**Government of Jamaica**
**Southern Regional Health Authority**

PUBLIC PROCUREMENT
STANDARD BIDDING DOCUMENT

# ANNEX W3

# Procurement of Minor Works
# Restricted Bidding
# (Request for Quotation RFQ)

## Platform (Base) for Medical Waste Storage Container at the Percy Junor Hospital (Ref No: SRHA-W-2020-04-009)

**Procuring Entity: Southern Regional Health Authority**

**July 2022**

# Foreword

This standard bidding document (SBD) for the "Procurement of Minor Works" has been prepared by the Ministry of Finance (MOF). Its use is mandatory for the procurement of minor works through Single-source procurement (request for quotations).

The application of this SBD means the procuring entity would have established that this procurement is within the single-source procurement method threshold under regulation 8. Further edits to ensure compliance with the Act and regulations may be required by the Procuring Entity.

This SBD is to be used when prequalification has not taken place before bidding.

Further edits to ensure compliance with the Act and its regulations may be required by the procuring entity.

Those wishing to submit comments or questions on this document or to obtain additional information are encouraged to contact:

Chief Public Procurement Policy Officer,

Office of Public Procurement Policy,

30 National Heroes Circle

Kingston 4

Jamaica

**opppcustomercare@mof.gov.jm**

# Abbreviations and Acronyms

| | |
|---|---|
| Act | Public Procurement Act, 2015 |
| e-GP | electronic Government Procurement System |
| ITC | Instructions to Contractors |
| JV | Joint Venture |
| MOF | Ministry of Finance |
| Office | Office of Public Procurement Policy |
| regulations | The Public Procurement Regulations |
| RFQ | Request for Quotations |
| SBD | Standard Bidding Document |
| TCL | Tax Compliance Letter |
| VAT | Value Added Tax |

MINISTRY OF HEALTH & WELLNESS

# Southern Regional Health Authority

**Compassion | Accountability | Respect | Efficiency**

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Ph: (876) 965-9174-5
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## INVITATION TO QUOTE
## Ref No: SRHA-W-2020-04-009

**Date: July 4, 2022**

To: ALL BIDDERS

Dear Madam/Sir

Subject: Proposed Renovation Works to the Accident and Emergency Department at the Percy Junor Hospital (Ref No: SRHA-NHF-W-2022-07-010)

1. The Southern Regional Health Authority utilizing public funds invites you to submit a price quotation for the execution of the following works:
    - General renovation works to include painting, sanitary fittings, doors, cupboards and counters.
2. The quotation must be submitted *using the Electronic Government Procurement Platform (www.gojep.gov.jm). Instructions for bid submission are included at Section I Instructions to Bidders, Clause 15. To participate in this tender opportunity and to download the tender document, Suppliers must first be registered in the Electronic Government Procurement System (e-GP (www.gojep.gov.jm)). Please register on the e-GP System by selecting the "Register as a supplier" link from the home page. For any assistance regarding registration, download of tender document or upload of tender proposal, please contact the Ministry of Finance, Procurement and Asset Policy Unit Customer Service Desk at (876) 932-5220/932-5253/932-5246/932-5205 or via email at papucustomercare@mof.gov.jm.*
3. Only a quotation from the eligible Bidder as defined in paragraph 2 of Section 1, Instructions to Bidder will be considered.

    *For tenders to be eligible, the following documents must be included with your Quotation and at Tender opening must have a valid Tax Compliance Certificate (TCC) and/or Tax Compliance Letter (TCL) and proof of registration with the Public Procurement Commission (PPC) in the category of Building Construction; Grade 1 – 4 or Building Maintenance; Grade 1 – 3. Tenders that do not contain all the above at bid opening will be deemed non-responsive. The quotation submitted by the Bidder must comprise the documents listed in Clause 8 of the Instructions to Bidders at bid opening, to meet the qualification requirements to be considered for the procurement contract award.*

**Chairman: Wayne Chen**; **Vice Chairman**; Michael Stern, **Board Members**: Dr. St. Aubyn Bartlett, Lorraine Green Mason, Marcus Greenwood, Stafford Haughton, Winston Maragh, Lennox Powell, Dr. Lloyd Reynolds, Albert Williams, **Permanent Secretary's Nominee**: Dr. Naydene Williams, **Regional Director and Secretary:** Michael Bent; **Regional Technical Director:** Dr. Vitillius Holder; **CEO, Mandeville Regional Hospital:** Alwyn Miller; **SMO, Mandeville Regional Hospital:** Dr. Everton McIntosh

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4. The quotation must be submitted by 2:00 p.m. on July 14, 2022. Late bids will be rejected by the system. Bids will be opened at 2:15 p.m. that same day using the online platform; as such there will not be a public opening of bids.
5. No Bid Security is required.
6. The Bidder may wish to visit and examine the site of the project and obtain for himself, at his own responsibility and risk, all information that may be necessary for preparing the quotation and entering into the procurement contract. The costs of visiting the site(s) shall be at the bidder's own expense.
7. Bids shall be valid for a period of Ninety (90) days after bid closing.

Yours faithfully

Damion Morgan – Senior Projects Manager (Actg.)
**Southern Regional Health Authority**
3 Brumalia Road, Mandeville, Manchester
Tel.: +1 (876) 625-0612-3 / 962-9491 | +1 (876) 961-8344
Email: GGrp_Projects@srha.gov.jm or srha.projects@gmail.com

**Addenda:**

| | |
|---|---|
| Section 1 | Instructions to Bidders |
| Section 2 | Works Requirements |
| Section 3 | Form of Quotation |
| Section 4 | Form of Contract Agreement |
| Section 5 | Mobilization Payment Guarantee |

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## Section 1 Instructions to Bidders

### 1. Eligible bidders

1.1 A bidder shall be deemed to have the nationality of a country if the bidder is a citizen or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed Subcontractors or suppliers for any part of the Contract including related services.

1.2 In accordance with the Public Procurement Regulations, 2018, Section 17, bidders and any named Subcontractors shall have to demonstrate that they have paid all taxes, duties, fees and other impositions as may be levied in Jamaica at the time of bid submission by presenting proof of a valid copy of the Tax Compliance Letter (TCL).

1.3 Bidders shall provide such evidence of their continued eligibility as the procuring entity may reasonably request.

### 2. Disqualified Bidders

2.1 Failure to directly **obtain** the bidding documents from the procuring entity will result in disqualification from the procurement proceedings.

2.2 A bidder shall not have a conflict of interest. All bidders found to have a conflict of interest shall be disqualified. Bidders may be considered to have a conflict of interest with one or more parties in this bidding process, if they are or have been associated in the past, with a firm or any of its affiliates which have been engaged by the procuring entity to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under this bidding document; or that has been hired (or is proposed to be hired) by the procuring entity as Project Manager for the Contract.

2.3 A bidder that is ineligible in accordance with ITB Clause 3, at the date of contract award, shall be disqualified.

### 3 Qualification of the Bidder

i. A Bidder must meet the following qualification requirements to be considered for the procurement contract award:
   a. Evidence as a Contractor in the construction of at least one work of the nature and complexity equivalent to the works included in this Invitation, over the last three years.
   b. ~~Evidence of financial resources to successfully complete the works i.e. letter from a bank, credit institutions, or other financial intermediary, supporting the availability of financial resources.~~
   c. Summary of current workload, listing current contracts, indicating name of employer, description and location of project, contract value, contract period (give dates) and the net outstanding value of these contracts.
   d. The Bidder may not subcontract any part of the works.

### 4. Fraud, Corruption and Other Prohibited Practices

4.1 The Government of Jamaica requires that all parties involved in the procurement proceedings and execution of such contracts observe the highest standard of ethics.

4.2 For the purposes of this provision, offences of fraud and corruption are defined in Part VII of the Public Procurement Act, 2015 (Act) and any other Act relating to corrupt activities in Jamaica.

4.3 A person who commits an offence under the Act or any other Act relating to corrupt activities in Jamaica shall:

i. (a) be liable for conviction under the provisions of the Act or any other Act relating to corrupt activities in Jamaica;

ii. (b) have their bid rejected if it is determined that the bidder is not in compliance with the provisions of the Act, the regulations or any other Act relating to corrupt activities in Jamaica;

iii. (c) risk other sanctions provided for in the Act or the regulations.

## 5. Eligible Bidders

5.1 In accordance with the Public Procurement Regulations, 2018, Section 17, bidders shall have to demonstrate that they have paid all taxes, duties, fees and other impositions as may be levied in Jamaica at the time of bid submission.

5.2 In accordance with the Public Procurement Regulations, 2018, Section 17, bidders shall have to demonstrate compliance with Section 15 of the Act at the time of bid submission.

**5.3 Bidders shall provide such evidence of their continued eligibility as the procuring entity may reasonably request**

## 6. Disqualified Bidders

6.1 Failure to directly **obtain** the bidding documents from the procuring entity will result in d**isqualification from the procurement proceedings.**

6.2 A bidder shall not have a conflict of interest. All bidders found to have a conflict of interest shall be disqualified. Bidders may be considered to have a conflict of interest with one or more parties in this bidding process, if they are or have been associated in the past, with a firm or any of its affiliates which have been engaged by the procuring entity to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods to be purchased under this bidding document; or that has been hired (or is proposed to be hired) by the procuring entity as Project Manager for the Contract.

6.3 A bidder that is ineligible in accordance with ITB Clause 3, at the date of contract award, shall be disqualified.

6.4 A Bidder falling in any of the disqualification grounds in sections 18 and 19 of The Public Procurement Regulations 2018 shall be disqualified.

## 7. Joint Venture

7.1 Bidders shall not submit more than one bid in this bidding process, except for alternative bids permitted under ITB Clause 14. This does not limit the participation of Subcontractors in more than one bid.

7.2 A bidder may be a firm that is a private entity or the combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a JV, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution. Unless specified **in the BDS**, there is no limit on the number of members in a JV.

7.3 Except as provided in ITB Sub-Clauses 5.2 and 6.1, this bidding process is open to:

(a) if a pre-qualification process has been undertaken for the Contract(s) for which these bidding documents have been issued, those firms - in case of JV with the same partner(s) and JV - that have been pre-qualified. The **BDS** specifies whether pre-qualified bidders may submit joint bids; or

(b) if a pre-qualification process has not been undertaken for the Contract(s) for which these bidding documents have been issued, then the provision of sub-clauses 5.3 and 47.1 apply.

## 8. Documents Comprising the Quotation

The quotation submitted by the Bidder shall comprise the following documents:

1. Signed Letter of Quotation with your company Seal.
2. Signed Bill of Quantities with your company Seal
3. Evidence of construction experience as specified in ITB Clause 3.
4. ~~Evidence of financial resources as specified in ITB Clause 3.~~
5. Summary of current workload as specified in ITB Clause 3.
6. Valid copy of the Tax Compliance Letter (TCL) or Tax Compliance Certificate (TCC).
7. Valid proof of Registration with the Public Procurement Commission (PPC) in the category of Building Construction; Grade 1 – 4 or Building Maintenance; Grade 1 – 3.

## 9. Quotation and Evaluation Criteria

The Bidder must quote for all the items specified in section 2 works requirements.

The procuring entity may award the contract to the Bidder following the evaluation and any negotiation.

## 10. Quotation Prices

Prices must be quoted in Jamaican Dollars for completion of the works by eight (8) weeks from the start date. All custom duties, import and any other taxes or fees applicable for materials or works imported in Jamaica and GCT should be quoted separately, where applicable.

The bidder shall fill in the rates and prices for all items of the works described in the Section 2 Works Requirements and as listed in the Bill of Quantities. Items for which no rate or price is entered by the bidder will not be paid for by the procuring entity when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

Prices shall remain fixed and not subject to adjustment during the period of performance of the contract.

**11. Site Visit**

The Bidder may wish to visit the examine the site(s) of the project and obtain for himself, at his own responsibility and risk, all information that may be necessary for preparing the quotation and entering into the procurement contract. The costs of visiting the site(s) shall be at the bidder's own expense.

The procuring entity will arrange for the bidder and any of its personnel or agents to gain access to the relevant site(s), provided that the bidder submits in writing a request for the proposed visit within five days of the date of this invitation.

No site visits shall be permitted after the deadline for the submission of quotations and prior to the award of the procurement contract.

**12. Validity of Quotation**

Your quotation should be valid for a period of Ninety (90) days from the deadline for submission.

**13. Language of the Quotation**

All documents relating to the quotation and contract shall be in the English language.

**14. Signing of the Quotation**

The original of the quotation shall be typed, digitally entered or written in permanent ink and shall be signed and stamped by a person duly authorized to sign on behalf of the bidder.

Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the quotation.

**15. Submission of the Quotation**

The quotation must be submitted electronically.

The Bidder submitting a quotation electronically shall follow the instruction as outlined in the GOJEP System: Quick Guide for Suppliers.

**SUMMARY INSTRUCTIONS FOR BID SUBMISSION**

**Suppliers must complete the upload of their Bid before the defined, 'Tender deadline for Bid Submission' otherwise the system will terminate the upload process once the tender deadline has been reached. As upload of a Bid may take some time (30 minutes for a 50 MB bid document, depending on bandwidth), it is strongly recommended that the Bid upload process be conducted at least two hours before the defined deadline.**

**Also first time User of the system should ensure that their Desktop Computer / Laptop is prepared for Bid Submission (As per instructions below) well in advance of the bid deadline. A Supplier can also conduct a test upload in advance, as the system allows for a bid to be uploaded multiple times.**

**PREPARING YOUR COMPUTER FOR BID SUBMISSION:**

1. **Browser compatibility:**
   a. Only Internet Explorer and Mozilla Firefox Browsers are supported by the Bid submission tool.
   **Google Chrome browser and Microsoft Edge browser will NOT work.**
2. **Java software installation and activation:**
   a. Java software must be downloaded and installed on the computer / laptop which will be used to submit the bid. Visit the website: https://www.java.com/download/ to download the Java software.
   b. Next, you must **ACTIVATE** the java software. To know how to do so, please Google **'How to activate Java software'** for the browser you are using.

**SUBMISSION (UPLOAD) OF YOUR BID:**

1. **Bid documents(s) preparation:**
   a. Bids setup by a Procuring entity to use the 'Off-Line Evaluation' functionality of the system will necessitate that the Supplier Submit (Upload) their Bid proposal document as a single electronic document (**preferably PDF format**) consisting of **all** the various sheets and documents of your proposal (technical specs, price sheet, copy of certificates etc.). It is advisable to try and limit the size of this single bid document, so as to facilitate easier upload. The System has a bid maximum size of 99Mb , but it is recommended to try and keep the Bid proposal document below 50MB size. Options for combining the multiple documents into one bid document are:
      i. Use of Acrobat PRO or Acrobat Writer software (you will have to purchase this); or
      ii. You can Google to find a free software that can combine multiple PDF documents into one PDF file; for example the one available from www.pdfmerge.com, or
      iii. You can arrange and scan the pages of the documents using a Multi-function printer, email it to yourself (it should be in PDF form) and then download it from your e-mail. If using this option, make sure to use the 'low resolution' scan option of the machine, to limit the size of the file generated by the machine; or
      iv. As a last resort you can Zip the files into one zip file bit this option is STRONGLY discouraged.
      **v. After your Bid Document has been prepared, please ensure that it is valid (i.e. not corrupted) and can be opened by the relevant program you had used to create it (e.g. if 'PDF' format, ensure it can be opened by Acrobat Reader. Page through the entire document to ensure everything is intact and in order.**

2. Login to the e-GP System at: www.gojep.gov.jm.

3. Select **List of my CfTs** from the Competition Management section of the page and from the list of tender(s) displayed. Select the tender for which you intend to submit a bid.
4. Select the **Show Menu** tab then Select **Bid Submission** from the drop down list, which will open the View bids form /page.
5. In this View bids form, Select **Accept & confirm all of the above** prompt.
6. **Select Launch Tender Preparation link** (in the centre left of the form / page). This action will run Java software and you will receive a series of Security prompts. Select the options to **Open**, **Allow**, **Continue**, **Run**, **Accept** etc. as they appear. You will then see a notice saying '**Downloading application'**.
7. The Tender Preparation Tool application will appear on your desktop, you will have to login again (using your e-GP system credentials which was created on initial registration (your Username and Password).
8. After logging in, a screen with a prompt button **attach file** will appear. Click this button and browse to where you have your single bid proposal document saved on your computer / laptop and then click **attach.**
9. Once your Bid document has been attached, you will see a prompt **Pack and submit** highlighted in yellow at the top of the tool. **Select this Pack and submit, thereafter a message 'Uploading tender' will display.**
10. **Once the Tender upload has been completed,** a message *'Tender submission 'Your tender was submitted..'* will be displayed and an e-mail confirmation will be sent to you.. **Depending of the Size of your Bid document, this upload could take up to 60 Minutes (for a 99MB file), so you will have to wait for the process to complete.** This is why it is also important to start the upload way in advance of the Tender closure. You can now close the Tender tool and logout of the e-GP system.
11. **If there was an interruption in the Tender upload the process will have to be restarted.**

A Bidder may modify or withdraw its quotation once submitted but only prior to the deadline for submission. The modification or withdrawal must be prepared as above, however, the outer envelope must also be marked 'MODIFICATION' or 'WITHDRAWAL'.

Failure to be directly obtain the Request for Proposal Document from the Procuring Entity will result in disqualification of that bidder from participating in the procurement process.

**16. Deadline for Submission**

The quotation must be submitted to the procuring entity no later than 2:00 p.m. on July 14, 2022.

**There shall be no public opening of quotations.**

**17. Late Quotations**

The procuring entity shall not consider any quotation that arrives after the deadline for submission. All late quotations shall be declared late and rejected. The Bidder will be notified and must collect their quotation within 30 days. If the quotation is not collected within this period it shall be destroyed.

In the case of electronic submission, **late bids will be automatically rejected by the system.** The bidder will be unable to upload their quotation once the quotation submission deadline has passed.

**Bidders are therefore urged to commence bid upload at least four (4) hours prior to the submission time. The Procuring Entity will not be held liability for bids not submitted on time due to late commencement of bid upload. At the FIRST SIGN of any technical difficulties, bidders must make contact with the Office of Public Procurement Policy: (876) 932-5220, 932-5253, 932-5246.**

**18. Confidentiality**

Information relating to the examination, evaluation, and comparison of quotations and recommendation for the procurement contract award shall not be disclosed to bidders or any other persons not officially concerned with the procurement proceedings until publications of the contract award.

Any attempt by the bidder or any person to influence the procuring entity during the procurement process, pursuant to Section 46 of the Act, shall result in the rejection of the quotation.

**19. Negotiation**

The procuring entity may seek to negotiate and obtain a reduction in the bid price in order to ensure best value for money.

**20. Procuring Entity's Right to Accept Any Quotation and to Reject any or all Quotations:**

The procuring entity reserves the right to accept or reject the quotation, and to cancel the procurement proceedings and reject the quotation, at any time prior to the award of the procurement contract, without incurring any liability to the affected Bidder(s).

**21. Clarifications or Further Information**

Any request for clarification or further information must be received three (3) days before the quotation deadline. All requests for clarification(s) will be facilitated through the electronic platform (www.gojep.gov.jm).

**22. Notification of Award and Standstill Period**

22.1 Prior to the expiration of the period of bid validity, the procuring entity shall notify all bidders, in writing, of the determination of the successful bid including all the information required by Section 44(2) of the Act.

22.2 The date of the notification under ITB Sub-Clause 42.1 establishes the commencement of the standstill period of **three (3) days**. During this time bidders may query, apply for reconsideration or otherwise challenge the decision of the procuring entity. This may include a request for debriefing seeking explanations for the grounds on which their bids were not selected.

**23 Signing of Contract**

23.1 On the expiry of the standstill period the procuring entity shall send the successful bidder the Letter of Acceptance.

23.2 The successful bidder shall return the signed contract within 28 days from the date of the Letter of Acceptance and shall sign, date, and return to the procuring

entity the signed contract Agreement and performance security, if required, pursuant to ITB Clause 44.

23.3 On receipt of the signed contract Agreement and performance security, if required, the procuring entity will immediately notify in writing all unsuccessful bidders, of the final results of the bidding process. This notice will discharge their bid securities pursuant to ITB Clause 20.4.

23.4 Following signature of the contract Agreement, the procuring entity shall publish, in the manner prescribed by the Office, the results, identifying the name of the contractor, the contract price and the contract number.

## 24 Right to Reconsideration and Review

Subject to section 49 of the Public Procurement Act 2015 and in accordance with The Public Procurement (Reconsideration and Review) Regulations, 2018 an eligible bidder has the right to reconsideration or review of an action or decision of the procuring entity.

## Section 2 Works Requirements

The Works Requirements comprise the following:

### 2A Scope of Requirements

- *General renovation works to include painting, sanitary fittings, doors, cupboards and counters.*

Alternative quotations will not be accepted.

Partial quotations will not be accepted.

## 2B Specifications

# TECHNICAL SPECIFICATIONS

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## 2.01 EARTHWORKS

### 2.01.01 INSPECTION

The Contractor shall give reasonable notice to the Architect whenever it is intended to cover any work or materials and in default of such notice shall, if required by the , uncover such work or materials at his own expense.

