



Bid Documents

**MINISTRY OF INDUSTRY, COMMERCE,
AGRICULTURE AND FISHERIES
AGRICULTURAL COMPETITIVENESS PROGRAMME
BRIDGING PROJECT**

**CONSTRUCTION OF OFFICE FACILITIES AT
TOP MOUNTAIN RESEARCH STATION,
ST. ANDREW**

MICAF/ACPBP/MAY201905

DEADLINE for SUBMISSION JULY 12, 2019 at 10:00am

Government of Jamaica

STANDARD BIDDING DOCUMENTS

Procurement of Works (Local Competitive Bidding)

April 2010

Acronyms

BDS	Bid Data Sheet
CFR	Cost and Freight
CIF	Cost, Insurance and Freight
CIP	Carriage and Insurance Paid to (<i>named place of destination</i>)
CPM	Critical Path Method
CPT	Carriage Paid to
CV	Curriculum Vitae
DAF	Delivery at Frontier
DDP	Delivered Duty Paid (<i>named place of destination</i>)
DDU	Delivered Duty Unpaid
DES	Delivered Ex Ship
DEQ	Delivered Ex Quay
EXW	Ex factory, ex works or ex warehouse
FAS	Free alongside Ship
FCA	Free Carrier
FIDIC	Fédération Internationale des Ingénieurs Conseils (International Federation of Consulting Engineers)
FOB	Free on Board
GCC	General Conditions of Contract
GOJ	Government of Jamaica
ICC	International Chamber of Commerce
IFB	Invitation for Bids
ITB	Instructions to Bidders
OT	Open Tender
SBD	Standard Bidding Document
SCC	Special Conditions of Contract
TS	Technical Specifications and Drawings
UNCITRAL	United Nations Commission on International Trade Law
UNDP	United Nation Development Programme

Glossary

Procuring Entity	One of the two parties to a works contract, the other party being the “Contractor.”
Contractor	The legal entity that is party to and performs a works contract, the other party to the contract being the “Procuring Entity.”
joint venture	An ad hoc association of firms that pool their resources and skills to undertake a large or complex contract in the role of “Contractor,” with all firms (partners in the JV) being legally liable, jointly and severally, for the execution of the contract in the event of a partner’s withdrawal.
management contractor	A firm, acting in the role of “Contractor,” that does not normally perform contract construction work directly, but manages the work of other (sub) contractors, while bearing full responsibility and risk for price, quality, and timely performance of the work contract.
construction manager	A consultant, acting as agent of the Procuring Entity, engaged to coordinate and monitor the timing of preparation, bidding award, and execution of a number of different contracts comprising a project, but does not take on the responsibility for price, quality, or performance of those contracts.
nominated	A specialist enterprise selected and approved by the Procuring Entity to
subcontractor	provide pre-specified works included in the Bill of Quantities and nominated as subcontractor to the main Contractor for such purpose.
Post-qualification	An assessment made by the Procuring Entity after the evaluation of bids and immediately prior to award of contract, to ensure that the lowest responsive, Bidder is qualified to perform the contract in accordance with previously specified prequalification requirements.
prequalification	An assessment made by the Procuring Entity before inviting bids, of the appropriate level of experience and capacity of firms expressing interest in undertaking a particular contract, before inviting them to bid.

prime contractor	A firm that performs a substantial part of a contract construction work itself and the balance, if any, by subcontractors, while bearing full responsibility for the whole contract.
provisional sum	A sum included provisionally in the Bill of Quantities of a contract, normally for a specialized part of the Works or for contingencies, which sum shall be used only on the instructions of the Procuring Entity/Engineer for payments to the contractor and/or to nominated subcontractors.
slice and package”	A procedure whereby a large homogeneous project is sliced into smaller similar contracts, which are bid simultaneously so as to attract the interest of both small and large firms; firms offer bids on individual contracts (slices) or on a group of similar contracts (packages), and award is made to the combination of bids offering the lowest cost to the Procuring Entity. Slices comprising a number of similar construction units together in a small area are sometimes referred to as “lots,” which are bid concurrently with other similar “lots” as part of the larger “package.
turnover	The gross earnings of a firm (in this context, a construction contractor), defined as the billings for contract work in progress and/or completed, normally expressed on an annual basis, and excluding income from other sources.
Works	The total work involvement in a construction contract, including the “Permanent” Works or finished product as specified, and the “Temporary” Works required in by the Contractor for the execution and completion of the contract.
In writing	For the purpose of this document, means authenticated handwritten, typed, or printed; a document prepared in writing can be transmitted by telex, electronic mail, facsimile, with proof of receipt; and in the form requested by the sender.

