Contractor shall carry out the following tests in accordance with the relevant British standards:

- Tests as per BS4873
- Tests as per BS5368
- Tests as per BS4315

CERTIFICATE FOR ALUMINIUM OPENINGS

In accordance with the requirements of (Clauses 1.1 and 1.3) of the Specifications of the contract for the Supply and fixing of Aluminium Openings for the project (Name of Project).....

..... I, the undersigned Registered Professional Engineer, hereby certify that the aluminium openings which have been fixed at (Location) have been designed and fixed to resist cyclonic winds of 280 Km/hr.

Name of Engineer:.....

Registration Number with the Council of Professional Engineers:.....

Signature:.....

The following part is to be signed by the Contractor.

In the event of a failure of these openings due to cyclonic winds of 280 km/hr or less, (Name of Contractor)undertakes to replace these openings and make good all damages resulting from the failure of these openings.

Name:.....

In the capacity of:.....

Signed:.....

Duly authorized to Sign the certificate for and on behalf of.....

Date:.....

Seal of Company:.....

The Waterproofing System

The Waterproofing system, unless otherwise specified, shall meet the following performance specifications:

EITHER

A SSS elastomeric bitumen system in double layers, torched bonded and of total minimum thickness of 4.2mm with granular finished as described below:

- a) The first layer should be a SBS (Styrene-Butadiene-Styrene) elastomeric bitumen system reinforced with non-woven glass fibre Md (50gm²) torched applied with a minimum thickness of 1.7mm.
- b) The second layer should be a SBS (Styrene-Butadiene-Styrene) elastomeric bitumen system reinforced with non-woven glass fibre matt having a minimum thickness of 2.5mm. This layer should have a granular finish colour white for better reflection and applied by torch.

OR

Any other alternative system provided it is duly supported with all technical specifications and back up information and literature to allow a proper assessment of the treatment proposed.

2. Performance Specifications of the Waterproofing System

- 2.1. The system shall, unless specified otherwise, be resistant to foot traffic and light concentrated loads associated with installation and maintenance operations.
- 2.2. The System shall comply with European, South African or American standards.
- 2.3. The System and its installation shall conform strictly to Manufacturer's specifications.

3. Preparation of surface to receive the Waterproofing treatment

- 3.1. The waterproofing Contractor shall ensure that the scope of the substrate is adequate to receive waterproofing and is according to Manufacturer's specifications.
- 3.2. All concrete surfaces to be waterproofed shall be reasonably smooth and free from holes and projection which might puncture or otherwise damage the waterproofing system to be applied.
- 3.3. The surface of the substrate shall also be dry and shall be thoroughly cleaned of dust and loose materials prior to the laying of the waterproofing system.
- 3.4. Prior to the application of the new treatment, the waterproofing Contractor shall be required to issue a certificate stating that the surface is ready to receive the new waterproofing treatment and is according to Manufacturer's specifications. It is hereby made clear that, should the waterproofing system fail to perform as required, no discharge of responsibilities shall be allowed on the grounds of the existing conditions prior to the application of the waterproofing system.

4. Inspection of Waterproofing System

- 4.1. The waterproofing treatment shall be carried out to the satisfaction of the Engineer.
- 4.2. The contractor shall ensure that the waterproofing system is free from wrinkles, buckles, blisters (trapped air) and other damage. Any damage or defects to the waterproofing system shall be corrected at the Contractor's cost, and to the Engineer's approval.
- 4.3. The contractor shall carry out a water test on the finished work, and seek the Engineer's approval for same. The test shall consist in filling the whole treated area with water (after plugging the rainwater pipe outlets) and retaining the water on the treated surface for 24 hours, as directed by the Engineer. Any leak/defect found shall be repaired at the Contractor's cost and another water test carried out to confirm the same, the whole to the Engineer's satisfaction.

4.4. The contractor shall clean adjacent surfaces of spillage and spaterrings or any adhesive materials used in the works.

5. Water Test

5.1. The contractor shall allow in his rates for a water test to be carried out after laying the screed to fall, to confirm the absence of any leakage. The Test shall be verified and approved by the Engineer.

6. Guarantee Certificate

6.1. On satisfactory completion of the waterproofing works, the Contractor shall submit a certificate of guarantee against leakage, defective materials and defective installation of the completed waterproofing system. Any such defects or leakage occurring during the guarantee period shall be promptly and completely corrected including all affected work at no additional cost to the Employer.