### 2.01.02 EXCAVATION

The quantities of excavation, filling and ramming, wheeling, spreading and levelling surplus excavated material are calculated from the net measurements before excavating and the Contractor shall make allowances, in his rates for increases in bulk.

The rates for excavation shall include for excavating in whatever nature of ground may be found to exist, removing stones boulders, tree roots up 150mm (6”) diameter and any other obstructions encountered.

The rates for filling and ramming, for wheeling, spreading and levelling or grading and for disposal of surplus excavated materials shall include for any double handling required (See 1.06).

Whenever excavations are carried to greater depths than are shown on the drawings (including uneven bottoms or soft spots) they shall be filled to the proper level with broken stone or gravel for non-bearing lightweight structures or with concrete under load bearing footing carrying concentrated loads.

The rates for excavation shall include for ramming all bottoms before any concrete is placed. the bottom and sides of excavations for foundations including tie beams shall be carefully cut so that when foundation reinforcement is placed the correct concrete cover is allowed to the bars.

The sides of the excavation if necessary shall be timbered and shored in such a way as to be sufficient to secure them from falling in, and the timbers shall be maintained as long as necessary. Prices shall include for any necessary timbering and shoring of excavations.

### 2.01.03 REMOVAL OF ROCKS

Rock met with in the course of excavation must normally be moved be means of wedges and levers. If blasting is considered necessary by the Contractor, it must be done at his own responsibility, after taking all necessary precautions for the safety of persons and property.

### 2.01.04 EXCAVATIONS TO BE KEPT FREE FROM WATER

The whole of the excavations shall allow in his prices for providing all pumping, baling, temporary drains and cuts required for this purpose.

### 2.01.05 BACKFILLING AND FILLING TO LEVELS

In filling around foundations and to make up levels, approved material arising from the excavations may be used, (providing it is free from vegetable matter) and to the approval of the Architect.

No backfilling shall be done until all formwork, bracing, etc., has been removed and the work inspected and approved by the Architect. Material softer than the adjoining soil shall not be used for backfill. All backfill shall be applied in layers not exceeding six inches and properly tamped and compacted including watering.

201.06 SURPLUS EXCAVATED MATERIAL

All surplus excavated material is to be deposited, spread and levelled where directed or removed from the Site.

The rates for removing surplus excavated material from the Site shall include for carting and depositing for a tip to be found by the Contractor, and for any fees and charges in connection therewith. (See also 1.02).

2.01.07 FILL

Rock chips removed during the excavation may be re-used as fill provided they form clean, sound and hard material of varying sizes capable of being compacted by rolling .

All fill brought to the Site must be clean, sharp, river sand or broken stone of varying dimensions.

All fill shall be placed in layers on greater than inches in depth.

2.01.08 APPROVAL OF EXCAVATIONS

The Contractor shall inform the Architect when excavations are ready to receive concrete. No concrete shall be placed in foundations until the excavation has been inspected and approved by the Architect.

2.01.09 HARDCORE

The hardcore is to be composed of approved hard bricks, old cement concrete hard tile stone, stone ballast or other hard substances of approved quality all to be broken to suitable sizes and well rammed and consolidated and where laid to receive concrete to be blinded with approved hard, clean, fine material, free from earth or vegetable matter.

2.01.10 PRE-CONSTRUCTION SUBTERRANEAN TERMITE TREATMENT

The material to be applied is to contain 42.8% Chlorpyrifos and water at 1% finished emulsion i.e. 2 gallons concentrate to 98 gallons of water. Application to produce a vertical barrier should be at a rate 4 gallons per ten (10) linear feet (ft) per foot (ft) of depth (10) square feet (ft).

For hollow block foundations apply at a rate of two gallon of emulsion per ten (10) linear feet (ft).

The solution must be applied strictly on accordance with manufacturer’s instructions.

The solution must be evenly applied and all surfaces completely covered.

Application shall not be made when the surfaces, compacted hardcore, marl, gravel, etc. or earth is excessively wet nor shall it be applied immediately after heavy rain.

The Contractor will be required to provide a guarantee for a period of three (3) years with prompt retreatment within ten (10) days should there be signs of infestation after the building

is constructed.

## 2.02 CONCRETING

### 2.02.01 CEMENT

The cement shall be "Carib' or other approved, complying in every respect with B.S. 12. It shall be delivered in the sound original packages of the manufactures plainly branded and must be stored in water-tight sheds on a floor rise at least 150mm (6") from the ground. Sufficient quantities must be stored to ensure continuous supplies and any cement damaged by water or found to be otherwise defective, must be removed from the site immediately. The cement shall be used as far as possible in the order in which it has been delivered. Any cement which arrives on the site hot from manufacturers shall not be used until one week has passed. Any packages in which there are hardened lumps or cakes of cement shall be rejected.

### 2.02.02 SAND

The sand shall be clean, hard, sharp course grit pit sand of good strata and from approved suppliers, or sand derived from crushing suitable gravel or stone, and shall be free from coagulated lumps, soft or flaky particles, shale, crusher dust, silt alkali, loam organic matter or other deleterious substances. The grains shall be well graded in size and must pass through a screen with a mesh of $4.5mm^2$ (3/16 of an inch square) and not more than 10% shall pass through a No. 100 B.S. sieve. It shall be well graded between these limits and shall be well washed if required by the Architect.

### 2.02.03 AGGREGATE

The graded course aggregate shall be screen pit ballast or crushed hard stone, clean durable, free from soft, porous, elongated or laminated pieces, crusher dust, alkali loam, organic matter or other deleterious substances. Aggregate for normal foundations paths, and steps shall be graded so as wholly to pass a 38mm (1½" gauge) mesh and be retained on a 10mm ( 3/8" gauge) mesh. Aggregate for reinforced concrete foundations, floors beams, columns, belts lintels, etc., shall be graded so as wholly to pass a 19mm (¾") mesh, and be retain on 4.5mm (3/16" gauge) mesh.

If aggregate conforming too the foregoing specified grading is not reasonably obtainable the Contractor shall supply two or more classes of otherwise satisfactory aggregates but of different maximum size and these separate materials shall be mixed in proportions to be directed by the Architect without any extra charge to the Contract.

### 2.02.04 WATER

Water shall be clean and free from oil, acid, alkali, earth, vegetable or organic matter or other deleterious substances in suspension or in solution in such amount as to impair. the strength or durability of the concrete mortar. Water shall be obtained from the public supply and no water taken from the spring, river, lake or similar sources or from excavations shall be used for any purpose on the Works unless approved by the Architect.

If instructed samples of water collected in an approved manner shall be submitted for the purpose of analysis or for making concrete tests. Test to be in accordance with B.S.3148: 1980.

2.02.05 REINFORCEMENT

The reinforcement shall be rolled steel bars, drawn wire or welded fabric as specified and shall comply with British Standard Specifications B.S.4449, B.S.4482 (1969) and B.S.4483. It shall be free from loose scale, loose rust, oil, grease or other harmful matter.

The steel shall be stored that it kept clean and reasonably free from rust.

2.02.06 CONCRETE

The concrete shall be mixed in the following proportions:-

| | | |
|---|---|---|
| QUALITY "A" | 1:1 1½:3 | Nominal Mix |
| Cement | | 42.50 kg. |
| Dry Sand | | 0.040 cubic metres |
| Course Aggregate (graded 10mmaximum) | | 0.080 cubic metres |
| QUALITY "B" | 1:2:4 | Nominal Mix |
| Cement | | 42.50kg. |
| Dry Sand | | 0.060 cubic metres |
| Course Aggregate (graded 19 maximum) | | 0.120 cubic metres |
| QUALITY "C" | 1:3:6 | Nominal Mix |
| Cement | | 42.50kg. |
| Dry sand | | 0.080 cubic metres |
| Course Aggregate (graded 38 mm maximum) | | 0.160 cubic metres |
| QUALITY "D" | 1:4:8 | Nominal Mix |
| Cement | | 42.50kg. |
| Dry Sand | | 0.110 cubic metres |
| Course Aggregate (graded 38mm maximum) | | 0.220 cubic metres |

In addition, concrete Qualities "A", "B" and "C" are to have the minimum crushing strengths hereinafter described.

In the foregoing table the aggregates are assumed to be measured dry, and if wet or damp at the time of mixing due allowance must be made for "bulking".

CONCRETE MINIUM RESISTANCE

2.02.07 QUALITY CRUSHING (CUBE STRENGHT)
IN N/mm2 28 DAYS AFTER MIXING

| | PRELIMINARY TEST | WORKS TEST | PRELIMINARY TEST | WORKS TEST |
|---|---|---|---|---|
| A | 30 | 26 | 22 | 19 |
| B | 24 | 16 | 16 | 14 |

| | | | | |
|---|---|---|---|---|
| C | 19 | 14 | 14 | 12 |

2.02.08 MIXING

The 94 lbs. (42.638kg) bag of cement shall be the basis of the batching and each batch shall contain a whole number of bags. The aggregates shall be measured for each batch in approved gauging boxes, properly constructed in timber to the necessary sizes and fitted with lifting handles.

The measurements of volume of aggregate shall be made in the proper gauge boxes and the concrete shall be mixed in an approved mechanical batch mixer. Mixing shall continue until there is a uniform distribution of the materials and the mass is uniform in consistency.

All materials and workmanship shall comply with the British Standard Code of Practice for Reinforced Concrete (B.S.8110) except that Clause 305 is amended as per Clause 4.4.2.3 of the National Code of Jamaica.

2.02.09 HANDLING

Concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients. It should be deposited as nearly as practicable in its final position to avoid rehandling or flowing.

2.02.10 PLACING

The concrete shall be placed before setting has commenced and must not be subsequently disturbed. Concrete shall be thoroughly compacted and worked around the reinforcement, around embedded fixtures, and into corners of the formwork Metal tampers of suitable approved types shall be used for tamping.

2.02.11 WATER CONTENT

The interval between adding the water to the concrete materials and completion of the concrete placing operations shall not exceed 25 minutes. The water content shall be the least amount which gives reasonable workability having regard to the method of compaction but shall never exceed 22.50 litres per 42.50 kg. of cement.

2.02.12 SLUMP TEST

Allow for carrying out slump tests whenever required. The slump shall not exceed 75mm in the case of un reinforced concrete, and 75mm in the case of vibrated reinforced concrete.

The method of test for consistency (slump test) shall be as follows. The test specimen shall be formed in a mould in the form of a frustum of a cone with internal dimensions as follows:

| | |
|---|---|
| Bottom diameter | 200 mm |
| Top diameter | 100 mm |
| Height | 300 mm |

The bottom and the top shall be open, parallel to each other and it right angles to the axis of the cone. The mould shall be provided with suitable foot pieces and handles. The internal surface shall be smooth. Care shall be taken to ensure that a representative sample is taken. The internal surface of the mould shall be thoroughly clean, dry and free from set cement before commencing the test. The mould shall be placed on a smooth, flat, non-absorbent surface, and the operator shall hold the mould firmly in place while it is being filled by standing on the foot pieces. The mould shall be filled to about one-fourth of its height with

concrete which shall then be tamped, using 25 strokes of a 16mm diameter steel rod, 600mm long, bullet pointed at the lower end. The filling shall be completed in successive layers similar to the first and the top struck off so that the mould is exactly filled. The mould shall then be removed by raising vertically, then be allowed to subside and the height of the specimen measured after coming to rest. The consistency shall be recorded in terms of inches of subsidence of the specimen during the test which is known as the slump. The test shall be made immediately after mixing and at the point where the concrete is being delivered for placing in the work.

2.2.13 READY-MIXED CONCRETE

At the Contractor's option, ready-mixed concrete may be used meeting the requirements as to materials, batching, mixing, transporting, and placing as specified herein, and the requirements of J.S.133. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted. Combination truck and trailer equipment for transporting ready-mixed concrete will not be permitted. The quality and quality of materials used in ready-mixed concrete and in batched aggregate shall be subject to inspection at the batching plant.

2.02.14 TEST CUBES

Allow for providing test cubes as required. The work shall be carried out in sections as directed and six test cubes shall be cast from each section. Cubes shall be made whenever a changes is made whether in the cement aggregate, or in the consistence of the concrete.

Cubes shall be 150 x 150 x 150mm in six and shall remain in the steel mould for 24 hours, or as directed by the , before being removed. They shall be marked, dated and immediately stored in damp sand unit dispatched for testing.

Cubes shall be dispatched in stout wooden boxes of damp sand to the testing laboratory as directed by the . A record of all test cubes and slump tests shall be kept on the site and on completion the set of records shall be submitted to the . Should the tests prove unsatisfactory, the concrete work shall be stopped and only continue when directed by the . The concreting involved will be liable to rejection and, if so directed, it shall be cut out, re-executed or rectified at the Contractor's expense.

2.02.15 VIBRATION

Mechanical vibrators shall be used only at the discretion of the .

2.02.16 CURING

Concrete after placing shall be protected during the first stage hardening from harmful effects of drying winds, the sun's rays rain or surface water. The concrete shall be covered with a layer of sacking canvas, hessian or suitable abosorbent material and kept constantly wet for the first ten days setting.

2.02.17 POURING

With concrete columns, pouring shall be proceeded with continuously until a point is reached just below the soffits of beams or haunches, and the concrete then left to settle for period of not less than 2 hours before depositing fresh concrete in beams girders or slab, supported by the columns.

Columns capitals, haunches and brackets and the whole of the floor system in the vicinity of the head column shall be cast in one operation.

Where laid in areas over 30 square metres, concrete ground floor slabs shall be laid in alternate bays not exceeding 30 square metres per bay. Formwork to the edges of bays shall be the full depth of the slabs.

2.02.18 CONSTRUCTION JOINTS

When it is necessary to stop concreting, the concrete shall be finished off with square edges, and it shall be allow to slope away. Before depositing new concrete against that which has been set, the surface of the latter shall be cleaned and loose or porous concrete removed and cut back until a solid face is exposed. The surface of the concrete shall then be hosed down, grouted with cement mortar (1:2) and the new concrete thoroughly rammed against the face.

2.02.19 FIXING REINFORCEMENT

The Contractor shall be responsible for the accurate fixing of the reinforcement shown or specified, but shall not place any concrete until the reinforcement has been inspected in position and approved by the . The Contractor shall deliver bar-bending schedules for the ’s approved before fixing.

All mail scale, loose or scaly rust, shall be thoroughly cleansed off the steel reinforcement with a stiff brush before the reinforcement is placed in position.

All reinforcing rods shall be rent to shape on the site of the Works. Bends and turn in rods up to 25mm diameter shall be made cold. bars exceeding this diameter may be heated to a dull red heat but not cooled by quenching. Bending shall be done with an evenly applied force. without jerk, in a bending machine of approved pattern. Any rod which shows sign of cracking at a bend must be rejected.

Reinforcement shall be bent to shape and place in strict accordance with the Drawings. Where rods cross, or come into contact, they shall be wired together with No. 14 S.W.G. iron wire with three turns before twisting and ends cut off 25mm from the twist with cutting pliers. Rods connected longitudinally shall have the ends bent over, the rods shall overlaps and shall be securely wired .

Ends of plain rods in tension shall be bent over a radius of four diameter or as otherwise shown or specified.

Reinforcement shall be properly braced, supported and held firmly in position, so that the placing and ramming of the concrete will cause no distortion or disturbance of the reinforcement . Any temporary supports shall be removed during concreting.

The ties, links, or stirrups connecting the bars shall be taut so that the bars are properly braced. The inside of their cured parts shall be in actual contact with the bars around which they are intended to fit.

Care shall be taken that the cover of concrete provide is as specified on the drawing, or if not so specified is not less than 25mm in the case of beams and columns and not less that ½” in the case of slabs and not less than 50mm in the case of foundations.

The rates for steel reinforcement shall include for cleaning as necessary, cutting to lengths, bending and hooked ends, placing in position, for distance pieces where necessary to ensure rigidity of the bars, and for tying together with No. 14 S. W. G. annealed soft iron wire so as to prevent displacement during concreting.

The prices for fabric reinforcement are to include for all cutting and notching and for laps.

2.02.20 FORMWORK

The formwork shall be so constructed as to remain sufficiently tight to prevent loss or liquid. All formwork shall be properly cleaned before re-use.

All vertical strutting shall be carried down to bear on such construction as is sufficiently strong to afford the required support without delay.

All rubbish, particularly chippings, shavings and sawdust shall be removed from the interior of the forms before the concrete is placed and suitable washout holes shall be provide to facilitate this.

No formwork is to be removed if in the opinion of the the concrete has not hardened sufficiently. Approved by the shall not relieve the Contractor of his liability for any damage or making good due to premature removal or collapse of form.

The Contractor is responsible for the designs, supply, stability, striking and removal of formwork.

2.02.21 FORMWORK REINFORCEMENT

Timber shall be well seasoned, free from loose knots and for shuttering of exposed concrete faces, wrought on all faces (See also 2.21). Faces in contact with concrete shall be free adhering grout, projecting nails splits or other defects that will mar the concrete surface. Shuttering for foundations and other concealed work may be of undressed.

All joint excepts as herinbelow specified, shall be sufficiently tight to prevent leakage of cement grout and to avoid the formation of fins or other blemishes and all faulty joints shall be caulked. If timber boarding is to be continuously wet throughout the period of use the joints shall not be tight when the shuttering is first constructed. Where the appearance of the concrete face is important the position and direction of the joints shall be as directed.

Opening for inspection and for the escape of wash water etc. shall be formed in such a way that they can be conveniently closed before commencing to place the concrete.

Prices for formwork are to include with mould oil or other approved coating to prevent adherence of the concrete. such coating shall be insoluble in water. non-staining, and not injurious to the concrete, and shall not become flaky nor be removable by rain or wash water. Liquids that retard the setting of cement shall not be applied to the shuttering without the prior approval of the . Mould reinforcement.

Formwork is measured to the actual surface in contact with the concrete, and prices are to include for all splayed and shot edges, notchings, allowance for overlaps and passings at angles, battens, and for nails. The rates foe formwork shall also include for all props, stays, struts, bolts, wedges and everything necessary to keep all firm and rigid and for all straight, raking and circular cutting and waste, and for fixing, easing, removing and thoroughly cleaning before re-use. The number of times the formwork may be reused shall be taken into account in pricing.

2.02.22 FAIR FACE

All exposed faces of insitu concrete shall be brought to a fair and even surface in the casings by working the concrete against the ceasing during pouring. Immediately after removal of the

casings the concrete surfaces shall be trowelled over to remove any irregularities, air holes, etc., and shall be stooped with cement mortar (1:3) to the requirements of the . The face of the concrete shall be rubbed down with carborundum stone dipped in cement grout to a perfectly true, smooth and even surface, free from all board and marks, honeycombing, pitting, etc. Such works shall be commenced within one hour of removing the shutter and actively and rapidly performed until completed. the object being to complete the finish as soon as possible after the removal of the shuttering. The Contractor will be permitted to provided the smooth linings which will achieve the required finish without rubbing down. All rubbed work shall be lightly washed with plain cold water on the completion of the Contractor and not before at least four weeks after initial mixing.

The rates for fair face concrete shall include the use of wrot formwork and well working the concrete against the formwork whilst concreting and for rubbing down and stopping holes immediately the formwork has been removed so as to produce a smooth finish free from marks, voids and other imperfections.

2.02.23 SURFACES TO BE RENDERED

Concrete surfaces which are to be plastered, rendered or tiled shall be closely hacked to provide an adequate key or alternatively the surface of timber shuttering may be treated with "Redalon" or other approved retarder. The retarder shall be applied strictly.

2.02.24 PRE-CAST CONCRETE

All units shall be poured in accurately made moulds using Concrete Quality "B" (fine aggregate). The concrete shall be vibrated fully into place in a manner which will yield a smooth, even surface.

Pre-cast concrete members will be inspected by the while they are being cast. Lengths, width, thickness and squareness will be checked and a tolerance of plus or minus 3mm in dimensions only will allowed.

All surfaces must be free from voids, course aggregate, cracks, exposed reinforcement or other imperfections. No patching is to be done on any surface without permission from the .

## 2.03 WALLING AND MASONARY

2.03.01 MATERIALS

For Cement, and sand water refer to 2.01, and 2.04.

2.03.02 HOLLOW CONCRETE BLOCKS

The hollow concrete blocks shall comply in all respects with J.S. and shall be Class A unless otherwise described.

2.03.03 MORTAR

The mortar used for block laying shall be cement and sand (1:4).

All mortar shall be properly mixed upon a clean platform and shall be used as mixed. No mortar which has been allowed to set shall be used in the work.

2.03.4 LAYING

All blockwork shall be laid in strecher bond, bedded, jointed, flushed up in mortar and carried up regularly around the building. All blocks shall be thoroughly watered before laying.

All reinforcement cavities above ground and all cavities blow ground level shall be filled in solid with 1:3:6 concrete placed consolidated in sections not exceeding 1200mm in height.

All concrete block units shall be wet immediately before being laid and the effective shells and webs shall rest and align one over the other.

All work shall be frequently checked with levelling instruments, and all angles reveals, etc. strictly true, square and plumb.