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**MINISTRY OF INDUSTRY, COMMERCE, AGRICULTURE AND FISHERIES/
AGRICULTURAL COMPETITIVENESS PROGRAMME BRIDGING PROJECT
FINANCING MODALITY: GOVERNMENT OF JAMAICA**

REQUEST FOR QUOTATIONS (RFQ)

The Government of Jamaica (GOJ) has identified funding to assist in furthering the development of the agro-park initiative which is being led by the Ministry of Industry, Commerce, Agriculture and Fisheries (MICAF) through the **Agricultural Competitiveness Programme Bridging Project (ACPBP)**. The general objective of the Programme is to support the efforts of the Government in restoring the competitiveness of the agricultural sector through the implementation of activities aimed at promoting market access by small and medium sized farmers and the stimulation of private sector investments within the agricultural sector. The Ministry of Industry, Commerce, Agriculture and Fisheries/Agricultural Competitiveness Programme Bridging Project, now invites quotations from eligible bidders for;

Construction of Office Facilities - Top Mountain Research Station, St. Andrew

Bidding will be conducted through Local Competitive Bidding (LCB) Procedures as specified in the Government of Jamaica procurement policies for the procurement of works and may obtain further information from the Agricultural Competitiveness Programme Bridging Project at email acpbpexecsec@micaf.gov.jm

Firms must present the following as part of their submission:

1. A Valid Tax Compliance Certificate
2. A Valid National Contracts Commission (NCC) Registration in any of the following; **Building Construction Grade 2 or 3**
3. Bid security in the amount of \$250,000.00

Bidding documents will be made available as of June 12, 2019 at www.micaf.gov.jm

Contact Information: The Procurement Officer, acpbpexecsec@micaf.gov.jm

Bid Validity Period: 90 days

Bids must be labelled “**CONSTRUCTION OF OFFICE FACILITIES AT TOP MOUNTAIN RESEARCH STATION, ST ANDREW**” and must be deposited by or before **10:00 am July 12, 2019** in the tender box located in the Conference Room at the following address:

**MINISTRY OF INDUSTRY, COMMERCE, AGRICULTURE & FISHERIES
FACILITIES AND PROPERTIES MANAGEMENT CONFERENCE ROOM
HOPE GARDENS, KINGSTON 6**

Bids will be opened at 10:15 am on July 12, 2019 at the above address.

The Agricultural Competitiveness Programme, Bridging Project (ACPBP) reserves the right to accept or reject any tenders or to abandon the tender process without any explanation to prospective bidders.

All tenderers or their representatives are invited to attend the tender opening.

Volume - 1 Standard Bidding Document

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Section 1. Instructions to Bidders

A. General

- 1. Scope of Bid**
- 1.1 The Procuring Entity as defined in Section 2, Conditions of Contract, and as specified in the Contract Data, invites bids for the construction of Works, as described in the Contract Data. The name and identification number of the Contract is provided in the Contract Data.
- 1.2 The successful Bidder will be expected to complete the Works by the Intended Completion Date specified in the Contract Data.
- 2. Source of Funds**
- 2.1 The Procuring Entity has committed funds toward the cost of the project and intends to apply a portion of the funds to eligible payments under the contract;
- 3. Eligible Bidders**
- 3.1 All bidders shall provide in Section 3, Forms of Bid and Qualification Information, a statement that the Bidder (including all members of a joint venture and subcontractors) is not associated, nor has been associated in the past, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Procuring Entity to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to bid.
- 3.2 Government-owned and majority public-owned enterprises from the Procuring Entity country may only participate if they are legally, managerially and financially autonomous, operate under commercial law and are not a dependent agency of the Procuring Entity.
- 3.3 In accordance with the Government of Jamaica Handbook of Public Sector Procurement Procedures November, 2008 (<http://www.mof.gov.jm>) the Bidder shall have to demonstrate that they have paid such taxes, duties, fees and other impositions as may be levied in Jamaica.
- 3.4 Where deemed necessary, the bidders should be registered with the National Contracts Commission “Registry of Public Sector Contractors” (<http://www.ncc.gov.jm>).
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4. Qualification of the Bidder