6.2. The said guarantee shall be in effect for a period of ten (10) years from the start date of the practical completion certificate. The guarantee shall be signed by the Contractor and countersigned by the Manufacturer's representative and shall be submitted to the Employer.

General Notes

1. The risk of falls should be prevented by observing safe work practices when working close to the edges and strict supervision should be ensured.
2. The fragility of the roof material should be ascertained prior to start of the operations and fragile roof should be identified with a warning sign.
3. Persons undertaking the works should have appropriate training.
4. Unauthorized access should be prevented by blocking off access routes and access equipment.
5. The use of permit to work system should be considered.
6. More care and precaution is needed in case of adverse weather conditions such as windy conditions.
7. Persons working on roof should be physically fit and provided with Personal Protective Equipment such as non-slip shoes, hard hats, tool belt and respiratory protection should be provided.
8. Minimize the need for manual handling and provide the workers with information on weights of material.
9. Segregation of the work area as well as appropriate signage should be used to prevent contact with access equipment.

ELECTRICAL WORKS REQUIREMENTS

1.0 Note to Bidders

(i) Instruction

The bidder is advised to read carefully these instructions and to ensure that he has complied with the requirements herewith in all respects before submitting the bid.

(ii) Bidding Documents

The bidding documents are to be based on the following set:

1. Note to bidders
2. Scope of Works
3. Conditions of Contract
4. Technical Specifications
5. Bill of Quantities
6. Schedule of Materials

The bidder should check that he is in the possession of a complete set of Bidding Documents, as above, and by reference to index and content summary pages, he should ensure that all pages are in correct sequence and that none is missing. Any discrepancy or other irregularity should be immediately notified to the Client.

(iii) Discrepancies

Should the Bidder conclude from the bidding document that there exists any inconsistency, discrepancy or conflict within the content thereof of figures and words indistinct or be in doubt as to the true meaning of any part of the Bidding Documents, he must notify the Client for clarifications, prior to the submission of the bid.

For any other information, please contact Client Ministry/Department.

2.0 Scope of Works

The scope of works for electrical and allied works shall consist of but not limited to the supply, installation, testing and commissioning of the following: -

- a) Distribution boards, control panels, switch gears, etc.
- b) Switches, sockets and accessories.
- c) LV cables/wirings in conduit/trunking/cable trays.
- d) Indoor and outdoor lighting
- e) Earthing System.
- f) Civil Works icw Electrical Works

Note: If required, the successful bidder shall arrange for elevator or otherwise for execution of above works at no additional cost.

2.1 Manner of Execution

The contractor shall supply, install, test and commission the equipment and Electrical Works in the manner set out in the non-exhaustive specifications or where not set out, to the satisfaction of the Project Coordinator (Electrical) and all reasonable variations on site shall be carried out in accordance with such directives as the Electrical Engineer may give.

It is understood that the project shall be completed for the fixed sum awarded inclusive of any item which might not be mentioned in the specifications, schedules, drawings but deemed necessary for the completion of the project and proper functioning of the system/equipment.

2.2 Schedule of Materials

Materials for this project should be as per specifications/schedules. All materials and equipment shall be new and of the best quality. The Contractor shall have to submit samples of the electrical accessories proposed to be used on the project or relevant documentation at no extra costs for approval or otherwise to the Engineer or his representative prior to ordering the lot and installation.

Full catalogue or where applicable leaflet containing technical data as proof of compliance with the specifications shall be attached and submitted with the offer to enable ease of evaluation. Omission to provide technical data will entail elimination from consideration.

2.3 Schedule of Works

The bidder shall submit a detailed programme of works for Electrical Works inclusive of shipment dates and delivery on site. The bidder shall indicate the time period for the execution and completion of the installations and for the whole project.

2.4 Site Exigencies

The selected bidder shall respect security arrangements in force at the site and shall seek necessary permission and security pass for yard access if any for execution of the work. The contractor shall carry out works outside normal office hours where deemed necessary and authorised by Project Coordinator (Electrical) without any increase in contract cost. Claims for overtime works shall not be entertained. The site shall be kept tidy and no materials/refuse shall be kept which may cause obstructions.

The contractor shall mention the site of storage if the equipment are not stored at the official site. The contractor shall provide all site amenities, testing equipment and tools inclusive of articulating booms/lifts for verification/testing purposes for the Project Coordinator (Electrical).

3.0 Conditions of Contract

3.1 Site Visit

Bidders are advised to visit the site before submission of bid so as to be fully acquainted with the nature of the site and extent of work involved. Bidders shall contact the Ministry for site visit arrangement.