Reinforcement steel shall be placed as shown on structural drawings. Where horizontal and vertical reinforcing bars cross they shall be wired as described in 2.19 here to before. The horizontal joints shall be filled with mortar to the full flushed extent of the bearing area of the units and the vertical joints shall be thoroughly flushed with mortar. Minimum splice of all reinforcing.

The rates for concrete blockwalling shall include for special size blocks and plumbing and bonding at all angles and intersections, cutting at all jambs and sills, cutting and fitting up top to concrete soffits, and for sealing tops and ends of wall to receive concrete or render.

Where block walls are described as being built fair and flush pointed, prices shall include for pointing as described on the Drawings or in the Bills of Quantities and in the case of window and door jambs, for standard or special sized blocks with fair ends.

All courses shall be laid perfectly level with joints of equal thickness and all adjacent exposed faces laid flush with each other.

All courses shall be laid perfectly level with joints of equal thickness and all adjacent exposed faces laid flush with each other.

2.03.05 LINTELS

All normal builder’s lintels shall be the same thickness as the wall and not less than 200mm deep with not less than 200mm bearings at each end and shall be reinforced with steel bars

hooked at each and placed 25mm above their soffits as follow.

100mm Wide and under: 1No. 12mm diameter bar for clear spans up to 1200mm.

For lintels over 100mm wide and up to 200mm wide; 2 No. 12mm diameter bars for clear spans up to 1200mm; 2No. 16mm diameter bars or 3 No. 12mm diameter bars for clear spans up to 2100mm.

The Contractor shall refer to the drawings for reinforcement details of all other lintels.

2.03.06 ENDS

All free vertical ends of walls such as window and door jambs to opening shall be reinforcement with a rod of at least 10mm diameter placed not more than 100mm from the edge.

2.03.07 EXECUTION

Erect all block walls and panels as shown on the Drawings and described herein, including all cutting of blocks to size for bonding, forming opening and plumbing all angels.

2.03.08 FAIR FACE

Fair faced block walls shall be built from approved quality selected block of uniform colour and textures to comply in all respects with J.S. 35 and shall be Class A unless otherwise described.

All courses shall be laid perfectly level with joints equal thickness and all adjacent exposed faces laid flush with each other. Properly calibrated courses rods or templates shall set up at the ends of every panel of walling to facilitate correct alignment of the block courses.

Unless otherwise described all pointing shall be carried out as the works proceeds shall be slightly recessed, and finished to give half round concave joints (bucket handle).

All excess mortar must be cleaned off before setting.

All external angles, reveals and jambs must be built perfectly square and vertical.
Specially manufactured blocks with fair ends shall be used in these locations. All sills must be built perfectly square and horizontal. Specially manufactured blocks with fan tops shall be used in these locations.

2.03.09 DRYWALL

Dry walling shall be done to meet Local best quality practices.
Plycem sheets shall be handled, transported, stored and installed as per supplier's and manufacturer's specifications and instructions.

## 2.04 ROOFING

2.04.01 WORK BY OTHERS

Head flashings at plumbing vent stacks through the roof will be furnished and installed by the plumber.

2.04.02 GENERAL

Thoroughly overhaul the roof on completion and leave it sound and watertight to be satisfaction of the .

FELT ROOFING

2.04.03 BASE

No roofing felt is to be applied to dirty or defectives surfaces. prices shall include for any cleaning and making good necessary to the surface to be covered.

2.04.04 MATERIALS

(a) Bitumen - an approved coal or tar pitch

(b) Felt - waterproof, acid-proof, alkali-proof tarred wood or fiberglass complying in all respects with B.S.747 Class 1.

(c) Nails - Copper of galvanised mild steel wire nails to B.S.1202

2.04.05 EXECUTION

The roofing shall be a 2 - or 3- layer built up saturated bituminous felt covering as stated in the Bills of Quantities laid on prepared surfaces.

The first or/and second layers of felt shall be in rolls 914mm wide weighing 0.62kg. per metre length and laid in the direction of the and bonded to the slab with hot bitumen at the rate of 1.50kg. per square metre. Roll to roll side end and end laps must be a minimum of 50mm and properly sealed.

The final layer of felt shall be standard grey or mineralised finish in rolls 914mm wide, weighing 1.86kg. per metre length and laid in hot bitumen at the rate of 1.50kg per square metres. The rolls must be laid in the direction of the fall with the joint staggered with those below.

Where the final layer of felt is standard grey finish, a top dressing of white limestone chippings to pass a 10mm mesh shall be rolled into a coat of bituminous compound to a thickness of 12mm.

All layers shall be dressed up at junctions with vertical surfaces and round ventilating and other pipes passing through the roof as shown on the Drawings in an approved manner. Finish at eaves shall consist of a welted bituminous felt drip or as detailed on the Drawing.

20.4.06 The rates for felt roofing shall include for all laps and for lying to requires falls cross-falls, currents or cambers .

ASPHALT

2.04.07 BASE

No asphalt is to be applied to dirty or defectives surfaces. Prices for asphalting shall include for any cleaning and making good necessary to be surfaces covered.

2.04.08 MATERIAL

The asphalt for roofing shall be either limestone aggregate mastic asphalt to B.S.6925 (1985) or natural rock or asphalt mastic asphalt to B.S6577 (1985).

The isolating membrane, where required, shall be black sheathing felt on B.S.747 Class 4A.

The reflective shall be either white limestone chippings to pass a 10mm mesh or an approved aluminium reflective paint.

2.04.09 EXECUTION

The asphalt roofing shall be laid in accordance with the British Standard Code of Practice in the number of coats and to the minimum thickness as described in the Bill of Quantities or on the Drawings.

The isolating membrane shall be well lapped at all joints, and the joints in successive layers of asphalt shall be staggered with hose below. Where the surface of asphalt is to be covered with chippings these shall be lightly to the topcoat whilst still tackly. The chippings shall be finished at edges, along up stand , etc., in a neat straight line.

Asphalt roofing shall, unless permitted otherwise by the , be executed by an approved Specialist, and in any case be guaranteed for a minimum period of five (5) years after the final completion of the contact

SINGLE ROOFING

2.04.10 MATERIALS

Shingles - Canadian Red Cedar No. 1 perfections end grain sawn and cut from the block at right angles to annular rings with a nominal length of 16’ (406mm) and random widths.

Nails - Copper or galvanised mild and random widths.

Sheeting - Aluminium or galvanised steel not less than 26 gauge

2.04.11 EXECUTION

Shingles shall be laid to the gauge specified with 38mm medium side lap each shingle twice nailed to batters or sarking. Eaves and verges shall be formed with a double course breaking joint. Hips, valleys and ridges shall be formed with cut and mitred shingles covered with shingles and laid wit edges lapped alternately, unless otherwise noted. Abutments and top edges shall be provided with sheet flashings.

## 2.05 CARPENTRY AND JOINERY

2.05.01 MATERIALS

All timber is to be the best quality obtainable and to the approved of the . thoroughly seasoned, free from sapwood, large loose or dead knots, waney edges, shakes and all other defects,

Softwood shall, unless otherwise noted, be wolmanised pine of the best quality available and shall be selected as suitable for each particular purpose.

Hardwood shall be Honduras Mahogany unless otherwise stated.

Sawn timbers shall hold up to the full sizes specified or noted on the Drawings.

All Carpenter's works is to be dressed where exposed and properly framed up and jointed.

All Joiner's work is to be jointed, pinned and glued and is be to got out with all joints, and stored on Site for as long as possible before assembly and fixing.

2.05.02 WORKMANSHIP

All Joiner's work is to be wrot finished with clean smooth surfaces, clean mirtes prepared in accordance with detailed Drawings and properly scribed and fixed to position in the building. The joinery is to be framed and put together as soon as possible after the commencement of the Contact, but not glued and wedged up until the joinery is prepared in readiness for immediate fixing. All framing is to be put together with well fittings mortice and tension joints wedged up solid. all mouldings are to properly mitred at angles. the glue is of the best and strongest quality and for external work shall be marine glue.

All screw and bolt heads or nuts are to countersunk, and exposed nail heads are to be driven home.

All glued joints are to be cross or feather tongued.

The prices for all items of carpentry and jointery shall include for all notchings and halvings and for all necessary nails, screw, plugs, straps anchors other fastenings to adequately secure the work subject to the approval of the . Fastenings in locations subject to wetting or high humidity shall be of an approved corrosion resisting material.

The rates for jointer's work shall include for rounded arrises as required. The rates for softwood skirtings, stop, architraves, fillets and brearer not exceeding 150mm in sectional area shall include for mitres, fitted ends, housings, returned ends, notching and other sundry labours of a like nature.

Where wrot softwood is described as planted-in, nails are to be punched and the holes stopped.

2.05.03 SIZES

All timber sizes, except where otherwise described are before planning, 3mm will be allowed for each wrought surfaces from all specified thickness.

2.05.04 FRAMES

Window, transome and door frames are to made up in accordance with detail drawings.

They shall, unless otherwise shown, be fixed to jambs with hold fasts located within 150mm of head and foot and at .090mm maximum centres between.

Heads of frames exceeding 0.90mm in width shall in addition be screw fixed to plugs at 0.90mm maximum centres, and the rates for frames shall allow for this.

2.02.05 DOORS

Flush doors unless otherwise detailed or described, shall comply with J.S.72 with four edges lipped and of internal or external quality according to location. They shall be finished on both sides with plywood of internal or external quality for painting or polishing as required and in accordance with the door schedule.

Doors shall be stored under protective cover away from dumped surfaces or locations.

Doors shall be fixed by experienced workman and shall be fitted and hung with a clearance of 3mm at the bottom and 1.5mm at the top and sides except where otherwise directed. Doors 45mm thick shall have the lock edged bevelled 3mm.

2.05.06 FITTINGS

Rates shall include for all framed bearers, scribing, fitting and screw fixing to walls (including rawl-plugged).

All wrot timber shall be rubbed down with three varying grades of sandpaper. all nail holes shall be stopped and the work left clean to receiving painting or polishing.

2.05.07 PREPARATION

The rates for all wood work to be painted shall included for priming before fixing in position.

## 2.06 HARDWARE AND METALWORK

STRUCTURAL STEELWORK

N.B. The term "the Contractor" where used under this heading means the steelwork Contractor.

### 2.06.01 STANDARD OF MATERIALS AND WORKMANSHIP

The whole of the materials and whole workmanship to be employed on the Works shall be the best of their respective kinds obtainable locally unless otherwise specified. The terms 'approved" or "selected" shall mean approved of or selected by the Architect.

### 2.06.02 STANDARD SPECIFICATIONS

All structural steel shall be type A36 new, conforming to the least edition of the ASTM Standard Specifications or shall be mild steel conforming to BSS 4360 - latest edition.

High Strength both shall be to ASTM A325-61T and installed in accordance with "Specification for Structural Joints using ASTM A325-61T".

Fabrication shall be carried out in accordance with the best Architecting practice and shall comply with the latest relevant specifications of the AISC and with BSS 449 (1959).

All welding electrodes shall comply with BSS 639 (1952) and welding shall be carried out in accordance with B.S.5135.

All the Standard Specifications mentioned in this specification shall be deemed to be part of it.

### 2.06.03 HANDLING AT SITE

The Contractor shall be responsible for handling, unloading, sorting and stacking of his materials on site. He shall not stack materials where they are likely to obstruct free access on the site or the work of others.

### 2.06.04 SUBSTITUTION OF MATERIALS

If materials specified on the drawings are not available, all alternative materials must be approved by the Architect.

### 2.06.05 FABRICATION

Fabrication shall be carried out in accordance with the drawings and the specification listed above. In particular:

(a) BOLT HOLES

Provide bolt holes as may be required to secure window and /or door frames and any special bolt holes as shown on the drawings.

(b) SHOP CONNECTIONS

Shop connections shall be welded, unless shown otherwise, and in such a manner

as to develop the full strength of the section. But welds will be subject to approval by the Architect, who shall have the option to order at the Contractor's expense, splice plates to be used in addition if he fells that there is some doubt about the adequacy of the butt we

(c) WELDING

All welds shall be neat and uniform in size. All welds shall be left in their original condition after chipping for examination by the Architect who shall have the option to order, at the Contractor's expense the grinding down to uniform size of all rough or unsightly welds. All shop welds shall be chipped prior to priming.

2.06.06 PAINTING

All structural steel except holding down bolts and the contract surfaces of bearing plates shall be wire-brushed and painted with one coat of best quality Zing Chromate primer or approved equal.

Bolts, welding spots and all abrasions to shop coat shall be made good with the same primer as above, prior to final paint.

2.06.07 ERECTION

(a) Erection programme shall co-ordinate with that of the main and other contractors so as to expedite construction and prevent delay to other work.

(b) All erection shall be carried out in accordance with standard specification listed above.

(c) The method employed for erection shall be at the option of the Contractor provide that this should not interfere with or damage work by others and provide it is acceptable to the main contractor.

(d) It is the responsibility of the Contractor to ensure stability of the structure at all times during erection. He shall provide all temporary bracing and remove same off the site after completion.

(e) Main frame site connection shall be with high tensile bolts using bearing type connection, in accordance with the standard specifications listed above. The Contractor shall provide necessary impact wrenches, include air supply, etc. required to comply with the specification.

(f) All other connections shall be with black bolts unless shown otherwise.

(g) Drifting done during assembly or erection shall not distort the metal or enlarge the holes; drifting to enlarge holes will NOT be permitted. Holes that must be enlarged to admit bolts shall be brought to the attention of the Architect, who may at his discretion, allow reaming. Poor matching of holes shall be cause for rejection of the member.

(h) All members shall be installed and maintained plumb and level and/or at the specified inclination. This shall be complied with as the erection progresses.

(i) The requirement for welding are as per shop welding - see 6.05 (c).

(j) No oxy-acetylene cutting or burning shall be done without the Architect's permission.

2.06.08 SHEETING

Aluminum sheeting shall comply with J.S.85

Fasteners to steelwork shall be stainless steel self-tapping screws with Neoprene washers fused to stainless steel washers. Side lap fasteners shall be stainless steel sheet metal screws.

Closure strip, sills flashing, corner sheets, etc., are all to be compatible with main sheeting.

Translucent sheeting shall be "Milite" or approved equal and shall be compatible with the main sheeting. It shall be installed in accordance with manufacturer's recommendations.

The entire installation is to be complete and in accord with good Architecting practice and strictly in compliance with B.S.C.P. 143 Part I and sheeting manufacturer's recommendations and these specifications.

Top and bottom sheets are to maintain even horizontal lines. Closure strips shall be used at head and still of all sections and to close all openings.

The Contractor shall furnish and install with roof and siding all necessary flashings closure strips, fasteners, tape, mastic or other type of sealing accessories to make the installation completely shall provide everything necessary to ensure strict compliance with this clause as no relief from its provision is possible.

Corpalosa steel decking shall be handled, transported, stored and installed as per supplier's and manufacturer's specifications and instructions.

GENERAL METALWORK

2.06.09 RUST

All steel and ironwork shall have rust and scale removed by scraping and steel wire brushing immediately before painting, and all shop prefabricated work to be primed with one coat of approved anti-corrosive paint before fixing or delivery to Site.

2.06.10 DRAWINGS

The Contractor shall supply shop drawings of all fabricated metalwork items for the approval of the Engineer.

2.06.11 WELDINGS

All welding shall be neatly cleaned off, and units shall be prefabricated in the shop whenever possible. Only the minimum of site welding shall be employed. All screwed work shall have full internal and external threads and all holes shall have burrs cleaned off. Counter-sinkings, where required, must be concentric.

2.06.12 SCREWS

All screwed work shall project at least two threads through nuts and all bolts passings through timber shall have washers under heads or nuts bearing on timber. Splayed washers shall be

fitted where necessary to give level bearing at sloped flanges, etc.

2.06.13 PRICES

The rates for all metalwork shall include for all fixing unless otherwise described at the rates for welding shall include for all labour, materials and appliance.

2.06.14 DELIVERY

The Contractor shall be responsible for the prompt ordering, clearing, receiving storage, etc., of all items. Upon receipt from the suppliers, all items shall be immediately checked for quantities and operation so that replacements may be obtained if necessary without causing delay.

2.06.15 HARDWARE

All hardware shall be clearly marked to indicate item and location and shall be carefully protected until completion of the Works. Finish items which can easily be removed, such as door knobs and pulls shall be removed and stored until painting work is completed. Other items shall be kept covered or protected in an approved manner. Any items which do not operate properly, or with damaged construction or finish, shall be replaced without additional charge.

Keys shall be stamped with their corresponding lock numbers by the factory or supplier and shall be tagged for location immediately upon receipt from the supplier. They shall hen be immediately checked for operation and handed over to the Employer.

All operating hardware shall be lubricated and adjusted as required and left in perfect working order before handing over. Only powdered graphite or other approved lock lubricant shall be used in locks. Operating shall be smooth, easy and free of rattles squeaks and other unacceptable noises and defects.

Samples as required by the , shall be submitted for approval and no furniture shall be fixed with screws of the same metal and finish as the fittings and the screw shall be provided by the supplier of the fittings.

The prices for fixing iron mongery are to include for all sinkings, notchings morticing and other labour required to fit and fix the respective items in the best manner and the taking off for painting and subsequent re-fitting.

Schedules of door furniture to be supplied and fixed will be furnished by the . Where items are not specifically noted by manufacturer’s name and catalogue number, samples are to be submitted to the for approval at least two weeks before fixing is due to commence.

Door furniture for cupboards and fittings will be shown on detail drawings.

2.06.16 WINDOWS

The prices for fixing metal windows in masonry or timber framed openings shall include for sealing and pointing all round, external and internal with an approved non-hardening neutral coloured tropical mastic.

## 2.07 RENDERING, PAVING AND TILING

### 2.07.01 MATERIALS

Sound shall be clean silica equal to the sample submitted to and approved by the . It shall be protected from dirt or soil during storage and is to be free from salt, alkali, loam, clay and other deleterious matter, and entirely suitable for plaster work.

Cement shall be as described under 2.01. It must be protected from damp, and it must be suitably cured for plaster work.

### 2.07.02 APPLICATION

Rendering shall not be lees that 12mm finished thickness executed in two coats and finished with a wood float.

The first rendering coat shall be cement and sand 1:4, the sand passing a No. 16 gauge sieve.

The finishing rendering coat to exterior surfaces shall be cement and sand 1:4. the sand passing a No. 24 gauge sieve.

The finishing rendering coat to interior surfaces shall be cement and sand 1:4, the sand passing a No. 32 gauge sieve.

Particular care shall be taken to plumb all angles and to run all junctions between surfaces perfectly true, straight and square. Plastering mixes shall be used up within one hour of mixing with water and all remaining after this period shall be discarded.

### 2.07.03 PRICES

The rates for rendering shall include for raking out joints of blockwalling or roughening concrete by an approved means to form a key, for working behind pipe and similar obstructions and for all temporary rules.

### 2.07.04 INTERNAL WALL TILING

All internal wall tiling shall be best quality glazed tiles. All external angels and exposed edges shall be made with round edge tiles. The tiling shall be fixed by an inorganic adhesive (“Richafix” or equal) used strictly in accordance with the manufacturer’s instruction. Alternatively, subject to the ’s approval, the tiling may be set in a cement and sand (1:3) bed properly keyed to the receiving surface.

### 2.07.05 CONCRETE FLOORS AND PLATFORMS

Where concrete floors and platforms are specified the surface of the slab while still green shall be sprinkled with a dry cement sand mix (1:3) and worked up with a steel trowel or wood float to an even and regular finish and to falls as noted on the Drawings.

The construction of the slab, if necessary for the future protection of the paving, shall wherever possible be delayed until such time as the heavy trades are off the site.

Where the topping coat of concrete floors is required to be hardened by the application of a hardening agent in accordance with the manufacturer’s instructions, the hardener shall be Lithurin Concrete Hardener as supplied by Mastermix Limited Kingston, unless otherwise

specified or approved.

207.06 EXTERNAL PEBBLE DASH RENDERING

The external pebble dash rendering is to be in two coats to a minimum thickness of 16mm. The initial coat shall be a scratch coat of cement and sand (1:4) the sand passing a No. 16 gauge sieve. the finishing coat shall consist of limestone pebbles mixed with stone dust fines to provide a colour finish and texture to the approval of the .

2.07.07 CONCRETE AND TERRAZZO FLOOR TILES

Concrete and terrazzo floor tiles shall comply with J.S. 50.

Terrazzo tiles shall be of the size and grade stated in the Bills of Quantities and of approved colour and pattern, bedded in cement mortar, ground in the colour as the of the tile and ground, neutralised, sealed and polished unless otherwise described.

Terrazzo floor tiles must not be laid until all trades other than decorators are not of the tiling area, and after laying, the floors shall be immediately protected with thin polythene or by some other approved method.

Floor tiles shall be set out with the centre line of the area concerned in both direction so that edge tiles shall be of equal width.

The rates for paving and skirting shall for all temporary rules.

2.07.08 BEDS AND SCREEDS

Cement screeds shall be composed of cement/sand (1:3) laid to the thickness required to achieve the falls shown on the Drawings. They shall at no point be less than 12mm thick unless otherwise specifically permitted.