- 4.1 All bidders shall provide in Section 3, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.
- 4.2 In the event that prequalification of potential bidders has been undertaken, only bids from pre-qualified bidders will be considered for award of Contract. These qualified bidders should submit with their bids any information updating their original prequalification applications or, alternatively, confirm in their bids that the originally-submitted prequalification information remains essentially correct as of the date of bid submission. The update or confirmation should be provided in Section 3.
- 4.3 If the Procuring Entity has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 3, unless otherwise stated in the Bidding Data:
- (a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder;
 - (b) total monetary value of construction work performed for each of the last three years;
 - (c) experience in works of a similar nature and size for each of the last three years, and details of work under way or contractually committed; and clients who may be contacted for further information on those contracts;
 - (d) major items of construction equipment proposed to carry out the Contract;
 - (e) qualifications and experience of key site management and technical personnel proposed for the Contract;
 - (f) reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past three years;
 - (g) evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);

- (h) authority to seek references from the Bidder's bankers;
- (i) information regarding any litigation, current or during the last three years, in which the Bidder is involved, the parties concerned, and disputed amount. [*N.B. The Procuring Entity reserves the right not to award a contract to any party with whom it is currently in litigation or with whom it has been previously involved in litigation*]; and
- (j) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.

4.4 Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated in the Bidding Data:

- (a) the Bid shall include all the information listed in Sub-Clause 4.3 above for each joint venture partner;
- (b) the Bid shall be signed so as to be legally binding on all partners;
- (c) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
- (d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
- (e) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

4.5 To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria:

- (a) annual volume of construction work of at least the amount specified in the Bidding Data;
 - (b) experience as prime contractor in the construction of at least two works of a nature and complexity equivalent to the Works over the last 5 years (to comply with this requirement, works cited should be at least 70 percent complete);
 - (c) proposals for the timely acquisition (own, lease, hire,
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etc.) of the essential equipment listed in the Bidding Data;

- (d) a Contract Manager with three years' experience in works of an equivalent nature and volume, including no less than one years as Manager; and
- (e) liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than the amount specified in the Bidding Data.

A consistent history of litigation or arbitration awards against the Applicant or any partner of a Joint Venture may result in disqualification.

4.6 The figures for each of the partners of a joint venture shall be added together to determine the Bidder's compliance with the minimum qualifying criteria of Sub-Clause 4.5(a) and (e); however, for a joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 4.5(a), (b), and (e) for an individual Bidder, and the partner in charge at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's Bid. Subcontractors' experience and resources will not be taken into account in determining the Bidder's compliance with the qualifying criteria, unless otherwise stated in the Bidding Data.

5. One Bid per Bidder

5.1 Each Bidder shall submit only one Bid, either individually or as a partner in a joint venture. A Bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

6. Cost of Bidding

6.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Procuring Entity will in no case be responsible or liable for those costs.

7. Site Visit

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

B. Bidding Documents

8. Content of Bidding Documents

8.1 The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 10:

Volume 1

Section	1	Instructions to Bidders
	2	Conditions of Contract
	3	Forms of Bid and Qualification
	4	Forms of Securities

Volume 2

Section	5	Bidding Data
	6	Contract Data
	7	Specifications
	8	Drawings
	9	Bill of Quantities or Activity Schedule for lump sum contracts

8.2 The number of copies to be completed and returned with the Bid is specified in the Bidding Data.

9. Clarification of Bidding Documents

9.1 A prospective Bidder requiring any clarification of the bidding documents may notify the Procuring Entity in writing or by cable (“cable” includes telex and facsimile) at the Procuring Entity’s address indicated in the invitation to bid. The Procuring Entity will respond to any request for clarification received earlier than 14 days prior to the deadline for submission of bids. Copies of the Procuring Entity’s response will be forwarded to all purchasers of the bidding documents, including a description of the inquiry, but without identifying its source.