3.2 Bill of Quantities, Drawings & Compliance Sheet - Not applicable at this stage

The bidders shall fill in the Bill of Quantities (BOQ) and Compliance sheet and submit same together with the bid documents.

The BOQ and **Compliance sheet** have been prepared with a view to provide a common basis for bidding. Before submission of bid, it is deemed that the bidder has acquainted himself with all conditions prevailing on site. All the specifications, PAS, drawings are complementary and should be read accordingly. The bidders are advised to carry out measurement and check the quantities of materials. In case of discrepancies, omissions or errors, the bidder shall inform the Client prior to submission of the bid. No extra claim shall be entertained afterwards on this issue.

The Bidders shall fill in the compliance sheets for the major equipment and submit same together with the bid documents. Equipment/materials for this project shall be as per specifications/schedules or as indicated on the drawings. Before supplying materials for the project, the proposed materials shall be vetted by the Project Coordinator (Electrical).

3.3 Liaison with CEB/Client Ministry

The contractor shall liaise with the representatives of the CEB and Client Ministry/ESD for connection /disconnection facilities or switching of the main supply etc. for the electrical installations. All structural/civil works icw with sheds/cubicles for switchgears, earthing, etc. shall be included in the contract.

3.4 Civil/Structural Works

All structural/civil works icw with LV pillars, sheds/cubicles switchgears, earthing, etc. shall be included in the contract. All structural/civil works to be approved by the Project Coordinator (Civil).

3.5 Guarantee Period

The Electrical installations shall be guaranteed against manufacturing defects, bad workmanship and other defects not related to normal wear and tear for a period of one (1) year or as mentioned from date of successful commissioning in presence of Project Coordinator (Electrical).

In the event of a defect, the Contractor shall at his own expense, within 48 hours, make good such defects as instructed to the satisfaction of the Project Coordinator (Electrical).

Retention money will normally be released at the end of the one-year guarantee period, subject to maintenance being carried out satisfactorily during that period.

3.6 Provisional Sum/Contingencies

Provisional sum/contingencies included in the contract price shall be expended or used as the Project Manager may in writing direct and not otherwise. In so far as the sum included in the contract price is not expended or used, it shall be deducted from the contract price.

3.7 Removal of existing Electrical installations

The Electrical installations and all electrical accessories shall be dismantled and removed. Prior to removal the client will provide all lists of items that need to be handed-over and other items shall be carted away.

All items in working condition that should be handover to client shall be removed with care without them being damaged in the process

3.8 Continuity of Electrical supply

The contractor shall liaise with the Client Ministry to ensure a smooth running and minimum disruption of activities before submitting the detailed programme of works. The contractor shall ensure the continuity of electrical supply to the playground. Temporary electrical installation/supply shall be provided as and when needed. All electrical items required shall be supplied.

3.9 Maintenance work

It is required to carry out servicing and maintenance work to the electrical items and electrical installation as mentioned below. The servicing shall be carried out as mentioned in this document or as per manufacturer recommendation:

- Electrical Installation, Electrical panels and electrical items.
- Air-Conditioning system.
- Fire alarm system.
- Lighting System
-

ELECTRICAL WORKS REQUIREMENTS

4.0 Electrical Installations

This section provides a brief description of the electrical works related to this contract. The selected Electrical Contractor shall carry out the works to the full satisfaction of the Project Coordinator (Electrical).

4.1 Regulations

The installations shall conform in all respects to the latest edition of Institution of Electrical Engineers (IEE-U.K.), Wiring Regulations (BS 7671) with any subsequent amendments.

4.2 Electrical Supply

The new installations shall be furnished with a 400V/230V, 50Hz power supply derived from a CEB source.

4.3 Distribution Boards (DBs) - Electrical Panels Main Distribution Boards, Sub-main Distribution Boards, Sub Distribution Board, Sub Distribution Boards

The **DB** shall be to IP 659, IK 10 and shall be vandalproof made of galvanised steel with textured polyester resin finish, self extinguishing type, reversible hinged lockable door and removable rear panel. It shall have having the wordings "DANGER ELECTRICITY" neatly & prominently painted. The outdoor DB shall have breaking capacity \geq Bus bars. It shall have adequate natural or fan assisted ventilation. It shall be mounted & enclosed in concrete acceptable to the Project Manager.