Before laying screeds, the concrete surfaces shall be chipped if necessary to form a key and then thoroughly cleaned and well sprayed with water. A coat of cement slurry shall be applied to the surface of the slab as the work proceeds and the screed shall then be laid before setting of the slurry. The screed shall be kept wet for at least seven days after laying.

2.07.09 MAKING GOOD

Protect rendering, screeding paving and tiling and make good damage during progress and on completion of other trades, including hacking off and replace all hollow or loose areas and leave all perfect and to the satisfaction of the .

## 2.08 PLUMBING

### 2.08.01 REGULATIONS

The whole of the plumbing work shall be executed strictly in accordance with the regulations and bye-laws of the Public Health Authority and/or other competent Authority.

### 2.08.02 MATERIALS GENERALLY

Materials shall be of the best quality of their respective kinds in accordance with the Specification and Drawing supplied by the .

The pipes are measured net as fixed, measured over all bends, tees etc., and the rates shall include for all short running lengths sockets, connectors and back nuts all cutting and waste, and making good around pipe supports. The rates for fittings are to include for all extra joints.

### 2.08.03 TUBING

Galvanised mild steel tubes be seamless and shall comply in all respects with B.S. 1387 of the qualities specified. Fitting shall be galvanised malleable iron to B.S. 1256. Joints shall be made with BSP taper threads of fine hemp and proprietary jointing compound.

P.V.C. tubes and fittings shall comply with J.S. 39 equal and approved. Joints shall be made strictly in accordance with the manufacturer's printed instructions.

### 2.08.04 SOIL AND VENTILATION PIPES

Ventillation pipes shall be cast iron galvanised steel or P.V.C. tube of the sizes noted on the Drawings. They shall terminate not less than 450mm above roof level and finish with a stout wire balloon well secured.

Cast iron soil and vent pipes and fittings are to comply with B.S. 416 "Medium Grade". The pipes are to be fixed with cast iron holder bats built into the walls. The joints are to be made with a gasket of hemp or yarn or metallic lead properly cauless with caulking tools and made perfectly airtight. The rates shall include for all sheet lengths and extra cutting and waste and extra joints fittings.

### 2.08.05 WASTE PIPES

Pipes connecting waste fittings to main waste, soil or drain pipes or to trapped gully basins shall be galvanised steel or P.V.C. tubes of the size noted on the Drawing.

All junctions for waste services shall be made with swept fittings and every waste branch shall have adequate means of rodding.

All waste fittings are to be properly trapped with sealed traps of suitable types and sizes.

### 2.08.06 WORKMANSHIP

The work shall be executed by fully qualified tradesmen in accordance with the Drawings and authorized modifications thereto, to the satisfaction of and as directed by the .

All taps and valves shall be dismantled and greased before fixing.

The full bore of the pipe work shall be maintained throughout and all internal burrs shall be reamed out.

Vertical pipe work shall be installed perpendicularly.

Where surface mounted galvanised mild steel tube shall be required to be fixed clear of walls with malleable iron brackets of the built in holder bat type, maximum spacing shall be as follows:-

| Diameter of Pipe | Horizontal Pipe | Vertical Pipe |
|---|---|---|
| Up to 19mm | 1.80m | 2.40m |
| 20mm and over | 2.40m | 3.00m |

N.B. : For installation procedures for P.V.C. pipe, see 8.12 hereafter

2.08.07 SANITARY FITTINGS

All sanitary fittings, fixtures, stop valves, are to be carefully installed strictly in accordance with the manufacturer's printed instructions and the Contractor will be responsible for obtaining accurate shop drawings setting out dimensions. Fittings and fixtures are to be installed with proper tools and to be left in perfect working order and free from all tool marks and other damage.

2.08.08 WATER SUPPLY

The supply pipes are to be set out to provide for the isolation of each fitting and for emptying down of the system.

Services shall be installed to ensure positive automatic clearance of air.

2.08.09 CHASING

Where pipes are described as in walls, floors, etc., prices of these pipes are to include cutting horizontal or vertical chases in hollow concrete block walling, concrete walls floors or ceilings, large enough to accommodate the full diameter of the pipe and socket and making good with cement mortar (1:3) flush with adjacent surfaces. All conduit and pipework to be fixed in chases shall be installed before the final rendering coat is applied.

All pipes whether soil, waste, ventilation or service are to be concealed in pipe ducts or in wall chases or ceiling or under unless otherwise particularly noted on Drawings.

Access panel shall be formed wherever necessary to give access to cleaning eyes and stopcocks.

2.08.10 TESTING

The Contractor shall allow in his rates for supplying all necessary appliances and labour for testing the whole of the work at such time and as directed by the .

Water services shall be tested under mains pressure or as otherwise directed.

Access plugs, caps and doors shall be removed, greased, refitted and made sound prior to the

final testing.

2.08.11 PROTECTION

The whole of the work, materials and fittings shall be adequately protected against damage and deterioration, any such damage or deterioration shall be made good and the work handed over at completion in a sound and clean condition and in perfect working order.

2.08.12 INSTALLATION PROCEDURES FOR P.V.C. PIPE

Cut pipe square without ragged edges so that pipe ends seat squarely in the fitting socket. Insert pipe to the full depth of the socket.

Ensure all joining surfaces are free of dirt, grease and any foreign matter. The surest method is to wipe with a cloth damped with methyl ethyl ketone. For pipe of sizes above 50mm, the use of 'MEK" is essential. Apply solvent cement with a natural ristle brush. Apply a light thin coat of solvent cement first to the fitting socket. Next apply a heavy coat of solvent cement to the pipe for a length equal to the socket depth. Immediately force the pipe and fittings together with a slight twisting motion, if possible, to ensure full engagement of the pipe into the fitting socket. Remove excess solvent cement from the exterior of the joint with a clean dry cloth. Reasonable handling of the assembly is permissible within two minutes after joining. Do not attempt to disturb the pipe-fitting joint after the cement has set; damage to the joint and loss of fit may result. Should any delay develop in assembly, apply an additional coat of cement immediately prior to joining.

In assembling P.V.C. pipe and fittings, exercise care to establish proper grade and alignment before joining with solvent cement. Installation may not be satisfactory if pipe and fittings are subject to strain by forced positioning to obtain grade or alignment.

Except in the case of Schedule 80 and higher gauge pipe, P.V.C. pipe should not be threaded. Use adaptor fittings when transition from pipe to threaded construction is necessary. A wide range of fittings to adapt traditional pipe to P.V.C are readily available.
Normal construction site handling procedures can be followed. It is good to practice to store pipe and fittings under suitable cover prior to installation.

Make connections or transitions to bell-and spigot or other pipe and fittings with approved mechanical compression joints or caulked joints made in an approved manner. In caulking, pack the joint with oakum or hemp and fill with molten lead to a depth of not less than 25mm. Allow a period of 4 minutes for cooling, following which caulk the lead at the inside and outside edges of the joint.

2.08.13 The Specifications referred to herein with regard to plumbing pipe work and installation will apply equally to the pipe work and installation relating to the Air-Conditioning Services.

## 2.09 GLAZING

2.09.01 GLASS

The whole of the glass shall be the best of its respective kind, free from all speaks. waves, bubbles, scratches and other defects, and shall be of the respective weights or thickness and types indicated on the Glass Distribution Schedule below and on the Drawings.

All broken or cracked panes shall be replaced at completion of the Works and the whole of the glazing left clean and perfect. Provide all necessary wash leather or velvet glazing strips.

209.02 GLASS DISTRIBUTION

All exterior and interior panes, except specifically noted otherwise on the Drawings shall have maximum allowable size per pane as follows:-

3mm float……2000 united millimetres
4mm float……2800 united millimetres
5mm float……3500 united millimetres
7/32”(5.5mm) float…… 4.50 square metres

2.09.03 PUTTY

Putty for use in glazing to woodwork shall be composed of best linseed oil and whiting and comply with B.S.

## 2.10 PAINTING

2.10.01 MATERIALS

All painting materials, varnishes and colours shall be approved by the and shall be equal to the products of Berger Paints Jamaica Limited, 256 Spanish Town Road, Kingston 11, Jamaica or Sherwin Williams (W.I.) P.O. Box 35, Kingston 11, Whitemarl, Spanish Town, Jamaica. All paints and painting materials are to be strictly in accordance with the latest standard manufacturer's specifications.

2.10.02 SAMPLE PANELS

0.60 x 0.60mm Sample boards showing the colours and tints of the various paints to be used shall be submitted to and approved by the prior to painting.

2.10.03 PREPARATION

All surfaces are to be prepared with the correct knotting, primers, sealers and stopping as required by the manufacturer's instructions for each type of paint and surface, and shall be applied accordingly.

All paints and varnishes shall be thoroughly mixed or stirred before use. They shall be so stored and sealed to minimise exposure to drying and exposure to dry and extremes of temperature.

All defective plaster and/or rendering shall be cut out and made good in approved fashion before painting. Slight cracks shall be made good with hard stopping.

All paint or varnish on woodwork shall be rubbed down with fine glass paper between each coat. Each coat shall be hard, dry and free from moisture or condensation before the next coat is applied.

All woodwork specified as painted is to be primed before being fixed in position. (See 5.07)

All knots are to receive two coats of knotting applied thinly and well brushed in. Loose knots shall be removed and the holes plugged with sound wood. Large knots shall be cut back and made good with hard stopping.

In no case shall any paint or distemper be applied to concrete or rendered surfaces until such surfaces are completely dried out and clear of efflorescent tendencies.

No paint or distemper are not to be applied prematurely but only after all dirty trades haves left the work.

Last coats of paint or distemper are not to be applied until immediately before handing over the building.

The proctection of the finished work and touching up shall be the Contactor,s responsibility.

The term "Prepare" in these Bills of Quantities has meaning as follows:-

(i) If it refers to paint or varnish on wood it includes knotting, stopping and filling.

(ii) If it refers to paint on metal it includes cleaning with wire brushes.

2.10.04 WORKMEN

Only skilled workmen are to be employed. A properly qualified painting foremen is to be constantly on the job while the work is in progress.

2.10.05 FITTINGS

All removable metal fittings are to be removed before the preparatory processes are commenced and are to be re-fixed on completion.

2.10.06 IRON AND STEEL WORK

All iron and steel work before painting is to be scraped and cleaned with wire brushes until all grease, scale, rust and loose substances are removed. Each coat is to be carefully and evenly applied until the previous coat is hard, dry and free from moisture.

2.10.07 PARTI-COLOURS

The Contractor is to allow in his rates for executing the whole of the foregoing work in parti-colours as many be directed by the . the prices for painting in narrow widths shall include for cutting to line on all edges as required.

2.10.08 COVERING POWER

If any of the painted or decorated surfaces are inadequately covered after the specification number of coats, further coats must be added at the Contractor's own expense to the entire satisfaction of the Architect.

2.10.09 BACK PRIMING

All exterior trims shall be back primed before installation with approved exterior base coat, and all interior trims with approved enamel undercoat. tops bottoms and edges of door shall be finished the same as the balance of the door after they have been fitted by the Carpenter.

2.10.10 APPLICATION

Paintwork shall be executed in accordance with the colour schedule and, unless other specified, as follow.

EXTERNALLY

| | | |
|---|---|---|
| (a) | RENDERED OR CONCRETE SURFACES - | Prepare and apply tow coats of emulsion paint. |
| (b) | WOOD SURFACES - | Knot, Prime, stop and fill as described, rub down and apply one under coat and required number of finishing coats of oil paint, or of best quality clear waterproof lacquer. |
| © | METALWORK - | prepare as described or touch up priming, apply, one coat of zinc |

chromate primer and two finishing coats of gloss enamel.

INTERNALLY

| | | |
|---|---|---|
| (a) | RENDERED OR CONCRETE SURFACES - | prepare as described and apply one undercoat the same colour as finishing coat, and one finishing coat of emulsion paint. |
| (b) | WOOD SURFACES - | Knot, prime, stop and fill as described, rub down and apply undercoat and finishing coats of oil paint or lacquer as external. |
| (c) | METAL WORK - | Prepare as described and prime with zinc chromate primer and two coats of gloss enamel. |

2.10.11 COMPLETION

Allow for thorough cleaning of all floors, fittings, ect., cleaning all glass both sides touching up paintwork where necessary, clearing away all debris and rubbish and handing over the building in a satisfactory condition, to the approval of the .

## 2.11 ELECTRICAL INSTALLATIONS

### 2.11.01 GOVERNMENT REGISTRATION

Any Sub-Contractor employed to undertake the electrical installations shall be registered with the Ministry of Transport and Works at a sufficient grade to allow him to undertake the words described herein.

### 2.11.02 REGULATIONS AND STANDARDS:

Where reference is made to "N.E.M.A Standards" it shall be understood that this reference is to the "Approved Standards" published by the National Electrial Manufacturers Association, Main Office - 155 East 44th Street, New York 10017.

Where reference is made to "A.S.A. Standards" it shall be understood that this reference is to the Standards published by the American Standards Associates, Main Office - 10 East 40th Street, New York.

"C.S.A. Standards" refer to Standards published by the Canadian Standards Association, Main Office 170 Rexdale Boulevard, Rexdale 603, Ontario, Canada.

The I.E.E. Regulations shall mean the current edition of the "Rules and Regulations for the Electrical, Equipment of Building" with any amendment sheets or interpretation notes as published by the institution of Electrical Architects, United Kingdom.

Reference may be made to the National Fire Code as published by the National Fire Protection Association (NFPA), 60 Battery march Street, Boston 10, Massachusetts.

In addition, reference may be made to "B.S.", "A.S.H.R.A.E.", "A.R.I." and "A.S.M.E." specification. These shall mean British Standard, American Society of Heating, Refrigeration and Air Conditioning Architects, American Refrigeration Institute and American Society of Mechanical Architects specification respectively.

The Works shall be in accordance with the requirements of standards as applicable above, and to local Regulations, Codes and Standard where they exist. In the event of degrees of stringency with respect to various standards applicable to any one item, the most stringent shall apply.

### 2.11.03 TECHNICAL DEFINITIONS

Specific items of terminology, as used herein, shall have the following meanings:

| | |
|---|---|
| "PIPING" | Pipe, fittings, flanges, valves, controls hangers traps, drains insulation, vents and items customarily required in connection with the transfer of fluids. |
| "CONCEALED" | Embedded in masonry or other construction, installed, behind wall furring, within double partitions or hung ceiling, in crawl spaces, in shafts. |
| "EXPOSED" | Not concealed |

"BY OTHER TRADES" By persons or parties responsible for work at the project other than the party or parties who have been duly awarded the contract for the work of this Trade. In the event that this document is used to acquire work as part of a general construction contract the words "By Other Trades" shall mean by persons or parties who are not anticipated to be the Sub-Contractor. In this context the words "By Others Trades" shall not be interpreted to mean not include in the overall contract.

2.11.04 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

As used in the drawings and specification, certain non-technical words shall be understood to have specific meanings as follow:

| | |
|---|---|
| "FURNISH" | Purchase and deliver to the project site complete with every necessary appurtenance and support. |
| "INSTALL" | Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project. |
| "PROVIDE" | Furnish and install. |

Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any item, in the drawings or specifications or both, carries with it the instruction is explicitly stated as part of the indication or description.

It shall be understood that the specifications and drawings are complementary and are to be taken together for complete interpretation of the work. Exceptions are that notes on the drawings, which refer to an individual element of work, take precedence over the specifications where they conflict with same.

No exclusions form, or limitations in the language used in the drawings or specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are to be omitted.

The drawings of necessity utilize symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The work shall be install in accordance with the diagrammatic intent expressed on the electrical and mechanical drawings and in conformity with the dimensions indicated on final ural and structural drawings and on equipment shop drawings.

No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded. Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field co-ordination for the indicated work.

Information add to the general construction shall be derived from structural and ural drawings and specifications only.

The use of words in the singular shall not be considered as limiting where other indications denote that reference is to more than one item.

2.11.05 MATERIALS

The Sub-Contractors shall include for the supply, testing, delivery and installation of all materials necessary to complete the Works as specified and scheduled, notwithstanding that such materials may or may not specified in details.

Materials generally shall be specified but where difficulties of supply occur, reasonable alternatives are submitted to the s and /or Architects for their written approval before substitution.

Such samples, after being approval, will be retained as standard reference until completion of the Sub-Contract and all materials supplied which are not in accordance with the approved samples will be rejected.

All materials shall comply with appropriate B.S., C.B.A., Specifications where such specifications exist and shall be suitable for the climate of Jamaica. Where materials are specified but qualified to indicate that alternatives may be considered by means of the phase "or equal" and "approved" it shall be understood that the decision of the and/or Architects as to equality of price, quality and performance shall be final and likewise demonstration of price, quality and performance equality shall not automatically result in approval.

In the event of alternatives being accepted, price adjustments shall be made on the basis of net trade costs and "on costs" shall also be adjusted with reference to this same basis.

The and /or Architects also reserve the right to call for samples of specified materials. Materials used in the shall be of quality equal to that of the samples approved by the s and /or Architects.

2.11.06 BRAND NAMES

Where specific items of equipment are specified by manufacturer, brand name, or type, catalogue number, and not qualified by the phase "or equal" the intent is that such items shall be furnished as specified unless changed by mutual agreement.

Where the designation is qualified by the phase "or equal" or "or approved equal" alternative brands may be offered for acceptance provide these represent items of equivalent price, quality and performance. The s and/or Architects reserve, as before, the right to determine equality.

2.11.07 PROPRIETARY GOODS AND PROCESS

Where proprietary goods, materials or processes are specified to be used, such goods materials or processes shall be used, fixed or carried out in strict accordance with the instructions of the suppliers thereof, and such instructions or directions shall be treated as if they formed part of this Specification.

2.11.08 SETTING OUT

The positions of electrical points, air conditioning diffusers, grilles and controls and equipment items generally indicated on the drawings are approximate only. The expect positions shall be confirmed on site by the Sub-Contractor before installation.

Unless otherwise detailed, wiring, conduit and duct runs are diagrammatical only. The exact

routes shall be agreed with the and/or Architect on site.

Rates must include

2.11.09 BUILDER'S WORK

Builder's Work in connection with the installations means cutting or forming all holes, chases, recesses in walls, floors ceilings, etc., and for conduits, cables, switches, pipes, duts, guides, etc.

Rates shall include for drilling and dumping of holes for all plugs fixing bolt alike and for fixing and locating equipment conduit, piping, trunking, ducting, guides, etc.

Trenching and backfilling shall be measured separately.

2.11.10 "AS INSTALLED" DRAWINGS

The Contractor shall deliver to the s and/or Architects, within three months of completion of the Works, and as a precedent to the final payment being made to the Contractor, record drawings and diagrams showing the detailed arrangement of the installations, together with necessary schedules giving information useful for maintenance purposes.

The method of preparation of "as installed" drawings shall be as follows:

The Architects will provide the Contractor with two sets prints of the working drawings. The Contractor shall record on those drawings as the work progresses, all plumbing, heating and ventilation, electrical and site utilities changes, revisions and additions to the work. For services laid underground or covered up, the Contractor shall record the exact route, depths of laying, elevations and all other pertinent data. particular record should be made or work which has been installed in an approved manner other than that show or specified in the Contract Document.

The sets of marked-up record prints shall form basis for the preparation of reproducible tracings by the Contractor as the s or Architects shall direct.

The Contractor shall also deliver to the s and/or Architects two (2) complete sets of manufacturer's catalogues, installation and maintenance instructions, and any other similar data including photographic cuts, diagrams, valve charts, replacement parts information and the like, in respect of all major items of equipment.

2.11.11 PERMITS AND INSPECTION CERTIFICATES

All required permits and inspection certificates shall be obtained and paid for by the Contractor. Such permits and inspection certificates shall be made available at the completion of the Works.

2.11.12 SHOP DRAWINGS AND OTHER INFORMATION REQUIRED

Prior to purchasing any equipment or materials, a list of their manufacturers shall be submitted for approval. As soon as possible after the reward of the Contractor, the Contractor shall submit to the s and/or Architects detailed, dimensioned and field installation drawings as required for a complete explanation and description of all items of equipment. No equipment shall be ordered or scheduled for production until such shop drawings and other information have been approved by the s and/or Architects.

The procedure to be observed for the submission of shop drawings is as follows:

The Contractor shall submit two (2) prints of shop drawings to the s and/or Architects for comment correction, after which the Contractor shall submit not less than four (4) sets of corrected shop drawing prints to the s and/or Architects. This same procedure shall be observed if subsequent shop drawing revisions are made.

The minimum allowance scales for shop drawings shall be 1:50 generally and 1:20 for complicated arrangements.

Documents submitted for approval shall:-

a. include information pertaining to appurtenances and accessories;

b. be submitted as a package where they pertain to related items;

c. be properly marked with both service or function identification and external connection identification where they consist of standard factory assembly or field installation drawings.

Documents will not be accepted for approval unless they comply in all respects with the general requirements above and with further specific requirements in the Technical Specifications

2.11.13 LOCATIONS

Locations indicated for all outlets, panel board , control apparatus, appliance etc. are approximate only. This Contractor must obtain exact locations from the /Architect before installing his work.