10. Amendment of Bidding Documents

10.1 Before the deadline for submission of bids, the Procuring Entity may modify the bidding documents by issuing addenda.

10.2 Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing or by cable to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by cable to the Procuring Entity.

10.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Procuring Entity shall extend, as necessary, the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

C. Preparation of Bids

- 11. Language of Bid** 11.1 All documents relating to the Bid shall be in the language specified in the Contract Data.
- 12. Documents Comprising the Bid** 12.1 The Bid submitted by the Bidder shall comprise the following:
- (a) The Bid (in the format indicated in Section 3);
 - (b) Bid Security;
 - (c) priced Bill of Quantities or priced Activity Schedule;
 - (d) Qualification Information Form and Documents;
 - (e) Alternative offers where invited;
- and any other materials required to be completed and submitted by bidders, as specified in the Bidding Data.
- 13. Bid Prices** 13.1 The Contract shall be for the whole Works, as described in Sub-Clause 1.1, based on the priced Bill of Quantities/priced Activity Schedule for lump sum contracts submitted by the Bidder. The type of contract (Unit Price or Lump Sum) shall be specified in the Bidding Data.
- 13.2 The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities (for lump sum contracts, described in the drawings and specifications and listed in the Activity Schedule). 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/Activity Schedule.
- 13.3 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates, prices, and total Bid price submitted by the Bidder (for lump sum contracts, "the rates and prices" are not applicable).
- 14. Currency of Bid and Payment** 14.1 The unit rates and prices (or the lump sum price for lump-sum contracts) shall be quoted by the Bidder entirely in the currency of the Procuring Entity's country specified in the Bidding Data.

- 15. Bid Validity**
- 15.1 Bids shall remain valid for the period specified in the Bidding Data.
- 15.2 In exceptional circumstances, the Procuring Entity may request that the bidders extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing. A Bidder may refuse the request without forfeiting the Bid Security. A Bidder agreeing to the request will not be required or permitted to otherwise modify the Bid, but will be required to extend the validity of Bid Security for the period of the extension, and in compliance with Clause 16 in all respects.
- 16. Bid Security**
- 16.1 The Bidder shall furnish, as part of the Bid, a Bid Security in local currency in the amount specified in the Bidding Data.
- 16.2 The Bid Security shall, at the Bidder's option, be in the form of a certified check, bank draft, standby letter of credit, or guarantee from a local bank which has been determined by the Bidder to be acceptable to the Procuring Entity. The format of the Bid Security should be in accordance with the form of Bid Security included in Section 4 or another form acceptable to the Procuring Entity.
- 16.3 Any Bid not accompanied by an acceptable Bid Security shall be rejected by the Procuring Entity. The bid security of a joint venture must define a "bidder" as all joint venture partners and list them in the following manner: a joint venture consisting of "_____", "_____", and "_____".
- 16.4 The Bid Security of unsuccessful bidders will be returned within 28 days of the end of the Bid validity period specified in Sub-Clause 15.1.
- 16.5 The Bid Security of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security.
- 16.6 The Bid Security may be forfeited
- (a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity;
 - (b) if the Bidder does not accept the correction of the Bid price, pursuant to Clause 27; or
-

- (c) in the case of a successful Bidder, if the Bidder fails within the specified time limit to
 - (i) sign the Agreement; or
 - (ii) furnish the required Performance Security.

17. Alternative Proposals by Bidders

17.1 Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic technical design as indicated in the drawings and specifications. Alternatives will not be considered, unless specifically allowed in the Bidding Data.

18. Format and Signing of Bid

18.1 The Bidder shall prepare one original of the documents comprising the Bid as described in Clause 12 of these Instructions to Bidders, bound with the volume containing the Form of Bid, and clearly marked "ORIGINAL". In addition, the Bidder shall submit copies of the Bid, in the number specified in the Bidding Data, and clearly marked as "COPIES". In the event of discrepancy between them, the original shall prevail.