The panels shall be integrated with rails/perforated plates and shall be big enough to accommodate incoming and outgoing feeders and the following:

1. MCCBs/MCBs and RCDs/RCBOs as per schematic layouts.
2. Bus bars/Distribution blocks of specified ratings with supports and spare connectors. Copper Earth Bar Terminal with suitable number of outlets & sizes.
3. Meters, Selector/Timer switches, Contactors, Indicators etc.
4. All accessories (Terminals, Distribution Blocks, Face Plates etc.) to make a complete panel.

Distribution boards shall be wall mounted or floor standing type as specified. All circuits and instruments in the board shall be properly labelled with Perspex and danger notices fixed on panels. Plasticised schematic layout shall be fixed in respective Distribution Boards.

Panels shall be located as shown in drawings and shall be solidly & properly earthed.

4.4 Busbars and Distribution Blocks

Compact rigid copper busbar to BS 5486 of specified ratings at least 440V, 3 phase TPN c/w Earth bar. The busbars shall be enclosed in a metal DB to IP 659, IK 10 as specified above.

The busbars shall be able to sustain faults currents of at least 25 kA.

The system shall include the following:

- i. Junction/feeder boxes for connection to cables
- ii. Accessories such as Tees, bends, etc.
- iii. Transparent protective front cover
- iv. Galvanised supports and fixing brackets.

The busbar shall be marked prominently at the outside with the wording "**DANGER**".

Distribution Blocks shall be self extinguishing type to EN 60695-2-11. They shall be rail mounted and supplied with insulated black plate and transparent protective front cover. They shall be 2P or 4P as specified with minimum I_{sc} 16/25 kA.

4.5 Labels and Danger Notices

Identification labels of laminated plastic materials (perspex) engraved, black on white with no less than 6mm 'Limo' style letters shall be fixed on or adjacent to all distribution gears with at least 2 brass screws.

Suitable warning notices in red lettering on white background shall be provided on each distribution boards. Label shall bear identifications on drawings and voltage also.

Suitable "Danger" plates shall be securely affixed on the distribution boards and mounted in prominent position. Each danger notice shall be fabricated in enamel sheet steel. Symbols shall be in red on white background and shall be to British Standards.

All cables ending in electrical panel shall be properly labelled as per a cable schedule.

4.6 Switchgears

Moulded Case Circuit Breaker MCCBs shall comply with BS 4752, shall be 4 poles of minimum breaking capacity 25 kA at 440 Volts, shall have adjustable nominal (I_o), thermal ($I_r \sim 0.7-1 I_n$) and magnetic releases ($I_m \sim 3.5-10 I_n$). It shall be supplied with all necessary accessories such as adaptor for fitting, auxiliary contacts, alarm contacts, shunt trip, under voltage releases and all mounting accessories such as terminals, spreaders and insulation seals etc. It shall incorporate the following:

- i. Positive opening indication
- ii. Test button for mechanical release control
- iii. Rotary retractable door mounted handle on the front of the unit of the Main MCCBs

Miniature Circuit Breakers (MCB) shall be to BS EN 60898 and shall be 2/4 poles as specified or as per schematic layouts. The minimum breaking capacity of the MCBs shall be 6/10 kA and shall have type B/C/D tripping characteristics as specified.

RCBOs or Residual Current Device (RCD) to IEC 61008-1 **Type A, 2P/4P** of sensitivity 30-300 mA with minimum breaking capacity 6/10 kA associated with MCBs shall be used where specified. These shall provide protection against earth leakages and short circuit/overload. *Type Hpi shall be used for computer and sensitive equipment.*

RCCBs shall not be accepted.

Power Contactor

The contactor shall conform to IEC 61095 and shall have the following characteristics:

- Power: 25-40 Amp, 400 V/50 Hz supply or as specified
- Voltage relay coils – 230 V/50 Hz or as specified
- At least 2 N/O & 2 N/C contacts
- Self cleaning contacts
- Easy frontal/lateral clipping of auxiliaries
- Mechanical life : around 10^6 cycles

These shall be used as directed.

Selector Timer Switch

The selector timer switch shall conform to IEC 61095 and shall have the following characteristics

- 230 V/50 Hz supply
- Programmable time switch
- Change Over Switch with manual override
- Ample Working Reserve
- Analogue Dial

These shall be used for external lighting or as directed

PIR Motion Detector

The PIR Motion/Presence Detector shall have the following specifications:

- AC supply 230V/50Hz
- Light level adjustment: 5-1000 lux
- Delay Timer: Pulse 5-300s
- Flexible detection range mounting
- Reset button incorporated
- Manufactured to BS

The PIR Motion/Presence Detector shall be used for toilets (lights+extract fans) or as directed.