2.11.14 EARTHING SYSTEM

All metal enclosures and non-current-carrying metal work shall be effectively bonded together and earthed on a common system shall extend to all equipment, plant and devices installed under this contract.

The earthing system shall installed in accordance with the requirement of J.S.21:1992, to the satisfaction of the Government Electrical Inspectorate and the Architect.

2.11.15 TESTS AND TEST CERTIFICATES

1. TESTS

After the wiring systems are completed they shall be tested for satisfactory operation, proper control and earthing and conformity with the specifications.

In addition, the following tests shall be carried out on completion of the work, or at any time as requested by the Architect and a record made of the results:

a. Insulation and Earth loop Resistance test of the general medium voltage installation in accordance with the J$21:1992 Regulations.

b. Functional tests on all plant and equipment to prove correct operation and the ability to withstand operating conditions.

c. Functional check of instruments, relays and overload devices for correct and effective operation.

d. On H.T. equipment, high voltage D.C. pressure test, of values and duration as defined in B.A.480 (cables) B.S.171 (Transformers) and B.S.195 (Switch gear).

e. On H.T. switch gear, Primary Current Injection tests to check the calibration of instrument and prove the setting of protective devices.

f. Insulation test between phases, and phases to earth of all H.T. equipment, the test being made with a 2000 volt insulation tester.

g. Resistance of Earth Electrode System when its installation forms part of this sub-contract.

2.11.16 11. TEST CERTIFICATES

The Contractor shall submit to the /Architect two copies of test certificates showing the results of the above tests.

Manufacturer's test certificates relating to H.T. Switchgear, Transformers, Motors and any special apparatus, shall be submitted to the Architect for formal approval.

2.11.17 TELEPHONE SYSTEM

a. The Contractor shall furnish and install empty conduits and wall outlets as indicated on the drawings and in conformity with telephone Company requirements.

b. All empty conduits for telephone cables shall be furnished with No.14 AWG draw-wire to facilitate installation of cables by the Telephone Company.

c. Outlet boxes and plates in masonry partitions shall be as specified for switches, except that plates shall have bushed hole openings for telephone.

2.11.18 DISTRIBUTION AND POWER PANELS

The Contractor shall furnish and install circuit breaker and panel boards at the locations shown on the plans. Each panel shall be distinctly numbered and a directory frame with indestructible cover shall be provided.

Panel boards shall be NEMA standard, dead front type fitted with locks and duplicate keys, as manufactured by Westinghouse, General Electric or approved equal.

2.11.19 LABELLING OF DISTRIBUTION BOARDS AND SWITCHGEAR

Distribution Boards shall have engraved lables conforming to the description given on the distribution boards schedules, and Switchgear shall be labelled showing the services fed from them. The inscription shall be wire 3/16 inch high letters or black 'Traffolyte' sheet or equal and shall be fixed to the lids of apparatus by screws or rivets.

The circuits fed from the distribution boards shall be marked on a card fixed to the inside of the lid. This card must indicate clearly outlets fed from each distribution way and the size of the fuse or circuit breaker rating. The information must either be typed or printed on the cards or presented in a similar manner.

2.11.20 POWER WIRING

The Contractor shall install all equipment, wiring etc. and make all connections required for the proper control and operation of all motors. This Contractors shall install all wiring for ventilation blowers, water pumps and automatic controls where applicable. (see respective Contractor).

All electrical apparatus or wiring not specifically included in other contracts shall be provided by this Contractor. All motor starters provided by this Contractor shall equipped with suitable thermal overload protection devices.

The Contractor shall clean, distribute install and connect all lighting fixtures and provide all lamps. Recessed fixtures shall be connected with PVC insulated wire to the octagonal ox an PVC insulated multicore cable from box to lighting fixture where necessary, mentioned.

2.11.21 LIGHTING FIXTURES

All Fluorescent lighting fixtures are to be white in colour unless otherwise specified.

If possible Gear Trays for Troffer Lighting Fixtures are to be located on the inner sides of the Troffer as opposed to the centre.

All Diffusers should be of high quality prismatic type. Diffuses for all Troffer Lighting Fixtures are to be fitted into a self supporting tray capable of fastening of fastening to the troffer by way of a Clip.

All Lighting Fixtures fitted with starting gears are to be fitted with high power factor ballasts and all components must be rated at 50 Hertz.

The choice of fluorescent tubes should be of the tropical daylight type throughout to provide uniformity.

2.11.22 SLEEVES, CHASES AND CUTTING

The work of this Contractor shall include furnishing and setting of all sleeves or forms as may be necessary for conduit an equipment supplied under this Contract. Cutting and patching of masonry will done under another Contract, provided that furbishing of materials and undertaking the work required under this Contract are accomplished in ample time and in proper sequence to avoid unnecessary cutting.

This Contract shall check the locations of all boxes left in the foundation walls for pipes sleeves to ensure conformity with the drawings and specifications. After the installation of all pipe sleeves in boxed openings, they shall be grouted and concrete the full depth of the foundation walls. This Contractor shall provided the General Contractor with information on boxes and sleeves as required.

2.11.23 WIRING DEVICES

Wiring shall be as indicated on the plans. This Contractor shall check and ensure that all wiring devices are in perfect condition after installation and that they operate satisfactorily under working condition.

2.11.24 UNDERWRITER'S LISTING

All equipment shall be listed by U.L. Inc. Each item of equipment shall have a label showing its U.L. approval for the purpose which it serves.

2.11.25 LIGHTING FIXTURES

Lighting fixtures to be provided under this contract and those to be furnished by others are indicated on the plans.

2.11.26 INDEXING

The face of all main switches motor disconnect panels and control equipment shall be stenciled to clearly indicate the function and/or index number of the device. All panel boards shall be equipped with typewritten directories indicating function and control of each circuit breaker.

2.11.27 CONDUITS

a. Wiring for all systems, circuits and feeders shall be in an approved standard weight rigid conduit unless otherwise shown or specified.

b. Conduits shall be 20mm minimum diameter unless otherwise indicated on drawings or specified.

c. Standard manufactured elbows shall be used for all conduits 32mm diameter or larger.

d. The ends of all conduits shall be carefully reamed out free form burrs before installation. All joints shall be tightly constructed using PVC cement. Joints in all conduits concealed in slabs, floors, shall be securely tied to reinforcement steel at a maximum spacing of 24 inches and 3 inches on either side of every joint.

e. The ends of each conduits shall be provided with PVC end and lock nut wherever it enter a junction box, cabinet, etc. Care shall be taken to see that all light and power conduit runs have a permanent and continuous ground return back to the ground connection point. Conduits used on systems which are entirely insulated from the light and power distribution system shall be electrically continuous and grounded in an approved manner.

f. In finished spaces, conduits shall be installed concealed in ceilings, wall or partitions of the buildings. Where concealed conduits are installed sufficient space must be left over conduit and couplings for the application of finished floors, wall and ceilings, The Contractor shall examine the ural drawings, and the necessary, confer with the to determine the type of construction in which concealed conduits will be run and the space available for such conduit.

g. Conduits shall be run exposed only in unfinished spaces and mechanical equipment rooms, or with the express permission of the . Where exposed conduits are installed, they shall be run parallel to the building walls or partitions, using approved conduit fittings. Exposed conduits shall be securely supported with galvanised iron pipe straps, angle iron frame racks or other approved means as required for clearance of other pipe or ductwork. Wood hangers and perforated sheet metal hanger strap will not be permitted. Spacing of conduit supports shall be within the limit of code requirements.

h. Conduits crossing building expansion joints shall be furnished with approved expansion fittings, and provided with approved flexible grounding bonds by-passing

the fittings.

j. No more than four right angle bends shall be permitted in the run of conduits between any two terminations or pull boxes.

k. During the installation of conduits, all unfinished runs and also terminations in pull boxes, etc. shall be capped in a manner approved by the Architects. Caps in cabinets shall be left in place until the building is ready for installation of conductors.

i. Conduits may be PVC metal as a available. Where metal conduit is used, conduit embedded in the building construction shall be of the hot-dipped galvanised type while the sheradized or electro galvanized type shall be used for all exposed conduit runs concealed in furred spaces and in hung ceilings.

m. The use of flexible conduit, electric metallic tubing armoured cable is specifically included expect as follows:-

i) Final conduit connections to motors shall be made with 500mm of flexible conduit.

ii) Final connections to recessed fixtures shall be made with not more than 1830mm of flexible conduit.

2.11.29 WIRE AND CABLE

All wires and cables shall be installed throughout the entire project as shown on the plans and as hereinafter specified. Conductors shall be either of soft copper, properly refined and tinned having a minimum conductivity of 98%, or of aluminum, as available or as particularly specified. All wire and cable insulation shall meet the standards of the Underwriters' Laboratories for the types and services unless otherwise noted. Wires and cable shall bear all tagging or markings showing type, voltage, manufacturer, etc., as required for compliance with code requirements. All wiring shall be continuous within conduit runs. Splices will be permitted only at outlets and junction boxes.

Joints must be mechanically and electrically secure and then soldered, after which they shall be taped with rubber friction tape in a manner making their insulation equal to that of the conductors. No wires shall be installed in conduits until plaster is dry and conduits are free of moisture. The only permissible wire pulling lubricant is powdered soapstone. Sufficient slack shall be left on all runs of wire and cable to permit the proper connection of fixtures, devices equipment etc.

Feeders and motor power circuit wiring shall be PVCSWAPVC or XLPE cable.

2.11.30 JUNCTION AND PULLBOXES

a. Where indicated in the plans and specifications, or where necessary for compliance with code requirements for cable installation, this Contractor shall install junction and pullboxes of the proper size. However, it is expected that the loop-in method of wiring shall be employed throughout the installation where multiple electrical points are connected to one (1) circuit.

The use of junction boxes will be permitted only in exceptional circumstances.

b. Junction and pull boxes shall be manufactured from galvanised cold heavy gauge sheet steel and shall be furnished with flat screw cover.

c. Where boxes are set flush in walls and ceiling, cover screws shall be flat-head type properly countersunk. Covers shall be arranged to completely cover openings in the building finish.

d. Where suitable, standard outlets boxes may be used as junction and pull boxes.

e. If required by the building construction, this Contractor shall finish the junction and pull boxes in special sizes and shapes determined from field measurements, as required to make a neat workmanlike installation.

2.11.31 OUTLET BOXES

a. Furnish and install outlet boxes at all locations requiring same, where shown on the drawings, and as hereinafter specified. All fixtures studs shall be securely fastened in an approved manner.

All sheet steel boxes shall be provided with suitable knockouts. Cast boxes shall be properly drilled and tapped.

There shall be no more holes in any outlets box than required for the conduits entering same. Depth of all boxes shall be as to allow for easy wire pulling and proper installation of wiring deices. Where shown on the plans, switches shall be gauge together only in the combinations indicated. Outlets for duplex receptacles shall be arranged for horizontal mounting of the receptacles.

b. Outlet box type shall be as follows:-

i. For recessed ceiling fixtures 102mm square sheet to ceiling suspension members in a approved manner not more than one foot from fixtures opening.

ii. For surfaces mounted ceiling fixtures (concealed conduit) 102mm steel metal octagonal with extension ring of a depth suitable to the construction and furnished with top cover having 10mm fixture stud.

iii. For ceiling and wall bracket outlets on exposed conduits in dry locations 102mm octagonal sheet box with 10mm fixtures stud.

iv. For surfaces mounted ceiling fixtures (hung ceiling) 102mm octagonal sheet steel hung in ceiling in an approved manner.

2.11.32 ELECTRICITY SUPPLY

Supply characteristics for the L.T. service shall be as existing and as follows:-

1. 110/220 volts, 4 - wire, 3 - phase 50 Hertz.

The Contractor shall be responsible for ensuring that all the necessary tests on cables have been satisfactorily carried out and that the system is properly connected to the main panel.

2.11.33 SUB-CIRCUITS

In general, sub-circuits for lighting shall be run out using PVC covered wires of specified sizes drawn through rigid conduits buried in concrete.

STANDBY GENERATOR

2.11.34 ENGINE

The engine shall be direct injection diesel engine driven generation set arranged for automatic starting and stopping in the event of main's failure operation.

The Engine shall be equipped with the following:

electronic governor
fuel injection equipment with fuel lift pump
fuel and lubricating oil filters
dry type air cleaner
24/12 volt electric starting with charge alternator
engine drive tropical radiator with pusher type fan, water circulating pump and thermostat and all necessary pipe work.

The engine shall also meet or exceed the following:

## 2.12 MECHANICAL INSTALLATIONS

2.12.01 GOVERNMENT REGISTRATION

Any Sub-Contractor employed to undertake the mechanical installation shall be registered with the ministry of Transport and Works at a sufficient grade to allow him to undertake the works described herein.

2.12.02 REGULATIONS AND STANDARDS:

Where reference is made to "N.E.M.A Standards" it shall be understood that this reference is to the "Approved Standards" published by the National Electrical Manufacturers Association, Main Office - 155 East 44th Street, New York 10017.

Where reference is made to "A.S.A Standards" it shall be understood that this reference is to the "Approved Standards" published by the American Standards Association, Main Office - 10 East 40th Street, New York.

"C.S.A. Standards" refer to Standards published by the Canadian Standards Association, Main Office 170 Rexdale Boulevard, Rexdale 603, Ontario, Canada.

The I.E.E. Regulations shall mean the current edition of the "Rules and Regulations for the Electrical, Equipment of Building" with only amendment sheets or interpretation notes as published by the institution of Electrical Architects, United Kingdom.

Reference may be made to the National Fire Code as published by the National Fire Protection Association (NFPA), 60 Batterymarch Street, Boston 10, Massachusetts.

In addition, reference may be made to "B.S.", "A.S.H.R.A.E.", "A.R.I." and "A.S.M.E." specification. These shall mean British Standard, American Society of Heating, Refrigeration and Air Conditioning Architects, American Refrigeration Institute and American Society of Mechanical Architects specification respectively.

The Works shall be in accordance with the requirements of standards as applicable above, and to Local Regulations, Codes and Standards where they exist. In the event of degrees of stringency with respect to various standards applicable to any one item, the most stringent shall apply.

2.12.03 TECHNICAL DEFINITIONS

Specific items of terminology, used herein, shall have the following meanings:

| | |
|---|---|
| "PIPING" | Pipe, fittings, flanges, valves, controls, hangers, trap, drains insulation, vents and items customarily required in connection with the transfer of fluids. |
| "CONCEALED" | Embedded in masonry or other construction, installed, behind wall furring, within double partitions, or hung ceilings, in crawl spaces, in shafts. |
| "EXPOSED" | Not concealed. |

| | |
|---|---|
| "BY OTHER TRADES" | By persons or parties responsible for work at the project other than the party or parties who have been duly awarded the contract for the work of this Trade. In the event that this document is used to acquire work as part of a Trade. In the event that this document is used to acquire work as part of a general Construction contract the words "By Others Trades" shall mean by persons or parties who are not anticipated to be the Sub-Contractor for this trade working together with the general Contractor. In this context the words "By Other Trades' shall not be interpected to mean not include in the overall contract. |

2.12.04 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

As used in the drawings and specification, certain non-technical words shall be understood to have specific meanings as follow:

| | |
|---|---|
| "FURNISH" | Purchase and deliver to the project site complete with every necessary appurtenance and support. |
| "INSTALL" | Unload at the deliver point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the project. |
| "PROVIDE" | Furnish and install. |

Except where modified by a specific notation to the contrary, it shall be understood that the indication and /or description of any item, in the drawings or specifications or both, carries with in the instruction to furnish and install the item, regardless of whether or not this instruction is explicitly stated as part indication or description.

It shall be understood that the specifications and drawings are complementary and are to be taken together for complete interpretation of the work. Exceptions are that notes on the drawings, which refer to an individual element of work. Take precedence over the specifications where they conflict with same.

Not exclusions form, or limitations in the language used in the drawings or specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are to be omitted.

The drawings of necessity utilize symbols and shematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations The work shall be installed in accordance with the diagrammatic intent expressed on the electrical and mechanical drawings, and in conformity with the dimensions indicated on final ural and structural drawings and on equipment shop drawings.

No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded Certain details appear on the drawings which are specific with regard to the dimensioning and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field co-ordination for the indicated work.

Information add to the general construction shall be derived from structural and ural drawings and specifications only.

The use of words in the singular shall not be considered as limiting where other indications denote the reference is to more than one item.

2.12.05 MATERIALS

The Sub-Contractors shall include for the supply, testing, delivery and installation of all materials necessary to complete the Works as specified and scheduled, notwithstanding that such materials may or may not specified in detail.

Materials generally shall be specified but where difficulties of supply, occur reasonable alternatives are submitted to the s and/or Architects for their written approval before substitution.

Such samples, after being approved, will be retained as standard reference until completion of the Sub-Contract and all materials supplied which are not in accordance with the approved samples will be rejected.

All materials shall comply with appropriate B.S.,C.B.A., or A.S.A., Specifications where such specifications exist and shall be suitable for the climate of Jamaica. Where materials are specified but qualified to indicate that alternatives may be considered by means of the phase "or equal" and "approved" it shall be understood that the decision of the s and/or Architects as to equality of price, quality and performance shall be final and likewise demonstration of price, quality and performance equality shall not automatically result in approval.

In the event of alternatives being accepted, price adjustments shall be made on the basis of net trade costs and "on costs" shall also be adjusted with reference to his same basis.

The s and/or Architects also reserve the right to call for samples of specified materials. Materials used in the work shall be of quality equal to that of the samples approved by the s and/or Architects.

2.12.06 BRAND NAMES

Where specific items of equipment are specified by manufacturer, brand name, or type, or catalogue number, not qualified by the phase "or equal" that intent is that such items shall be furnished as specified unless changed by mutual agreement.

Where the designation is qualified by the phase "or equal" or approved equal" alternative brands may be offered for acceptance provided theses represent items of equivalent price, quality and performance. the s and/or Architects reserve, as before the right to determine equality.

2.12.07 PROPRIETARY GOODS AND PROCESS

When proprietary goods, materials or processes are specified to used, such goods materials or processes shall be used, fixed or carries out in strict accordance with the instructions of the suppliers thereof, and such instructions or directions shall be treated as if they formed part of this Specification.

2.12.08 SETTING OUT

The positions of electrical points, air conditioning diffusers, grilles and controls and equipment items generally indicated on the drawings are approximate only. The exact positions shall be confirmed on site by the Sub-Contractor before installation.

Unless otherwise detailed, wiring, conduit and duct runs are diagrammed only. The exact routes shall be agreed with the and/or Architect on site.

Rates must include

2.12.09 BUILDER'S WORK

Builder's Work in connection with the installations means cutting or forming all holes, chases recesses in walls, floors, ceiling, etc., and for conduits, cables, switches, pipes ducts, guides etc.

Rates shall include for drilling and dumping of holes for all plugs fixing bolt alike and for fixing and locating equipment conduit, piping trunking, ducting, guides etc.

Trenching and backfilling shall be measured separately

2.12.10 AS INSTALLED DRAWINGS

The Contractor shall deliver to the s and/or Architects, within three months of completion of the Works, and as a precedent to the final payment being made to the Contractor, record drawings and diagrams showing the detailed arrangement of the installations, together with necessary schedules giving information useful for maintenance purposes.

The method of preparation of "as installed" drawings shall be as follows

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The Architects will provide the Contractor with two sets of prints of the working drawing. the Contractor shall record on those drawings as the work progresses all plumbing, heating and ventilation, electrical and site utilities changes, revisions and additions to the work. For services laid underground or covered up, the Contractor shall record should be made of work which has been installed in an approved manner other than show or specified in the Contract Document.

The sets of marked-up record prints shall form the basis for the preparation of reproducible tracings by the Contractor as the s or Architects shall direct.

The Contractor shall also deliver to the s and/or Architects two (2) complete sets of manufacturer's catalogues, installation and maintenance instructions, and any other similar data including photographic cuts, diagrams, valve charts, replacement parts information and the like, in respect of all major items of equipment.

2.12.11 PERMITS AND INSPECTION CERTIFICATES

All required permits and inspection certificates shall be obtained and paid for by the Contractor. Such permits and inspection certificates shall be made available at the completion of the Works.

2.12.12 SHOP DRAWING AND OTHER INFORMATION REQUIRED

Prior to purchasing any equipment or materials, a list of their manufacturers shall be submitted for approval. As soon as possible after the award of the Contractor, the Contractor shall submit to the s and/or Architects detailed, dimensioned shop drawings together with catalogue information, factory assembly drawings and field installation drawings as required

for a complete explanation and description of all items of equipment. No equipment shall be ordered or scheduled for production until such shop drawing and other information have been approved by the s and/or Architects.

The procedure to be observed for the submission of shop drawing is as follows:

The Contractor shall submit (2) prints of shop drawing to the s and/or Architect for comment correction, after which the Contractor shall submit not less than four (4) sets of corrected shop drawing prints to the s and or Architects. This same procedure shall be observed if subsequent shop drawing revisions are made.

The minimum allowance scales for shop drawings shall be 1:50 generally and 1:20 for complicated arrangements.