18.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-Clauses 4.3(a) or 4.4(b), as the case may be. All pages of the Bid where entries or amendments have been made shall be initialed by the person or persons signing the Bid.

18.3 The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Procuring Entity, or as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

18.4 The Bidder shall furnish information as described in the Form of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid, and to contract execution if the Bidder is awarded the contract.

D. Submission of Bids

19. Sealing and Marking of Bids

19.1 The Bidder shall seal the original and all copies of the Bid in two inner envelopes and one outer envelope, duly marking the inner envelopes as “ORIGINAL” and “COPIES”.

19.2 The inner and outer envelopes shall

- (a) be addressed to the Procuring Entity at the address provided in the Bidding Data;
- (b) bear the name and identification number of the Contract as defined in the Bidding and Contract Data; and
- (c) provide a warning not to open before the specified time and date for Bid opening as defined in the Bidding Data.

19.3 In addition to the identification required in Sub-Clause 19.2, the inner envelopes shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late, pursuant to Clause 21.

19.4 If the outer envelope is not sealed and marked as above, the Procuring Entity will assume no responsibility for the misplacement or premature opening of the Bid.

20. Deadline for Submission of Bids

20.1 Bids shall be delivered to the Procuring Entity at the address specified in Clause 19.2 (a) above no later than the time and date specified in the Bidding Data.

20.2 The Procuring Entity may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Procuring Entity and the bidders previously subject to the original deadline will then be subject to the new deadline.

21. Late Bids

21.1 Any Bid received by the Procuring Entity after the deadline prescribed in Clause 20 will be returned unopened to the Bidder.

22. Modification and Withdrawal of Bids

22.1 Bidders may modify or withdraw their bids by giving notice in writing before the deadline prescribed in Clause 20.

22.2 Each Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clauses 18 and 19, with the outer and inner envelopes additionally marked “MODIFICATION” or “WITHDRAWAL”, as appropriate.

22.3 No Bid may be modified after the deadline for submission of Bids.

22.4 Withdrawal of a Bid between the deadline for submission of bids and the expiration of the period of Bid validity specified in the Bidding Data or as extended pursuant to Sub-Clause 15.2 may result in the forfeiture of the Bid Security pursuant to Clause 16.

22.5 Bidders may only offer discounts to, or otherwise modify the prices of their bids by submitting Bid modifications in accordance with this clause, or included in the original Bid submission.

E. Bid Opening and Evaluation

23. Bid Opening 23.1 The Procuring Entity will open the bids, including modifications made pursuant to Clause 22, in the presence of the bidders' representatives who choose to attend at the time and in the place specified in the Bidding Data.

23.2 The bidders' names, the Bid prices, the total amount of each Bid and of any alternative Bid (if alternatives have been requested or permitted), any discounts, Bid modifications and withdrawals, the presence or absence of Bid Security, and such other details as the Procuring Entity may consider appropriate, will be announced by the Procuring Entity at the opening.

23.3 The Procuring Entity will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.2.

24. Process to Be Confidential 24.1 Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Procuring Entity's processing of bids or award decisions may result in the rejection of his Bid.

25. Clarification of Bids and Contacting the Procuring Entity 25.1 To assist in the examination, evaluation, and comparison of bids, the Procuring Entity may, at the Procuring Entity's discretion, ask any Bidder for clarification of the Bidder's Bid, including breakdowns of unit rates (or the prices in the

Activity Schedule for lump-sum contracts). The request for clarification and the response shall be in writing or by cable, telex, or facsimile, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the bids in accordance with Clause 27.

25.2 From the time of bid opening to the time of contract award, if any bidder wishes to contact the Procuring Entity on any matter related to the bid, it should do so in writing.

25.3 Any effort by the Bidder to influence the Procuring Entity in the Procuring Entity's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

26. Examination of Bids

26.1 Prior to the detailed evaluation of bids, the Procuring Entity will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the bidding documents.

26.2 A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the bidding documents, the Procuring Entity's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3 If a Bid is not substantially responsive, it will be rejected by the Procuring Entity, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

27. Correction of Errors

27.1 Bids determined to be substantially responsive will be checked by the Procuring Entity for any arithmetic errors. Errors will be corrected by the Procuring Entity as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and

the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Procuring Entity there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern, and the unit rate will be corrected.