4.7a Switches and Sockets

- The lighting switches shall be to BS 3676 recessed metal clad vandal proof and IP 65 outdoor-weather proof type complete with very flat base plate, rated as specified. The number of gangs and ways shall be as indicated in the drawings. The lighting switches shall be flush mounted and fixed at around 1500mm above the finished floor level.

- All sockets shall be to BS 1363 switched recessed metal clad vandal proof and IP 65 outdoor-weather proof type with shuttered openings and shall be provided with neon indicators. The number of gangs shall be as indicated in the drawings. The sockets shall be flush mounted and fixed at around 300mm from the finished floor level, or as specified.

4.7b Combined Lightning Current and Surge Arrestor

| | |
|--|--|
| Voltage Rating/Frequency | 200 - 240 or 380-440 V _{rms} /47-63 Hz |
| Nominal Discharge Current/ph | 25 kA 8/20□s one time |
| Max Surge Discharge Current/ph | 50kA for 240V and 100kA for 440V 10/350□s one time |
| Follow Current Extinguishing capability/ph | 50 kA _{rms} |
| Response Time | <100 ns |
| Leakage Current | <250 □□ (Ph/E) |
| Let through Voltage at | 700 V Ph/N 3 kA 8/20 □s one time 700 V Ph/E |
| Protection level | 5.0 kV at In |
| Indication for operation/fault | LED green/red |
| Suitable for Neutral point connections | EE-EN-IE |
| Standard | Type1 IEC 61643-1 |

It shall be enclosed within a modular design to IP 55

Associated MCB/RCD shall be included for complete installation

It shall be backed by a five (5) year guarantee

4.8 Type of Installation and Cables

The cables shall be routed mostly in fire-retardant PVC trunkings, concealed conduits, cable trays, ducts, PVC underground pipes, galvanized conduits, manholes or as specified. The cables shall be neatly grouped without any crossing and shall be properly clipped at recommended interval of 1 metre and at bends according to recommended cable space factor requirements. All cabling shall be complete with end terminations, cable glands, lugs, etc. Bending radii of cables shall conform to BS.

Cables shall comply with BS 6500 and IEC 60502. Cables shall be of 1 KV grading conductors of high conductivity copper wires. The cabling between the Main Distribution Panel/Board and various distribution boards shall be of copper conductor XLPE/SWA/PVC insulated and of specified sizes as per schematic drawings. Sufficient Inspection boxes to the nearest minimum requirements shall be provided to permit periodical inspection and to facilitate replacement of wires if necessary. The inspection/junction boxes shall be mounted flush with the wall or ceiling concrete. Ventilating holes shall be provided in the installation where required.

Colour code of cable shall be as follows:

| | |
|--------------|--------------|
| First phase | Brown |
| Second phase | Black |
| Third phase | Grey |
| Neutral | Blue |
| Earthing | Yellow-Green |

The contractor shall submit shop drawings for indicating the cable routes, type of installation including dimensions for the cables and associated details to Project Coordinator (Electrical) for approval.

4.9 Wiring & Conduit for Final Circuits

Wiring for final circuits shall, unless otherwise specified, be carried out in non-armoured 1kV grade single-core PVC-insulated cables manufactured in accordance with BS 6004. Cables shall be stranded copper conductor and self-coloured insulation to BS EN 50525.

All cables shall be within fire-retardant trunkings/concealed heavy duty orange conduits/galvanized perforated steel cable trays as approved by the Project Coordinator (Electrical). Within the trunking/conduits/cable trays, circuits shall be bunched at reasonable intervals and shall be properly labeled. They shall be supplied with cable straps at 2000mm intervals. Inspection boxes shall be provided to permit periodic inspections and maintenance works.

Flexible fire retardant trunkings/ heavy duty conduits/cable trays of adequate dimension shall be used in order to satisfy cable space factor. Separate twin trunkings/conduits shall be used in offices for power and data cables.

Manufacturer's standard fittings (e.g bends, tees, end plates) shall be used throughout.

4.10 Underground Cables

The **armoured** underground cables shall be routed through yellow/orange high pressure PVC pipes in trenches as per drawings. They shall run in continuous lengths; no cable joint shall be permitted. The stipulated space factor shall be observed for the pipes.

The contractor shall make all necessary allowance in his quotation for Warning tapes and any trenching work which shall include excavation, backfilling as well as erection of electrical manholes. Shop drawings to be submitted after award of contract.