Documents submitted for approval shall:-

a. Include information pertaining to appurtenances and accessories;

b. be submitted as a package where they pertain to related items;

c. be properly marked with both service or function identification and external connection identification where they consist of standard factory assembly or field installation drawings.

2.12.13 SCOPE OF WORKS

The Works shall include the followings:-

a. The complete provision of all plant and accessories necessary for the production of conditioned air to be distributed as shown on drawing.

b. Provide all air handling equipment (air handling and fan coil units) all complete with motors, pulleys and drive assemblies and other accessories necessary for satisfactory operation under the specified condition.

c. Provide all ductwork for air distribution throughout the various areas within the building. All ductwork shall be of a sheet metal with internal and external insulation as specified.

d. Provide all ductwork for ventilation and exhaust systems where down on drawings.

e. Diffusers, grilles registers, dampers, and locking quadrant all form a part of ductwork systems. These shall be provide complete with all accessories necessary for field adjustments.

f. Provide all ventilation and exhaust fans where shown on drawings. Ventilation systems shall include any hoods over specialized heat producing devices.

g. Provide controls (temperature, humidity and pressure) to all devices in the system. It is intention to these specifications that the air conditioning system shall be self balancing and operate in a semi-automatic mode.

2.12.14 INSTALLATION

All equipment and materials shall be installed in the locations shown and such work shall be consistent with the best established practice in the trade.

Manufacturer's recommendations shall be observed in all cases where these may apply.

Locations shown drawings for the installation of equipment are approximate only. Exact locations shall be verified with the /Architect.

In cases where work has to be done by others to facilitate installation of materials and equipment (e.g. cutting of holes in walls, placing plinths or supports) under this contract, this Contractor shall mark such locations in good time in order not to delay or cause damage to the work of others.

The installation shall include all materials, fitments (e.g. nuts, bolts, washers, shim gaskets, filters, etc.) not specifically identified on drawing but necessary for the proper functioning of the various systems.

2.12.15 COMPLETENESS

In addition, the scope of this contract includes all work usual or necessary to this Trade, whether or not specifically called for herein, on the plans or specifications.

All materials shall be in strict accordance with standards laid down by A.S.H.R.A.E. and A.R.I. while being fully adaptable to local conditions.

2.12.16 SYSTEMS DESCRIPTION

The system provides for the use of air-cooled central split systems and mini-split systems.

2.12.17 AIR DISTRIBUTION

Air Handling Units are employed to serve where the quality of the air discharged in the space achieve the highest standard filtration at acceptable static pressure levels.

Air handling units are employed for the service of spaces provided with recirculated air systems. These units shall be of the free standing or hung types as indicated.

All system have been designed on the basis of constant air volume/variable temperature principle. Temperature control shall be achieved through control of two-stage room thermostats.

All air distribution ductwork shall be of sheet metal and insulated internally or externally as specified.

Grilles, registers and diffusers all form part of the ductwork system and shall be provide in the form and manner satisfactory to the Architect. All registers and diffusers shall be fitted with adjustable dampers. Ventilation (exhaust) fans shall have free-acting (gravity) dampers.

2.12.18 EQUIPMENT AND MATERIALS

All equipment and materials required for installation under these specifications shall be new and without blemish or defect.

All equipment shall bear labels attesting to Underwriters Laboratories approval where subject

to Underwriters Laboratories label service.

It is the intention of these specifications that wherever a manufacturer of a product is specified, and the terms “the other approved” or “or approved equal” or “equal” are used, the substituted item must conform in all respects to the specified item.

Perform as delineated in schedules and in the specifications shall be interpreted as minimum performance. ( In some cases equipment may be oversized to allow for pick-up loads which cannot be delineated under the minimum meets the performance) Consideration will not be given to claims that the substituted items meets the performance requirements with lesser construction (such as lesser heat exchange surface, etc.).

All equipment of one type (such as fan, pump, coil, etc.) shall be the product of one manufacturer.

2.12.18 EQUIPMENT AND MATERIALS (Continued)

Substituted equipment, where permitted and approved must conform to space requirements. Any substituted equipment that cannot meet space requirements, whether approved or not, shall be replaced at the Contractor’s expense.

Any modifications to related systems as a result of substitution shall be made a the Contractor’s expense.

Note that approval of shop drawings, or other information submitted in accordance with the requirements hereinafter specified, does not assure that the Architect, , or any other Owner’s Representative, attest to the dimensional accuracy or dimensional suitability of the materials or equipment involved or the mechanical performance of the equipment. Approval of shop drawings does not invalidate the plans and specifications if in conflict, unless approval given on the Architect’s letterhead.

2.12.19 CONDENSING UNIT

The condensing unit shall be factory assembled complete with compressors, condenser, fans piping, controls and wiring all ready for field installation.

Construction shall be of heavy gauge galvanized steel members to which galvanized steel casings having baked enamel finish are fixed. Compressor section to have hinged access panels.

Unit construction shall be designed to conform to A.N.S.I. B9.I Safety Code, N.E.C. and A.S.M.E. applicable codes.

The condenser shall be of the air-cooled type with integral sub-cooler constructed of seamless copper tubing having aluminium fins mechanically bounded thereto. Coils shall be free of leaks when operating using refrigerant R-22 having been pressure tested at 450 p.s.i.g. (3103 kpa).

The condenser fans shall be direct driven propeller type discharging air vertically.
The fans shall have

1. permanently lubricated bearings

2. corrosion resistance shaft

3. PVC coated steel wire safety guard.

Fan wheels shall be statically and dynamically balanced and vibration noise and energy losses under working conditions shall be negligible. Motors driving condenser fans shall be of the totally enclosed type, fully tropicalised and suitable for operation on the rated power supply (2240/110 V, 3 phase 50 hertz).

Diagnostic display shall be included to monitor all probable defects (or malfunctions) of the system.

Operating power supply to the condensing units 220/140 volts, 3 phase, 50 hertz, 4 wire. Circuits breakers and other power control devices shall have thermal of magnetic over load protection.

Recommended manufacture shall be of Carrier, York, Trane of approved equal.

2.12.20 AIR HANDLING UNITS

Air handling units shall be of the built-up type having galvanized steel frame and casing, forward curved centrifugal fan, cooling coil, high efficiency filter and prefilter if indicated on drawing.

Unit performance shall be certified in accordance with A.R.I. standard.

Cooling coils shall be of hard-drawn copper tubing having aluminium fin plates mechanically bonded to them. Coils shall be fitted with pressure type bass distributors with solder type connections. Headers shall be fitted with drain and vent connections. Coils shall be tested at a pressure of not less than 300 psi (2067 kpa).

Insulation of coil sections, fan and accessory sections shall be not less than 5/8inch. (41.28mm) thick foams with plastic coated aluminium foil vapour harrier permanently secured to be ceasing by weather proof adhesive and mechanical fasteners where necessary.

Condensate drain pans shall be of the double wall construction having threaded drain connections at both ends. The drain pan shall not have less than 5/8inch (41.28mm) thick foam insulation on both sides with plastic coated aluminium foil vapour barrier on the wet surface.

Fan section shall be constructed of galvanized steel and have provisions for integral mounting of fan and motor assemblies. Fan scroll, wheel, shaft and bearings shall be mounted on a structural steel frame rigidly secured to the channel base. The unit shall have a single fan wheel with forward curved galvanized steel blades, single scroll with double inlet.

Fan wheel and shaft shall be statically and dynamically balanced in order that the unit may operate at design conditions free of vibration.

Fan bearings shall be self-aligning pillow block regreaseable ball type, selected for an average life of 200,000 hours at design operating conditions as per ANSI code B3.15.

Fan drive shall have provision for adjustment of pulleys and belts to vary fan speed through the full range of the unit specification.

Fan discharge dampers - where indicated on drawings, fan discharge dampers shall be fitted to vary air conditions (hot and cold deck dampers 90 degrees to each other) at constant volume. Dampers shall be of the opposed action blades type, foamed at the edges with neoprene gasketed strips and mechanically secured to steel rods, rotating in nylon bushings

and mounted on rigid flanged galvanized steel frame.

Filter section shall be constructed to accommodate high efficiency filters and shall have hinged access (for replacement of filters) which shall be air tight when closed.

2.12.21 FAN COIL UNITS

Basically, fan coil units shall be of similar material construction as air handling units.

Units shall be designed to have vertical or horizontal discharge and draw-thru fan operation depending on mounting of unit.

All necessary accessories such as fan motor and control package, sub-base, drive assembly and variable drive pulleys shall be provided.

Rubber-in-shear vibration isolators shall be provided for all air handling equipment.

2.12.22 SHEET METAL DUCTWORK

All ductwork, flues, register boxes, air chambers dampers, grilles and diffusers and all auxiliary equipment or work of any kind necessary to made the various air conditioning and ventilation systems in the complex complete and ready for operation shall be furnished and installed.

All ductwork indicated on drawing is schematic, therefore, changes in duct size and/or location (which do not significantly affect design) shall be made where necessary to conform with space conditions, without additional cost to the Owner.

Dimensions indicated on drawing are the clear internal dimensions.

All ductwork shall be substantially built with approved joints and seams smooth on the inside and a neat finish on the outside. Duct joints shall be as air tight as possible with laps in the direction of air flow and no flanged projecting in the air stream.

Ductwork construction shall conform with the following schedule:

| GREATEST DUCT DIMENSION | U.S. STANDARD GAUGE | LONGITUDINAL SEAM | TRANSVERSE SEAM |
|---|---|---|---|
| 305m (12”) or less | 26 | Pittsburgh or Acme Lock | Drive Slip or Pocket Lock |
| 330m (13”) thru’ 457mm (18”) | 24 | Pittsburgh or Acme Lock | Drive Slip or Pocket Lock |
| 483m (19”) thru 762mm (30”) | 24 | Pittsburgh or Acme Lock | Hemmed “S” Slip or Pocket Lock |
| 787mm (31”) thru’ 1,067mm (42”) | 22 | Pittsburgh or Acme Lock Slip or 38m | 32mm”Bar Pocket Lock |

For 22g ductwork, if transverse joints are located on 2.4m (8 ft.) centres reinforced with 25mm x 25mm x 3m angles on 1.2m O.C. fastened to duct on 203mm centres. All ducts 457mm thru' 1372mm shall be cross broken.

Changes in shape and dimension shall conform with the following:

For increase in cross sectional area the shape of the transformation shall not exceed 25mm in 178mm.

For reductions in area the slope may be 25mm in 102mm but 25mm in 178mm is preferred.

Changes in direction shall conform with the following:

For increases in cross sectional area the shape of the transformation shall not exceed 25mm in 178mm.

For reductions in areas the slope may be 25mm in 102mm but 25mm in 179mm is preferred.

Changes in direction shall conform with the following:

Unvaned elbow with throat radius not less than one half the width of the duct.

Square elbows with double thickness duct turning vanes (Tuttle and Bailey or approved).

All ductwork, unless otherwise noted, shall be hung using 25mm x 3mm galvanized iron bands.

Ductwork with cross sectional areas under 1sq.M shall be hung on 2.4m centres.

Ductwork with cross sectional areas over 1sq.M shall be hung on 1.2m centres.

With the width of the duct exceeds 0.6M the hanger shall be bent under bottom of duct and fastened to the bottom as well to the sides.

Where ducts are stacked they shall be independently supported.

Hangers for other ceiling mounted devices (such as lighting fixtures) shall not cause holes to be punched in the ductwork.

All accessories such as dampers, registers, grilles diffusers, access doors etc. as indicated on drawings shall be finished.

All branch ducts shall be fitted with splitter dampers having approved locking quadrants.

2.12.23 INSULATION OF DUCTWORK

All low pressure ductwork connected in air conditioning systems shall be insulated using 1 inch (25mm) thick 6 lb/ft.3 (96 kg/m³) density fiber glass having a maximum K-factor of 0.29 at 75 degrees f. (23.89 degrees C) mean temperature, with reinforced foil faced flame resistant kraft vapour barrier.

Insulation shall be adhered to the external duct surface with Insul-Coustic Sure-Stil FR. 215 or approved equal adhesive. In all cases blanket shall be cut back from facing materials 2 in. (50.8mm) to provide sealing lap at all joints and these laps adhered with approved adhesive.

Internal insulation on ductwork shall be permitted only for duct sections close to the air handling unit where excessive condensation could result.

Refrigerant piping shall be insulated using rigid foam insulation having Flex 11 heavy duty weather proofing jacket.

Insulation shall be adhered to pipe using an approved adhesive, application being made to the dry pipe surface. Insulation shall be cut back at joints to provide 3inch (75mm) lap of the weather proof jacket over the adjacent insulating material. Faces of insulation at joints shall be daubled with the adhesive and every joint made waterproof.

The completed pipe insulation shall be finally painted (generously) with Berger 404 paint to match existing surrounding.

2.12.24 TESTING AND ADJUSTING

The capacities of equipment specified in general, exceed the performance requirements specified in the schedules on drawings. After the entire installation has been completed, make all required adjustments to balancing valves, air vents, automatic controls, circulators, dampers, grilles, registers, diffusers, fans, refrigerating equipment, etc., until all performance requirements have been met.

All tests shall be conducted in accordance with applicable codes of A.S.H.R.A.E. and A.S.M.E., etc.,

All instruments, gauge, meters, etc., shall have metric. scales.

2.12.25 PROTECTION DEVICES

All compressors shall be adequately protected from overload, over and under voltage and in the cash of three phase equipment added phase loss protection.

## 2.13 DRAINAGE

2.12.26 WORKMANSHIP

The installations shall be carried out in a neat and workmanlike manner and to the satisfaction of the and Architect.

All mechanical work shall conform to the least edition of the relevant standards as published by A.S.H.R.A.E., A.S.M.E., B.S. and Jamaica Bureau of Standards and shall be inspected by the Architect prior to acceptance.

2.12.27 WARRANTIES

Any fault developing on the installation during a period of six months after "handing over" shall be rectified at the expense of this Contractor, if this fault is due to poor workmanship or defective materials.

All equipment shall have at least a one (1) year warranty.

2.13.01 BYE-LAWS

The Contractor shall conform with the regulations and bye-laws of the Public Health Authority and other competent authority.

2.13.02 MATERIALS

Sand, aggregates, cement and steel shall be described under 2.00 "Concreting ".

Concrete blocks and mortar shall be described under 3.00 "Walling and Masonry"

P.V.C. pipes and fittings shall be obtained from an approved manufacturer.

Glazedware pipes and fittings shall be obtained from an approved manufacturer and shall comply with B.S.539 and B.S.65.

2.13.03 LAYING

The drains shall be laid to suit the general progress of the building work and at such time and in such a manner as to be adequately protected against damage and deterioration. The whole of the work shall be handed over in a sound and clean condition on completion of the contract.

All drains and pipes shall be kept clear of obstructions during the process of laying and maintained until completely clear of obstructions and handed over in a clean condition.

The holes previously left below collars for jointing purposes shall be carefully filled in.

The excavation for drains shall be made to true and even falls and the bottoms shall be trimmed to the correct level and well rammed. The prices for excavation shall including for grading and ramming.

Suitable handholes shall be provided at all joints to allow access for jointing.

The widths of trenches at the bottoms shall allow for not less than a 150mm clearance between the outside of the pipe and the face of trench of timbering the same.

## 2.14 EXTERNAL WORKS

Wherever soft places in excavated surfaces are encountered the Contractor shall excavate the soil to a hard foundation and fill up with concrete or other suitable approved material before any drains are laid. Any trenches excavated in error to a greater depth than is required, shall be filled up to the required level with concrete 1:3:6 at the Contrctor's expense. Trenches shall be left open until all drains, manholes, etc., have been tested and approved.

Backfilling to trenches shall consist of fine screened excavated material along the sides of the pipes and at least 300mm over the pipe. This filling should not be tamped. the remainder of the trench shall be filled and hand tamped and consolidated in layers not exceeding 150mm thick.

### 2.14.01 GENERALLY

The specifications for other sections apply equally to work in this section.

The Contractor should note that trees not removed are to be properly from damage in a manner approved by the .

The site shall be graded or filled to bring the subgraded to the levels shown on the drawings. Any fill materials shall be taken from the excavations or imported to the site from a source obtained by the Contractor.

The quantities for excavating or filling are arrived at from the net measurements before excavating and the Contractor shall allow in his prices for increase in bulk and for any bouble handling required.

### 2.14.02 EARTH FILLING

Filled areas shall be made and built up to the levels, dimensions and shapes as shown on the drawing or as may be subsequently directed by the , and in general to the underside of the general marl, hardcore, vegetable soil or base specified.

Before any filling is started the ground on which fill is to be placed shall be stripped of all grass and topsoil and all roots, vegetable matter and other unsuitable substance removed. No material shall be place in any portion of the fill areas until the foundation for each section has been approved by the and the suitability of each part of the foundation for placing filling materials for use in filled areas construction will be determined by the Architect.

No bush roots sod or other perishable unsuitable material shall be placed in fill areas.

Each load of the fill material placed shall be placed in the location designated by the .

The Contractor shall maintain filled areas in an approved manner including maintaining surfaces free of weed (and other vegetation if applicable) until final completion and acceptance of all work under the contract.

The rates for filling are to include preparing the foundations, placing, supplementary wetting of the fill if necessary and any additional work required on the fill to accomplish uniform moisture application, compacting where compaction is required, preparing bonding surfaces, and all other operations required to secure adequate bond between material to be placed.

All earth fill taken from excavations has been measured as being taken to a spoil heap.

Each layer of fill material shall be compacted by a minimum of 8 passes of an approved roller which shall be the minimum compacting effort to be performed by the Contractor. During compaction, the placement moisture content and dry density of the earth fill shall be maintained within the control limits specified below.

To determine that the moisture content and dry density requirements of the compacted earth fill are being met, field and laboratory tests shall be made at frequent intervals on samples taken at locations determined by the .

Materials not meeting the specified moisture content and dry density requirements by the test, shall be reworked until approved results are obtained. Reworking may include removal, rehandling, reconditioning, rerolling, or combinations of these procedures. The contractor shall be entitled to no additional allowance above tendered rates by reason of any work required to achieve the placement of moisture content and density specified.

The standard optimum moisture content is defined as, “that moisture content which will result in a maximum dry unit weight of the soil when subjected to the “Modified Proctor Compaction Test”. The maximum dry weight, in pounds per cubic foot, obtained by the above procedure is the Proctor maximum dry density.

The moisture content of the earth fill material prior to and during compaction shall be distributed uniformly throughout each layer of the material.

Material represented by samples tested having a placement moisture content more that 10 percent dry of the standard optimum condition, or more that 10 percent wet of the standard optimum condition will be rejected and shall be removed or reworked until the moisture content is between these limits.

Placed material represented by samples having a dry density will be rejected, such rejected material shall be rolled until a satisfactory dry density is obtained.

The distribution and graduation of the materials throughout the earth fill shall be such that the fills will be free from lenses, pockets, streaks, or layers of material differing substantially in texture, graduation, or moisture from the surrounding material. Operations shall be such that the material when compacted and stability blended sufficiently to ensure the best practicable degree of compaction and stability. Successive loads of material shall be dumped on the earth fill so as to produce the best practicable distribution of the material subject too the approved of the .

The material shall be placed in the earth fill in continuous, approximately horizontal layers not more than 150mm inches in thickness after being compacted. If, in the opinion of the the surface of the prepared foundation on the compacted surface of any layer of earth fill is too dry or smooth to bond properly with the layer of material to be placed thereon, it shall be moisture and/or worked with harrow, scarified, or other suitable equipment, in an approved manner to a sufficient depth to provide a satisfactory bonding surface to reduce the moisture content to the required amount; and then it shall be re-compacted before the next succeeding layer of earth fill material is placed.

Approved vibratory tamping rollers shall be use for compacting the fill.

When each layer of material has been conditioned to have the specified moisture, it shall be compacted by passing the roller over it a minimum of 8 times, and when compacted density shall be essentially uniform throughout the layer. If the uncompacted earth fill material is too wet proper compaction, the earth fill material shall be worked with harrow, scarifier , or suitable equipment to reduce the moisture content to the amount specified; shall be allowed to dry until such time as the material contains only the specified moisture content; or the material shall be removed from the embankment. Compacted earth material having a moisture content or dry density that do not meet the criteria specified in above shall reworked and rerolled, as directed by the contracting authority, to obtain the specified moisture content and dry density of embankment in place.

2.14.03 MARL

Good quality granular type limestone gravel sand mixture, known locally as marl of approved quality and conforming to an approved grading curve, shall be spread on the previously prepared sub-grade and compacted in maximum thickness of 150mm by means of a 10 tone roller. If the moisture content is not sufficient to maintain satisfactory compaction or to prevent segregation, water shall be added as directed by the .

The finished surface shall be smooth and even and shall be to the levels shown on the drawings with a tolerance of +/-12mm on a 4 metre straight edge placed in may position or direction on the surface and the whole of the base be left to the satisfaction of the .

2.14.04 “BARBER-GREENE”

The surfacing shall be approve bituminous concrete pavement known locally as “Barber-Greene” and rolled and consolidated with a 10 tone roller.