4.11 Manholes

Manholes (Electrical Drawpits) shall be built with reinforced concrete according to drawing. Openings of sufficient size shall be made on the sides for entry of PVC pipes. The manholes shall have waterproof galvanised metal covers on top of which shall be marked "DANGER ELECTRICITY". All opening shall be properly sealed to prevent ingress of water, dust and rodents. The layout of the manhole is attached in the Appendix.

4.12 Earthing System

The Earthing system shall be to BS 7430. For the earthing of the **MDB**, there shall be a combination of copper plate of minimum size 600mm x 600mm x 3mm installed at a depth of at least 2 metres below ground level and 4 copper rods of minimum diameter 25mm and 2 metres long and spaced at twice their length apart as earth electrodes.

The earthing of the MDB shall form a connected array of earth plate and rods driven into the ground, linked and bonded together by the BS recommended swa copper conductors to form an equipotential ground plane.

The Earth Resistance shall be less than 5 ohm.

The above number of earth rods shall be increased until the acceptable earth resistance is achieved. Electrically conductive Ground Enhancing Materials may be used to achieve low ground resistance in accordance with the manufacturer's instructions.

Concrete inspection pits c/w galvanised removable covers marked 'EARTH' shall be erected for main earthing to enable inspection and testing as per drawing.

5.0 LIGHTING AND LUMINAIRES

Lighting Installations

All luminaires shall comply with BS 4533 and manufactured to European Standards.

All light fittings shall be installed c/w lamp/tube, LEDs, driver, electronic starter, control gears choke and pf compensating ballast.

All luminaires shall be carefully stored before erection and handed over in new conditions.

Energy Saving LED Fittings

The LED tubes shall have the following specifications:

- Power rating: 230V, 50Hz
- Efficacy: > 100 lm/W
- Beam angle: min. 210°
- Colour Temperature:>4000K industrial white
- Colour rendering: Ra>80
- Life span: around 25,000 hours
- Certification: IEC 62776
- Proof of certification shall be submitted with quotation

TYPE A

Flat Led square Panel Light Fitting - 600x600mm (TYPE A) – (Main Building and store,offices)

- Body: Flat slim design ceiling grid module size around 1300mm x 250mm
- Light source: LED modules

- Luminous flux : 5500 – 6000lm,
- Electrical Supply: 230 V, 50 Hz
- Integral power supply and driver
- Efficacy: at least 100 lm/W
- Beam angle: around 90-100°
- Type: recessed for false ceiling and surface mounted in concrete ceiling.
- Material Housing:
Back cover: treated steel
Frame, light guide and diffuser: polycarbonate/polystyrene
Optic cover: micro-lens made of acrylic
- Lifetime: 30,000 hours
- Manufactured to European Standards

TYPE B

Weatherproof Bulkhead (Toilet)

The ceiling mounted luminaire shall be circular/oval and shall have the foll. features:

- Body: Die cast Aluminium and tempered glass
- Integral power supply and driver
- White LEDs in wide beam optics configuration
- Fitted with: **12-15 W, 230V LEDs**
- Insulation Class I/II to IP 55
- Manufactured to European Standards

6.0b Extractor Fans

Extractor Fans shall be to the following specifications:

- a) Wall/glass mounted
- b) Steel protected by polyester spray paint or High impact resistant thermoplastics
- c) Single phase 230 V, 50 Hz
- d) Air flow rate: around 350 m³/h (100 l/s) /
- e) Motor/electrical connection protected to IP 55
- f) Automatic external shutters to prevent ingress of water
- g) Removable safety grille for maintenance/servicing
- h) Noise level shall not be greater than 50 dBA at 1 metre.
- i) Wired remote switch for fan speed control
- j) Connected to PIR Controller for presence detection in Toilets

Section IV: General Conditions of Contract and Particular Conditions Of Contract

Any resulting contract shall be placed by means of a Letter of Acceptance and shall be subject to the General Conditions of Contract (GCC),

(Ref: W/GCC10/12-21), for the Procurement of Works (available on website ppo.govmu.org) except where modified by the Particular Conditions of Contract below.

Procurement Reference Number: **08/FY/2024**

The clause numbers given in the first column correspond to the relevant clause number of the General Conditions of Contract.

Particular Conditions of Contract

| A. General | |
|-----------------------|--|
| GCC 1.1 (r) | <i>The Employer is Sugar Insurance Fund Board (SIFB)</i> |
| GCC 1.1 (v) | The Intended Completion Date for the whole of the Works shall be 120 calendar days as from the signature of contract. |
| GCC 1.1 (y) | The Project Manager is Mr. M Balloo; tel: 5774 9189 |
| GCC 1.1 (aa) | The Site is located at New Road, Quartier Militaire |
| GCC 1.1 (dd) | <i>“The Start Date shall be 7 days from the handing over of site.</i> |
| GCC 1.1 (hh) | The Works consist of new building, demolition works, aluminium openings, painting, Laminated parquet and tiling works, watchman post, site works, etc all as described in the scope of works. |
| GCC 2.2 | Sectional Completions are: <i>N/A</i> |
| GCC 2.3(i) | The following documents also form part of the Contract: <i>N/A</i> |
| GCC 3.1 | The language of the contract is English The law that applies to the Contract is the law of Mauritius. |
| GCC 5.1 | The Project manager may delegate any of his duties and responsibilities. |
| GCC 8.1 | Schedule of other contractors: <i>N/A</i> |
| GCC 13.1 | <p>Except for the cover mentioned in (d)(i) hereunder, the other insurance covers shall be in the joint names of the Contractor and the Employer and the minimum insurance amounts shall be:</p> <ul style="list-style-type: none"> (a) for the Works, Plant and Materials: <i>(for the full amount of the works including removal of debris, professional fee etc...)</i> (b) for loss or damage to Equipment: MUR 500,000 (c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract <i>for an amount representing the value of the properties that are exposed to the action of the contractor in the execution of the works. It will extend to the property of the Procuring Entity as well). MUR 1,000,000</i> (d) for personal injury or death: <ul style="list-style-type: none"> (i) of the Contractor’s employees: <i>[The Contractor shall take an adequate insurance cover for its employees for any claim arising in the execution of the works]. 5,000,000</i> (ii) of other people: <i>[This cover shall be extended to the Employer and its representatives and the no of occurrences are unlimited]. MUR 5,000,000</i> (e) for loss or damage to materials on-site and for which payment have been included in the Interim Payment Certificate, where applicable. <p>The Contractor shall choose to take the insurance covers indicated above as separate covers or a combination of the Contractor’s All Risks coupled with the Employer’s liability and First Loss Burglary, after approval of the Employer. All insurance covers shall be of nil or the minimum possible deductibles at sole expense of the contractor.</p> |
| GCC 14.1 | Site Data are: <i>N/A</i> |
| GCC 20.1 | The Site Possession Date(s) shall be <i>the date of handing over of site.</i> |
| GCC 23.1 & | Appointing Authority for the Adjudicator: No Adjudicator shall be appointed for this |

| | |
|----------------------------------|---|
| GCC 23.2 | Contract. |
| GCC 24. | <p>In case a dispute of any kind arises between the Employer and the Contractor in connection with, or arising out of, the contract or the execution of works or after completion of works and whether before or after repudiation or other termination of Contract, including any dispute as to any opinion, instruction, determination, certificate or valuation of the Employer's Representative, the matter in dispute shall, in the first place, be referred in writing to the employer's representative, with a copy to the other party.</p> <p>The Employer and the Contractor shall make every effort to resolve the dispute amicably by direct informal negotiation. If, after twenty-eight (28) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the SIFB or the Contractor may give notice to the other party of its intention to refer the matter to</p> <p style="text-align: center;">“ the competent courts of Mauritius”</p> |
| B. Time Control | |
| GCC 25.1 | The Contractor shall submit for approval a Program for the Works within 14 days from the date of the Letter of Acceptance. |
| GCC 25.3 | <p>The period between Program updates is 07 calendar days.</p> <p>The amount to be withheld for late submission of an updated Program is <i>MUR 5,000</i>.</p> |
| C. Quality Control | |
| GCC 33.1 | The Defects Liability Period is: 180 calendar days. |
| GCC 34.1 | <p>Delete sub-clause 34.1 and replace by the following:</p> <p>Should any defect arise during the contractual period and up to the end of the Defects Liability Period and the Contractor fails to correct the Defect within the time specified in the Project Manager's notice, this shall constitute a breach of the Contractor's obligations under the contract. The Project Manager shall assess the cost of having the defect corrected and recover the money from monies due to the contractor or from the Performance Security.</p> |
| GCC 39.7 | Interim Payment for Plant and Material on site is not applicable. |
| D. Cost Control | |
| GCC 40.1 | Amend clause 40.1 by replacing 21 days by 7 and 42 days by 28 days. |
| GCC 41.1 (l) | <i>Cyclone class III, flooding, torrential rain, rain of intensity not less than 20mm or any other events beyond the control of the contractor.</i> |
| GCC 43.1 | The currency of the Employer's country is: Mauritian Rupees. |
| GCC 44.1 | The Contract is not subject to price adjustment. |
| GCC 45.1 | GCC Clause 45 is not applicable. |
| GCC 46.1 | <p>The liquidated damages for the whole of the Works are MUR 5,000 per calendar day.</p> <p>The maximum amount of liquidated damages for the whole of the Works is 3% of the Contract price.</p> |
| GCC 47.1 | The Bonus for the whole of the Works is not applicable. |
| GCC 48.1 | The Advance Payments shall be <i>10% of contract value</i> and shall be paid to the Contractor within 10 days after signature of the Contract and submission of the approved Advance Payment security by the contractor no later than <i>15 days from the date of the letter of acceptance.</i> |
| GCC 49.1 | The Performance Security amount is <i>10% of contract sum and inserted at contract signature stage.</i> |
| E. Finishing the Contract | |
| GCC 56.1 | The date by which operating and maintenance manuals are required is <i>on practical completion date of the project</i> . The date by which “as built” drawings are required is <i>on practical completion date of the project</i> . |
| GCC 57.2 (g) | The maximum number of days is: 60 days |
| GCC 59.1 | The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is 20%. |