2.14.05 KERBS

The Contractor shall allow for forming kerbs as shown on the drawings. Kerbs shall be concrete (1:2:4) cast in convenient lengths and shall be laid in trenches on approved fill to finish 150mm above surface of road. All exposed faces of kerbs shall be fair face and drain opening shall be left in kerbs as directed.

2.14.06 FIRE HYDRANTS

Fire hydrants shall be 4” (102mm) Pillar Type with 2 (64mm) diameter male screw double outlets with London ‘V’ threads as supplied by Reginald Aitken Limited or other equal and approved. Hydrants are to be supplied painted in accordance with the requirements of the local fire Authority.

2.14.07 UNDERGROUND WATER SUPPLIES

The contractor shall conform with the regulations and bye-laws of the Public Health Authority and/or other competent Authority.

Materials and workmanship shall be of the best quality and executed in accordance with the Specifications and drawings as supplied by the project administrator and to his approval and satisfaction.

Re-filling the trench after laying and joining the pipes shall be carried out with soft soil well rammed each side of the pipe, no large stones shall be refilled into the trench until the top surface of the pipe is covered to a depth of at least one foot with ordinary soil.

Where trenches are to be cut through rock, all projections shall be removed from the bottom

of the trench, after which it shall be re-filled to a depth of a least three inches with any available soft soil and small rock chippings, lightly rammed to form a level bed. Joint holes shall be provided to allow the pipes to bed evenly along their entire length.

After the pipes have been laid and testes, and the joints protected as indicated before, the trench shall be re-filled with all available soft and small chippings well rammed on each side of the pipe. No large rocks shall be placed in the trench until the pipes are covered to a depth of a least one foot with soil and chippings At completion all water mains shall be chlorinated as directed by the Local Water Authority.

## 2.15 FENCING

2.15.01 DESCRIPTION

This work consists of all labor, materials, and equipment necessary for furnishing and installing chain link fence, gates and accessories in conformance with the lines, grades, and details as shown.

2.15.02 POST SETTING

Install posts plumb and in alignment. Set post in concrete footings of dimensions as shown, except in bedrock. Thoroughly compact concrete so as it to be free of voids and finished in a slope or dome to divert water running down the post away from the footing. Post Location shall be as required spaced equidistant at intervals not exceeding 10 ft. (3.05m). Measure the interval parallel to the grade of the proposed fence and in the line of the fence from center to center of the posts. Terminal Posts (end corner and gate posts) shall be set at the beginning and end and end of each continuous length of fence and at abrupt changes in vertical and horizontal alignments. Post Foundations shall be concrete with hole diameters dug or drilled a minimum of four times the largest cross section of the post and a minimum depth of 24 in. Cure concrete and grout a minimum of 72 hours before any further work is done on the posts.

2.15.03 POST CAPS

Fit all exposed ends of post with caps. Provide caps that fit snugly and are weather tight. Where top rail is used, provide caps to accommodate the top rail. Install post caps as recommended by the manufacturer.

2.15.04 TOP RAILS AND BOTTOM RAILS

Install rails before installing chain link fabric. Provide suitable means for securing rail ends to terminal and intermediate post. Top rails shall pass through intermediate post supporting arms or caps as shown. The rails shall have expansion couplings (rail sleeves) spaced as recommended by the manufacturer.

2.15.05 FABRIC

Chain-Link Fabric shall be placed on the outside of the area enclosed or as directed by the purchaser. Place the fabric by securing one end, applying sufficient tension to remove all slack before making attachments elsewhere. Tighten the fabric to provide a smooth uniform appearance free from sag. The fabric can be cut by untwisting a picket and attaching each span independently at all terminal post. Use stretcher bars with tension bands or other suitable devices at 15 in. (380mm) maximum intervals. The fence fabric should be installed 2 in. (50mm) above ground level. Measure the clearance at the post with a tolerance of ± 3 in. (±76mm). Fasten the fabric to the line posts at intervals not exceeding 15 in. (380mm). Fasten the fabric to the rail or tension wire at intervals not exceeding 24 in. (610mm). Rolls of wire fabric can be joined by weaving a single picket into the ends of the rolls to form a continuous mesh.

2.15.06 BARBED WIRE

Install barbed wire, when required, on supporting arms above the fence posts. Barbed wire supporting arms, when required to be furnished, shall be at an angle of approximately 45° or vertical, as required, and shall be fitted with clips or other means for attaching three strands of barbed wire. With 45° arms the top wire shall be approximately twelve inches horizontally from the fence line and the other wires spaced uniformly between the top of the fence fabric and the outside strand. Barbed wire arm shall be of sufficient strength to withstand a weight

of 250 pounds Extend each end member of gate frames sufficiently above the top member to carry three strands of barbed wire in horizontal alignment with barbed wire strands on the fence. Pull each strand taut and securely fasten to each supporting arm and extended member.

2.15.07 GATES

Install gates plumb, level, and secure for full opening without interference. Set keepers, stops and other accessories into concrete as required by the manufacturer and as shown. Adjust hardware for smooth operation and lubricate where necessary. The type of hinges shall allow gates to swing through 180 degrees, from closed to open position. Hang and secure gates in such a manner that, when locked, they cannot be lifted off hinges. Provide stops and keepers for all double gates. Latches shall have a plunger bar arranged to engage the center stop. Arrange latches for locking. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger bar. Keepers shall consist of a mechanical device for securing the free end of the gate when in full open position.

2.15.08 FINAL CLEAN UP

Remove all debris, rubbish and excess material from the station. Work areas shall be left neat and free of any debris caused by the erection of the fence. All work shall be performed in a safe and orderly manner.

2.15.09 FITTINGS & HARDWARE

Posts, gate frames, braces, rails, stretcher bars, truss rods and tension wire shall be of steel. Gate hinges, post caps, barbed wire supporting arms, stretcher bar bands, and other parts shall be of steel, malleable iron, ductile iron or equal except that post tops, rail ends, ties and clips may be of aluminum.

Gate leaves more than 2400 mm (8 feet) wide shall have intermediate members and diagonal truss rods, or shall have tubular members as necessary to provide rigid construction, free from sag or twist.

**2C List of Drawings**

As part of the Technical Requirements the following Drawings are provided:

| Type Of Drawing | Drawing title | Drawing number | Sheet | Revision |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

**NOT APPLICABLE**

**2D Completion Schedule**

The required completion date is eight (8) weeks from the start date.

**2E Bill of Quantities**

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **GENERAL SUMMARY** | | | | |
| | PRELIMINARIES | | | | |
| | A&E DEPARTMENT | | | | |
| | **SUB-TOTAL (A)** | | | **$** | |
| | Allow the Contingency Sum of $250,000.00 to be used as directed by the Client, if not used to be deducted from the Contract Sum. | | | | $ 250,000.00 |
| | **SUB-TOTAL (B)** | | | **$** | |
| | Add or deduct a sum that will be treated as a percentage on or off the whole of the prices and rates in the Bills of Quantities (excluding Preliminary Items, Prime Costs and Provisional Sums) and the rates for any variations will be based on rates arrived at after being subjected to such percentage adjustment. | | | | |
| | **Carried to Letter of Quotation** | | | **$** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **GENERAL CONDITIONS** | | | | |
| | **PREAMBLES** | | | | |
| **A** | The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, Conditions of Contract, Bidding Data, Contract Data, Technical Specifications, and Drawings. | | | | |
| **B** | The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Project Manager and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Project Manager may fix within the terms of the Contract. | | | | |
| **C** | All dimensions and quantities stated are approximate. The Contractor is deemed to have visited the Site and satisfied himself as to accessibility of the site, local conditions, full extent and character of the work to be done. The availability of Labour and material and water and the like and the general condition which may affect his tender, as no claim due to lack of knowledge in these respects will be allowed unless otherwise stated elsewhere in the Tender Documents. The contractor is to allow in his rate for all necessary double handling and the removal of debris, rubbish, etc. from the site to leave the premises thoroughly clean and tidy upon completion. | | | | |
| **D** | The rates and prices bid in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional Plant, labor, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract. | | | | |
| **E** | A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities. | | | | |
| **F** | The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, and where no Items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related Items of Work. | | | | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **GENERAL CONDITIONS** | | | | |
| | **PREAMBLES (Cont'd)** | | | | |
| **A** | General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities. | | | | |
| **B** | The Contractor should note that the building will be occupied and that the hospital will be in operation throughout the period of works and the Contractor will be required to take all necessary precautions to protect the staff and patients. | | | | |
| **C** | Adequate hoarding, barriers and protective measures must be provided where needed and the contractor shall provide all necessary measures to prevent nuisance and disturbance. | | | | |
| **D** | The Bidder is recommended at the Bidders' own responsibility and risk to visit and examine the site and extent of the proposed works and its surroundings, any necessary measurements and quantities, means of access thereto, facilities for storage, and offices and all other matters liable to affect the preparation of the Bid and enter into a contract for the construction of the works. | | | | |
| **E** | The costs of visiting the site shall be at the Bidders own expense. Failure to comply with these recommendations shall not form the basis for any claim and unpriced items in this section shall be deemed to be included elsewhere in the Bills of Quantities. | | | | |
| **F** | This quotation should include for all materials, government tax, transportation, labour, profit, overheads and for executing the work in detail as described on the following pages. | | | | |
| **G** | All Provisional Quantities and Provisional Sums shall be omitted in the Final Account and substituted by actual measurement of such works related to the Provisional Sums and as specifically authorised by the Architect. | | | | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **PRELIMINARIES** | | | | |
| | *NB.: Unpriced items in this section shall be deemed to be included elsewhere in the Bills of Quantities and specific requirements e.g. telephone, sign board, etc. not executed by the contractor, will be omitted from the Final Account Sum.* | | | | |
| | **PRELIMINARY ITEMS** | | | | |
| **A** | Allow for Insurance of the works. | | Item | | |
| **B** | Allow for supervision of the works. | | Item | | |
| **C** | Include the costs of all Watching & Lighting. | | Item | | |
| **D** | Allow for water for the works. | | Item | | |
| **E** | Allow for construction program to be maintained throughout the project. | | Item | | |
| **F** | Allow for plant, scaffolding tools & transport. | | Item | | |
| **G** | Allow for temporary storage sheds | | Item | | |
| **H** | Allow for temporary accomodation | | Item | | |
| **I** | Allow for sanitary facilities | | Item | | |
| **J** | Allow for safety, health and welfare | | Item | | |
| **K** | Allow for hoarding | | Item | | |
| **L** | Allow for providing all necessary temporary chutes, screens, tarpaulins and other coverings for protecting the works during construction | | Item | | |
| **M** | Allow for maintaining a debris free site during repairs and thorough cleaning up of the site prior to hand-over | | Item | | |
| | | | | **Carry to General Summary:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Doctor's Room No. 1** | | | | |
| A | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of wall. | 27 | $m^2$ | | |
| B | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 4 | $m^2$ | | |
| C | Ditto; door frames exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| D | Ditto, timber skirting, 100mm high. | 11 | m | | |
| E | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 20 | m | | |
| | **Doctor's Room No. 2** | | | | |
| F | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of wall. | 27 | $m^2$ | | |
| G | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 4 | $m^2$ | | |
| H | Ditto; door frames exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| I | Ditto, timber skirting, 100mm high. | 11 | m | | |
| J | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 20 | m | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Doctor's Room No. 3** | | | | |
| **A** | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of wall. | 27 | $m^2$ | | |
| **B** | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 4 | $m^2$ | | |
| **C** | Ditto; door frame exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| **D** | Ditto, timber skirting, 100mm high. | 11 | m | | |
| **E** | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 20 | m | | |
| | **Lunch Room** | | | | |
| **F** | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of wall. | 21 | $m^2$ | | |
| **G** | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 4 | $m^2$ | | |
| **H** | Ditto; door frame exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| **I** | Ditto, timber skirting, 100mm high. | 8 | m | | |
| **J** | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 14 | m | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Lunch Room (cont'd)** | | | | |
| | **Staff Bathroom** | | | | |
| | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces: | | | | |
| **A** | Wall. | 21 | $m^2$ | | |
| **B** | Ceiling. | 4 | $m^2$ | | |
| | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | | | | |
| **C** | Timber doors (measured flat both sides). | 4 | $m^2$ | | |
| **D** | Door frame exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| **E** | Timber skirting, 100mm high. | 8 | m | | |
| **F** | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 11 | m | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Sluice Room** | | | | |
| A | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of wall. | 36 | $m^2$ | | |
| B | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 4 | $m^2$ | | |
| C | Ditto; door frame exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| D | Ditto; timber skirting, 100mm high. | 14 | m | | |
| E | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 27 | m | | |
| | **General Areas** | | | | |
| F | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of wall. | 97 | $m^2$ | | |
| G | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of ceiling. | 125 | $m^2$ | | |
| H | Ditto; timber skirting, 100mm high. | 45 | m | | |
| I | Ditto; timber moulding to top of partition wall and perimeter of doors and windows, exceeding 75mm but not exceeding 150mm girth. | 50 | m | | |
| J | Include the Provisional Sum of $50,000.00 for repairs to existing drywalls, to be used as directed by the Contract Administrator. | | Sum | | $ 50,000.00 |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Staff Bathroom No. 2** | | | | |
| **A** | Carefully remove existing wall mounted lavatory basin, temporarily block off existing supply and disposal pipes, leave area ready for new basin (measured separately), make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| **B** | Carefully remove existing w.c. seat and cover, leave area ready for new seat and cover (measured seperately), make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| **C** | Carefully remove existing mortice door lock, leave area ready for new mortice lock, supply and install new chromium plated, double turn mortice lock, including matching screws fixed to existing door, make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| **D** | Supply and install white vitreous china pedestal lavatory basin complete with 13mm diameter chromium plated mixer tap and angle supply with stopcock, 32mm chromium plated pop-up waste assembly and 32mm P.V.C. 'S'-trap with basin secured to wall with mild steel brackets including sealing all around in mastic, incuding making all watertight connections to pipework. | 1 | no | | |
| **E** | Supply and install toilet seat and cover complete. | 1 | no | | |
| **F** | Supply and install automatic (touch free), wall mounted, hand sanitizer dispenser (Purell, or other equal and approved) complete with refill, including assembling as per manufacturer's instructions. | 3 | no. | | |
| **G** | Surface mounted, heavy duty, plastic paper towel dispenser (manual operated), complete with refill, including assembling as per manufacturer's instructions. | 3 | no. | | |
| **H** | Supply and install automatic (touch free), wall mounted, soap dispenser (San Jamar, or other equal and approved), complete with refill, including assembling as per manufacturer's instructions. | 1 | no. | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Staff Bathroom No. 2 (cont'd)** | | | | |
| | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces: | | | | |
| **A** | Walls. | 20 | $m^2$ | | |
| **B** | Ceiling. | 5 | $m^2$ | | |
| | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of: | | | | |
| **C** | Timber doors (measured flat both sides). | 4 | $m^2$ | | |
| **D** | Door frame exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| | **Procedure Room** | | | | |
| **E** | Carefully remove existing wall mounted lavatory basin, temporarily block off existing supply and disposal pipes, leave area ready for new basin (measured separately), make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| **F** | Carefully remove existing mortice door lock, leave area ready for new mortice lock, supply and install new chromium plated, double turn mortice lock, including matching screws fixed to existing door, make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| **G** | Supply and install white vitreous china pedestal lavatory basin complete with 13mm diameter chromium plated mixer tap and angle supply with stopcock, 32mm chromium plated pop-up waste assembly and 32mm P.V.C. 'S'-trap with basin secured to wall with mild steel brackets including sealing all around in mastic, incuding making all watertight connections to pipework. | 1 | no | | |
| **H** | Extra over pedestal lavatory basin for foot valve assembly, including making all watertight connections to pipework. | 1 | no. | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Procedure Room (cont'd)** | | | | |
| **A** | Supply and install automatic (touch free), wall mounted, hand sanitizer dispenser (Purell, or other equal and approved) complete with refill, including assembling as per manufacturer's instructions. | 1 | no. | | |
| | Prepare and apply two coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one undercoat and one finishing coat to general surfaces: | | | | |
| **B** | Walls. | 27 | $m^2$ | | |
| **C** | Ceiling. | 10 | $m^2$ | | |
| | Knot, stop, prepare and apply two coats oil paint with non Volatile Organic Compounds (VOC) consisting of one undercoat and one finishing coat to general surfaces of: | | | | |
| **D** | Timber doors (measured flat both sides). | 4 | $m^2$ | | |
| **E** | Door frame exceeding 150mm but not exceeding 225mm girth. | 5 | m | | |
| | **Passage/Corridor** | | | | |
| **F** | Prepare and apply two coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one undercoat and one finishing coat to general surfaces of wall. | 14 | $m^2$ | | |
| **G** | Ditto; ceiling. | 3 | $m^2$ | | |
| **H** | Knot, stop, prepare and apply two coats oil paint with non Volatile Organic Compounds (VOC) consisting of one undercoat and one finishing coat to general surfaces of existing grills (measured flat both sides). | 4 | $m^2$ | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Casualty Doctor's Rooms** | | | | |
| A | Carefully remove existing double timber doors including frames and make good surfaces disturbed and remove debris from site overall size 1295mm wide x 2080mm high. | 1 | no. | | |
| B | Carefully remove existing double timber doors including frames and make good surfaces disturbed and remove debris from site overall size 1345mm wide x 2080mm high. | 1 | no. | | |
| C | Carefully remove existing single bowl kitchen sink with drain board and faucet, temperately block off existing water supply and disposal pipes, make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| D | Carefully remove existing 456mm wide x 914mm high timber floor mounted cupboard unit, make good surfaces disturbed and remove debris from site. | 1 | m | | |
| | Doors | | | | |
| E | Glazed anodized aluminium double door and frame to suit opening size 1345mm wide x 2080mm high overall, frame in anodized finish with mid rail and clad with 22 gauge anodised aluminum sheeting, with 6mm thick clear laminated glass, including neoprene glazing strip, aluminium fixing beads, etc., transported to site and fixed in position and caulked all round on both sides of frame and complete with all necessary threshold, single swing hinges, approved cylinder door lock with thumb turn, automatic door closer and matching push/pull fittings. | 1 | no. | | |
| F | Glazed anodized aluminium double door and frame to suit opening size 1295mm wide x 2080mm high overall, frame in anodized finish with mid rail and clad with 22 gauge anodised aluminum sheeting, with 6mm thick clear laminated glass, including neoprene glazing strip, aluminium fixing beads, etc., transported to site and fixed in position and caulked all round on both sides of frame and complete with all necessary threshold, single swing hinges, approved cylinder door lock with thumb turn, automatic door closer and matching push/pull fittings. | 1 | no. | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Casualty Doctor's Rooms (cont'd)** | | | | |
| | Cupboards, Counters and Shelves | | | | |
| **A** | Fabricate and install 914mm long x 610mm wide x 915mm high floor cupboard comprising 51 mm x 51 mm white aluminium framing, aluminum sheeting as cladding, casement doors comprising white aluminum window jambs with aluminum sheeting in-fill panel, complete with 16mm thick plycem board shelf with laminate finish to all exposed surfaces, complete with all necessary door pulls, shelf brackets, etc. with and including quartz (or other equal and approved) solid surface countertop. | 1 | no. | | |
| | Plumbing Installation | | | | |
| **B** | Supply and install white vitreous china pedestal lavatory basin complete with 13mm diameter chromium plated mixer tap and angle supply with stopcock, 32mm chromium plated pop-up waste assembly and 32mm P.V.C. 'S'-trap with basin secured to wall with mild steel brackets including sealing all around in mastic, incuding making all watertight connections to pipework. | 1 | no | | |
| **C** | Supply and install stainless steel single bowl kitchen sink complete with drain boars, chrome faucets, basket strainers and waste, chrome plated flexible supply pipe, trap, angle valve and flex tube plugged and screwed to wall and fixing to counter top (measured separately); and sealing with caulking compound, including making all watertight connections to pipework. | 1 | no. | | |
| **D** | Extra over pedestal lavatory basin for foot valve assembly, including making all watertight connections to pipework. | 2 | no. | | |
| | Prepare and apply two coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one undercoat and one finishing coat to general surfaces: | | | | |
| **E** | Walls. | 70 | $m^2$ | | |
| **F** | Ceiling. | 30 | $m^2$ | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Casualty Doctor's Rooms (cont'd)** | | | | |
| | **Casualty Nurses' Station** | | | | |
| **A** | Carefully remove existing timber doors including frames and make good surfaces disturbed and remove debris from site overall size 914mm wide x 2030mm high. | 1 | no. | | |
| **B** | Carefully remove existing wall mounted lavatory basin, temporarily block off existing supply and disposal pipes, leave area ready for new basin (measured separately), make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| | Doors | | | | |
| **C** | Glazed anodized aluminium door and frame to suit opening size 914mm wide x 2030mm high overall, frame in anodized finish with mid rail and clad with 22 gauge anodised aluminum sheeting, including 305mm wide x 305mm high viewing panel glazed with 6mm thick clear laminated glass, including neoprene glazing strip, aluminium fixing beads, etc., transported to site and fixed in position and caulked all round on both sides of frame and complete with all necessary threshold, single swing hinges, approved cylinder door lock with thumb turn, automatic door closer and matching push/pull fittings. | 1 | no. | | |
| | Plumbing Installation | | | | |
| **D** | Supply and install white vitreous china pedestal lavatory basin complete with 13mm diameter chromium plated mixer tap and angle supply with stopcock, 32mm chromium plated pop-up waste assembly and 32mm P.V.C. 'S'-trap with basin secured to wall with mild steel brackets including sealing all around in mastic, incuding making all watertight connections to pipework. | 1 | no | | |
| **E** | Extra over pedestal lavatory basin for foot valve assembly, including making all watertight connections to pipework. | 1 | no. | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Casualty Nurses' Station (cont'd)** | | | | |
| A | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of walls. | 70 | $m^2$ | | |
| B | Ditto; ceiling. | 30 | $m^2$ | | |
| C | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 16 | $m^2$ | | |
| D | Ditto; door frame exceeding 150mm but not exceeding 225mm girth. | 20 | m | | |
| E | Ditto; 50mm x 100mm timber frame, girth 300mm. | 60 | m | | |
| | _____ | | | | |
| F | Allow for sanding down, touching up primer and apply two coats of gloss enamel paint on surfaces of mild steel grilles and expanded mesh (measured flat both surfaces). | 20 | $m^2$ | | |
| | **Waiting Area** | | | | |
| G | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of walls. | 85 | $m^2$ | | |
| H | Ditto; ceiling. | 70 | $m^2$ | | |
| I | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of timber doors (measured flat both sides). | 16 | $m^2$ | | |
| J | Ditto; door frame exceeding 150mm but not exceeding 225mm girth. | 20 | m | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Patients' Male and Female Bathrooms** | | | | |
| **A** | Carefully remove existing wall mounted lavatory basin, temporarily block off existing supply and disposal pipes, leave area ready for new basin (measured separately), make good surfaces disturbed and remove debris from site. | 2 | no. | | |
| **B** | Carefully remove existing w.c. suite, temporarily block off existing supply and disposal pipes, make good surfaces disturbed and remove debris from site. | 3 | no. | | |
| **C** | Carefully remove existing urinal, temporarily block off existing supply and disposal pipes, make good surfaces disturbed and remove debris from site. | 1 | no. | | |
| **D** | Carefully remove existing timber doors including frames and make good surfaces disturbed and remove debris from site overall size 914mm wide x 2030mm high. | 2 | no. | | |
| **E** | Carefully remove existing timber cubicle doors including frames and make good surfaces disturbed and remove debris from site overall size 914mm wide x 2030mm high. | 3 | no. | | |
| **F** | Supply and install 38mm Thick natural pine six panel door, size 914mm wide x 2030mm high, sanded and left clean for painting and hung on butt hinges (both measured separately). | 2 | no. | | |
| **G** | Supply and install 38mm Thick internal quality hollow core flush plywood door, size 660mm wide x 1980mm high, hardwood lipped to all edges, sanded and left clean for painting and hung on butt hinges (both measured separately). | 3 | no. | | |
| **H** | Supply, fit and install 50mm x 100mm Wolmanised Pitch Pine door frames, fixed in existing prepared opening and sanded and left clean for painting (measured separately). | 20 | m | | |
| **I** | Ditto; 12mm x 38mm Wolmanised Pitch Pine door stop planted on to frame including mitres, sanded and left clean for painting (measured separately). | 20 | m | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **Patients' Male and Female Bathrooms (cont'd)** | | | | |
| **A** | Supply and install pair 100mm stainless steel butt hinges including matching screws fixed to woodwork. | 5 | no. | | |
| **B** | Supply and install chromium plated bored cylindrical lock including matching screws fixed to woodwork. | 1 | no. | | |
| | Plumbing Installation | | | | |
| **C** | Supply and install white vitreous china pedestal lavatory basin complete with 13mm diameter chromium plated mixer tap and angle supply with stopcock, 32mm chromium plated pop-up waste assembly and 32mm P.V.C. 'S'-trap with basin secured to wall with mild steel brackets including sealing all around in mastic, incuding making all watertight connections to pipework. | 1 | no | | |
| **D** | Supply and install wall-hung urinal (American Standard, or other equal and approved) complete with flush valve and waste fitting, concealed bracket fixings, with 20mm and 37mm inlet and outlet respectively and 'P' trap, including assembling as necessary making all watertight connections to pipework. | 1 | no. | | |
| **E** | Supply and install white vitreous china low level w.c. suite (American Standard, or other equal and approved) comprising pan with 'P'-trap and complete with cistern, 13mm chromium plated angle supply with stopcock, wax gasket, plastic seat and cover, floor bolts and bolt caps and sealing complete to floor slab, incuding making all watertight connections to pipework. | 3 | no. | | |
| | Prepare and apply three coats non-scented low sheen emulsion paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces: | | | | |
| **F** | Walls. | 110 | $m^2$ | | |
| **G** | Ceiling. | 26 | $m^2$ | | |
| | | | | **Carried to Collection:** | |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | *The Following is painting to Internal surfaces of Patient's Male and Female Bathroom's Cont'd.* | | | | |
| | Knot, stop, prepare and apply three coats oil paint with non Volatile Organic Compounds (VOC) consisting of one prime coat, one undercoat and one finishing coat to general surfaces of: | | | | |
| **A** | Timber doors (measured flat both sides). | 35 | $m^2$ | | |
| **B** | Door frame exceeding 150mm but not exceeding 225mm girth. | 35 | m | | |
| | **Decorative Signage** | | | | |
| **C** | Include the Provisional Sum of $500,000.00 for Decorative Signage, required in connection with the proposed works, to be used as directed by the Contract Administrator. | | Sum | | $ 500,000.00 |
| | | | | **Carried to Collection:** | **$ 500,000.00** |

| ITEM | DESCRIPTION | QUANT. | UNIT | RATE | AMOUNT |
|---|---|---|---|---|---|
| | **A&E DEPARTMENT** | | | | |
| | **COLLECTION** | | | | |
| | From Page 5 | | | | |
| | From Page 6 | | | | |
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| | From Page 16 | | | | |
| | From Page 17 | | | | |
| | From Page 18 | | | | |
| | | | | **Carry to General Summary:** | |

## Section 3 Letter of Quotation

Date: July 4, 2022

Ref No.: SRHA-NHF-W-2022-07-010

To: Southern Regional Health Authority

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Invitation, including Addenda issued in accordance with Instructions to Contractors (**ITC**);

(b) We offer to supply, in conformity with the Invitation for Quotations, the following works: Proposed Renovation Works to the Accident and Emergency Department at the Percy Junor Hospital (Ref No: SRHA-NHF-W-2022-07-010);

(c) The total price of our quotation, excluding any discounts offered in item (d) below, but including all applicable taxes is:

_____

_____

_____ (JMD$_____)

*[amount of Jamaican Dollars in words], [amount in figures],* ;

(d) The discounts offered and the methodology for their application are:

_____;

(e) Our quotation shall be valid for a period of Ninety (90) days from the date fixed for the quotation submission deadline in accordance with the Invitation for Quotations and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(f) We do not have any conflict of interest in accordance with **ITC** 1;

(g) Our firm, its affiliates or subsidiaries (including any subcontractors or contractors for any part of the contract), have not been declared ineligible procuring entity in accordance with ITC 2 ;

(h) We hereby agree that in competing for (and, if the award is made to us, in executing) the contract, we undertake to observe the laws against fraud and corruption, including bribery, in force in Jamaica;

(i) The following commissions, gratuities, or fees have been paid or are to be paid with respect to the quotation process or execution of the contract:

| Name of Recipient | Address | Reason | Amount |
|---|---|---|---|
| N | O | N | E |

[If none has been paid or is to be paid, indicate "none."]

(j) We understand that this quotation, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.

(k) We understand that you are not bound to accept the lowest responsive quotation or any other quotation that you may receive. We understand that the procuring entity may cancel a procurement at any time prior to the acceptance of the successful quotation or after the successful quotation is accepted if:

(i) the contractor presenting the quotation is disqualified under the Act or the regulations of the Public Procurement Act, 2015;

(ii) the procurement is cancelled;

(iii) the contractor presenting the successful quotation is excluded on the grounds of corruption, unfair competition and a conflict of interest; or

(iv) the procurement, the quotation or the contractor contravenes or is otherwise not compliant with the provisions of the Public Procurement Act, 2015.

Name _____

In the capacity of _____

Signed _____

Duly authorized to sign the quotation for and on behalf of

_____

Address _____

_____

_____

Dated on _____ day of _____, 2019

Company Seal/Stamp

## Section 4 Form of Contract Agreement

THIS CONTRACT AGREEMENT made the *[insert number*] day of *[insert month], [insert year]*

BETWEEN

*[ insert complete name of procuring entity ],* a *[ insert description of type of legal entity, for example, an agency of the Ministry of .... of the Government of Jamaica, or corporation incorporated under the laws of Jamaica ]* and having its principal place of business at *[ insert address of procuring entity ]* (hereinafter called "the procuring entity"), of the one part,

and

*[ insert name of contractor]*, a corporation incorporated under the laws of *[ insert: country of contractor]* and having its principal place of business at *[ insert: address of contractor]* (hereinafter called "the contractor"), of the other part:

WHEREAS the procuring entity desires that the works known as *[insert name of works]* should be executed by the contractor, and has accepted a quotation by the contractor for the execution and completion of these works and the remedying of any defects therein,

The procuring entity and the contractor agree as follows:

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

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

(i) the Quotation

(ii) the addenda Nos _____(if any)

(iii) the Conditions of Contract;

(iv) the Specification

(v) the Drawings; and

(vi) the completed Bill of Quantities.

3. In consideration of the payments to be made by the procuring entity to the contractor as indicated in this Agreement, the contractor hereby covenants with the procuring entity to execute the works and to remedy defects therein in conformity in all respects with the provisions of the contract.

4. The procuring entity hereby covenants to pay the contractor in consideration of the execution and completion of the works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

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

For the Procuring Entity:

_____ (name of Procuring Entity's representative)

_____ *(signature of Employer's representative).* Position: **Regional Director**

Witnessed by _____ (name and signature)

SEAL:

For the Contractor:

_____ (name of Contractor's representative)

_____ (signature). (Position) _____

Witnessed by _____ (name and signature)

SEAL:

**Conditions of Contract**

1. Definitions:

a. Bill of Quantities specifies procuring entity's estimate of quantity for each item of work and priced accordingly by the contractor;

b. The Completion Date Is eight (8) weeks from the start date and is the date of completion of the works as certified by the procuring entity. This may only be revised by the procuring entity in writing.

c. The procuring entity (one party) is Southern Regional Health Authority.

d. The contract is the contract between the procuring entity and the contractor to execute, complete, and maintain the works as specified in the specifications or in other sections of the contract. The name and identification number of the contract is given in the Invitation to Quote.

e. The contractor (the other party) is a person or corporate body whose quotation to carry out the works has been accepted by the procuring entity.

f. The contractor's quotation is the completed document (Invitation to Quote together with attachments) submitted by the contractor to the procuring entity.

g. The contract Price is [_____].

h. Days are calendar days; months are calendar months.

i. A Defect is any part of the works not completed in accordance with the contract.

j. The Defects Liability Period is three (3) months counted from the Completion Date.

k. Equipment is the contractor's machinery and vehicles brought temporarily to the Site to construct the works.

l. Materials are all supplies, including consumables, used by the contractor for incorporation in the works.

m. The Project Supervisor is the person appointed by the procuring entity and who is responsible for supervising the execution of the works and administering the contract.

n. Works means the scope, specification and drawings of the works included in the contract and any modification or addition made or approved by the procuring entity.

o. The Site is Percy Junor Hospital, Spalding, Spalding P.O, Clarendon.

p. The Start Date is to be determined. It is the latest date when the contractor shall commence the execution of the works.

q. The Variation is an instruction given by the procuring entity in writing which varies the scope of the original Work requirements.

2. Fraud and Corruption. GoJ requires that all parties involved in the procurement proceedings and execution of such contracts observe the highest standard of ethics.

   For the purposes of this provision, offences of fraud and corruption are defined in Part VII of the Act and any other Act relating to corrupt activities in Jamaica.

   A person who commits an offence under the Act or any other Act relating to corrupt activities in Jamaica shall

   (a) be liable for conviction under the provisions of the Act or any other Act relating to corrupt activities in Jamaica;

   (b) have their quotation rejected if it is determined that the quotation or contractor is not in compliance with the provisions of the Act, the regulations or any other Act relating to corrupt activities in Jamaica

   (c) risk other sanctions provided for in the Act or the regulations.

3. Language and Law. The contract shall be in English. The law governing the contract shall be the applicable law(s) of Jamaica. The contractor shall comply with all applicable Laws in the performance of the contract.
4. Communications. Communications between parties that are referred to in these Conditions shall be effective only when made in writing. A notice shall be effective only when it is delivered.
    (a) the term "in writing" means a communication in hand or machine written type and includes messages by facsimile, e-mail and other electronic forms of communications with proof of receipt.
    (b) "Electronic communications" means the transfer of information using electronic or similar media and the recording of information using electronic media.
5. Assignment. Neither party may assign the whole or part of the contract.
6. Contractor's Risks. From the Starting Date until the Project Supervisor has issued a certificate for the correction of any Defects, the risks of personal injury, death, and loss or damage to property and adjacent property (including, without limitation, the works, materials and equipment) are the contractor's risks.
7. Works to be Completed by the Completion Date. The contractor shall commence execution of the works on the Start Date and shall carry out the works in accordance with the work schedule submitted by the contractor, as updated with the approval of the Project Supervisor, and complete them by the Completion Date.
8. Safety. The contractor shall be responsible for the safety of all activities on the Site.
9. Delays Ordered by the Project Supervisor. The Project Supervisor may instruct the contractor to delay the start or progress of any activity within the works. Delays or suspension of work by the Project Supervisor which increases the contractor's costs shall be subject to equitable adjustments by the procuring entity.
10. Defects. The Project Supervisor shall give notice to the contractor of any Defects before the end of the Defects Liability Period, which begins at Completion. The Defects Liability Period shall be extended for as long as Defects remain uncorrected. Every time notice of a Defect is given, the contractor shall correct the notified Defect within the length of time specified by the Project Supervisor's noticed. If the contractor has not corrected a Defect within the time specified by the Project Supervisor's notice, the Project Supervisor will assess the cost of having the Defect corrected, and the contractor will pay this amount, or the procuring entity shall recover these amounts by deduction from the amounts due to the contractor.
11. Program. Within seven (7) days of the written notification of award, the contractor shall submit to the Project Supervisor for approval a Program showing the general methods, arrangements, order, and timing for all activities of the works. The Project Supervisor's approval of the Program shall not alter the contractor's obligations. The contractor may revise the Program and submit it to the Project Supervisor again at any time. A revised Program will show the effect of Variations.
12. Changes in Quantities. The contractor shall carry out all the activities and complete them in accordance with the scope of work specified in the contract as part of the prices in the Bill of Quantities which shall not be subject to any changes. In the case of unit rate contracts no adjustment in the unit rate shall be made if the variation in quantity of each item does not exceed 25% of the initial estimated quantity. If the quantity exceeds 25% the Project Supervisor will determine if there is any justification to revise the unit price, based on information provided by the contractor, and will fix such rate as he deems appropriate with the approval of the procuring entity.

13. Payment Certificate. The Project Supervisor shall check the contractor's executed work and certify the amount to be paid to the contractor. The value of work executed shall comprise the value of completed items of work.
14. Payments. Payments shall be adjusted for deductions on account of mobilization payments and retention money. The procuring entity will make its best efforts to pay the contractor the amounts certified by the Project Supervisor within twenty (20 days of the date of each certificate.

*The Procuring Entity shall retain from each payment due to the Contractor the proportion of 10 percent (10%), up to a maximum of 5 percent (5%) of the Contract Price, until Practical Completion has being achieved. Upon achieving Practical Completion, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Procuring Entity's Representative (Project Manager) has certified that all Defects notified by the Procuring Entity's Representative (Project Manager) to the Contractor before the end of this period have been corrected.*

15. Mobilization Payment. The procuring entity may make mobilization payment to the contractor in the amount up to ten (10) percent of the contract Price after the contractor has provided any mobilization payment Bank Guarantee for an equal amount. The mobilization payment shall be repaid by deducting proportionate amounts from payments otherwise due to the contractor, to be recovered within one-half of the contract completion period.
16. Completion and Taking Over. The contractor shall request the Project Supervisor to issue a certificate of completion of the works, and the Project Supervisor will issue such a certificate when he determines that the work is satisfactorily completed. The procuring entity shall take possession of the site within seven (7) days of the Project Supervisor's issuing a certificate of completion of the works.
17. Final Account. The contractor shall supply the Project Supervisor with a detailed account of the total amount that the contractor considers payable under the contract before the end of the Defects Liability Period. The Project Supervisor shall issue a Defects Liability Certificate after the contractor has fulfilled its obligations under the contract to this end and certify any final payment that is due to the contractor within fifteen (15) days of receiving the contractor's account if it is correct and complete. If it is not, the Project Supervisor shall issue within fifteen (15) days a schedule that states the scope of the corrections or changes that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Supervisor shall decide on the amount payable to the contractor and issue a payment certificate.
18. Termination. The procuring entity or the contractor may terminate the contract if the either party causes a fundamental breach of the contract. Fundamental breaches of contract shall include, but shall not be limited to, the following:
    a. The contractor stops work for ten (10) days when the stoppage has not been authorized by the Project Supervisor;
    b. if the contractor, has engaged in fraud and corruption, as defined in Clause 2, in competing for or in executing the contract;
    c. a payment certified by the Project Supervisor is not paid by the procuring entity to the contractor within thirty (30) days of the date of the Project Supervisor's certificate;

d. the Project Supervisor gives notice that the contractor has failed to correct a Defect within twenty (20) days as determined by the Project Supervisor; and

e. the contractor has delayed the completion of the works by thirty (30) days.

Notwithstanding the above, the procuring entity may terminate the contract for its convenience by giving the contractor a thirty day notice in writing. If the contract is terminated, the contractor shall stop work immediately, make the Site safe and secure, and leave the Site within fifteen (15) days of the completion of the notice period.

19. Force Majeure: Either party may terminate the contract by giving thirty (30) days' notice to the other for events beyond that party's control, such as Wars and acts of God such as earthquakes, floods, fires, etc.

20. Payment Upon Termination. If the contract is terminated because of a fundamental breach of contract by the contractor, the Project Supervisor shall issue a certificate for the value of the work completed and for the materials already ordered less the mobilization payments received up to the date of the issue of the certificate. If the total amount due to the procuring entity exceeds any payment due to the contractor, the difference shall be a debt payable by the contractor to the procuring entity.

21. Property. All materials and construction equipment on the site, temporary works, and works shall be deemed to be the property of the procuring entity if the contract is terminated because of the contractor's default.

22. Resolution of Disputes. The procuring entity and the contractor shall make every effort to resolve amicably by direct negotiations any disagreement or dispute arising between them under or in connection with the contract. In case of further disagreement either party can take the matter to arbitration in accordance with the Law governing the contract. The place where arbitration will take place will be Jamaica.

**APPENDIX 1**

**Works Requirements**

The Contractor should note that the building will be occupied and that the hospital will be in operation throughout the period of works and the Contractor will be required to take all necessary precautions to protect the staff, patients and visitors.

**APPENDIX 2**

**Copy of the Contractor's Quotation**

## Section 5 Mobilization Payment Guarantee

### Demand Guarantee

*[The bank, as requested by the successful contractor, shall fill in this form in accordance with the instructions indicated on their own letterhead.]*

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

Ref No. and title: *[insert number and title of bidding process]*

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

**Beneficiary:** _____ *[Name and Address of* procuring entity*]*

**MOBILIZATION PAYMENT GUARANTEE No.:**_____

We have been informed that *[insert complete name and address of the contractor]* (hereinafter called "the contractor") has entered into contract No. *[insert number]* dated *[insert date]* with you, for the execution of *[insert name of contract and brief description of* works*]* (hereinafter called "the contract").

Furthermore, we understand that, according to the conditions of the contract, a mobilization payment is to be made against a mobilization payment guarantee.

At the request of the contractor, we *[insert name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[insert amount in figures] [insert amount in words]*[1] 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;

(a) has used the mobilization payment for purposes other than the costs of mobilization in respect of the works; or

(b) has failed to repay the mobilization payment in accordance with the contract conditions, specifying the amount which the Applicant has failed to repay.

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

The maximum amount of this guarantee shall be progressively reduced by the amount of the mobilization 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 *[insert day]* day of *[insert month], [insert year]*,[2] whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

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[1] *The Guarantor shall insert an amount representing the amount of the mobilization payment and denominated either in the currency(ies) of the mobilization payment as specified in the contract, or in a freely convertible currency acceptable to the procuring entity.*

[2] *Insert the expected expiration date of the Time for Completion. The procuring entity should note that in the event of an extension of the time for completion of the contract, the procuring entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the procuring entity 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 procuring entity's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.

_____

*[signature(s)]*

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