Section V- Contract forms

Performance Security

.....*Bank Name and Address of Issuing Branch or Office*.....

Beneficiary:*Name and Address of Public Body*.....

Date.....

PERFORMANCE GUARANTEE No.:

We have been informed that*[name of the Contractor]* (hereinafter called "the Contractor") has entered into Contract No.....*[reference number of the Contract]* dated..... with you, for the execution of*[name of Contract and brief description of Works]*(hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance security is required.

At the request of the Contractor, we *[name of Bank]*hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[amount in figures (amount in words)]* such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire and returned to us not later than twenty- one days from the date of issuance of the Defects Liability Certificate, calculated based on a copy of such Certificate which shall be provided to us, or on the.....day of,, whichever occurs first. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

.....*Seal of bank/Insurance Guarantee and*

Signature(s).....

Advance Payment Security

[Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: *[Name and Address of Employer]*

Date:.....

Advance Payment Guarantee No.:

We have been informed that *[name of the Contractor]* (hereinafter called "the Contractor") has entered into Contract No. *[reference number of the Contract]* dated with you, for the execution of *[name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum *[name of the currency and amount in figures]*¹ (*[amount in words]*) is to be made against an advance payment guarantee.

At the request of the Contractor, we *[name of the Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[name of the currency and amount in figures]* *. . . . (*[amount in words]*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number *[Contractor's account number]* at *[name and address of the Bank]*

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated 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 eighty (80) percent of the Contract Price has been certified for payment, or on the . . . day of², whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

..... *[Seal of Bank/Insurance Company and Signature(s)]*

Note –

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

1 The Guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.

2 Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer 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. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "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 Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

Date

Name and address of the contractor

Letter of Acceptance

Subject: *[Notification of Award Contract No]*.

This is to notify you that your Bid dated*[insert date]* for execution of the*insert name of the contract and identification number, as given in the Appendix to Bid]* for the Accepted Contract Amount of .Rs *[insert amount in numbers and words and name of currency]*, exclusive of VAT, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by *(insert name of Corporate Body)*.

You are requested to furnish the Performance Security in accordance with the General Conditions of Contract, using for that purpose of the Performance Security Form included in Section V (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

Contract Agreement

THIS AGREEMENT made theday of,, between *[name of the Employer]*. (hereinafter “the Employer”), of the one part, and *[name of the Contractor]*. (hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as *the Upgrading Works at Quartier Militaire SIFB Sub Office, Proc/* should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

- (a) the Letter of Acceptance
- (b) the Bid
- (c) the Addenda Nos *[insert addenda numbers if any]*.
- (d) the Appendix to the General Conditions of Contract
- (e) the General Conditions of Contract;
- (f) the Specification
- (g) the Drawings; and
- (h) the completed Schedules,

In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Mauritius on the day, month and year indicated above.

Signed by: _____
for and on behalf of the Employer

Signed by: _____
for and on behalf the Contractor

in the
presence of:

in the
presence of:

Witness, Name, Signature, Address, Date

Witness, Name, Signature, Address, Date