27.2 The amount stated in the Bid will be adjusted by the Procuring Entity in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Bid Security may be forfeited in accordance with Sub-Clause 16.6(b).

28. Evaluation and Comparison of Bids

28.1 The Procuring Entity will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 26.

28.2 In evaluating the bids, the Procuring Entity will determine for each Bid the evaluated Bid price by adjusting the Bid price as follows:

- (a) making any correction for errors pursuant to Clause 27;
- (b) excluding provisional sums and the provision, if any, for contingencies in the Bill of Quantities (or Activity Schedule for lump sum contracts), but including Daywork, where priced competitively;
- (c) making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with Clause 17; and
- (d) making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub-Clause 22.5.

28.3 The Procuring Entity reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the bidding documents or otherwise result in unsolicited benefits for the Procuring Entity will not be taken into account in Bid evaluation.

F. Award of Contract

29. Award Criteria 29.1 Subject to Clause 30, the Procuring Entity will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest responsive bid price, provided that such Bidder has been determined to be (a) eligible in accordance with the provisions of Clause 3, and (b) qualified in accordance with the provisions of Clause 4.

30. Procuring Entity's Right to Accept any Bid and to Reject any or all Bids 30.1 Notwithstanding Clause 29, the Procuring Entity reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Procuring Entity's action.

N.B. The Procuring Entity reserves the right not to award a contract to any party with whom it is currently in litigation or with whom it has been previously involved in litigation.

31. Notification of Award and Signing of Agreement 31.1 The Bidder whose Bid has been accepted will be notified of the award by the Procuring Entity prior to expiration of the Bid validity period by cable, telex, or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Procuring Entity will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

31.2 The notification of award will constitute the formation of the Contract, subject to the Bidder furnishing the Performance Security in accordance with Clause 32 and signing the Agreement in accordance with Sub-Clause 31.3.

31.3 The Agreement will incorporate all agreements between the Procuring Entity and the successful Bidder. It will be signed by the Procuring Entity and sent to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 28 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Procuring Entity.

31.4 Upon the furnishing by the successful Bidder of the Performance Security, the Procuring Entity will promptly

notify the other bidders that their bids have been unsuccessful.

32. Performance Security

32.1 Within 28 days after receipt of the Letter of Acceptance the successful Bidder shall deliver to the Procuring Entity a Performance Security in the amount stipulated in the Contract Data and in the form stipulated in the Bidding Data.

32.2 If the Performance Security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued by a local bank.

32.3 Failure of the successful Bidder to comply with the requirements of Sub-Clause 32.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

33. Advance Payment and Security

33.1 The Procuring Entity will provide an Advance Payment on the Contract price as stipulated in the Conditions of Contract, subject to a maximum amount, as stated in the Bidding Data.

34. Corrupt or Fraudulent Practices

34.1 Government of Jamaica requires that Bidders, Suppliers, Contractors, and Consultants, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, GOJ:

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and

(ii) “fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract, to the detriment of Government of Jamaica and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive Government of the benefits of free and open competition;

(iii) “collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Procuring Entity, designed to establish bid prices at artificial non-competitive levels or to influence the action of any party in the procurement process or the execution of a

contract; and

(iv) “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;

(b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a GOJ-financed contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a GOJ-financed contract.

Section II. Conditions of Contract

- 1. Definitions** **1.1** Terms that are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Boldface type is used to identify defined terms.

Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.

Compensation Events are those defined in Clause 42 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with Sub-Clause 52.1.

The **Contract** is the Contract between the Procuring Entity and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.3 below.

The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Procuring Entity.

The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Procuring Entity.

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

Dayworks are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

Days are calendar days; **months** are calendar months.

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

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

Drawings include calculations and other information provided or approved by the Project Manager for the

execution of the Contract.

The **Procuring Entity** is the party who employs the Contractor to carry out the Works.

The **Project Manager** is the person named in the Contract Data (or any other competent person appointed by the Procuring Entity and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.

Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract Price** is the Contract Price listed in the Procuring Entity's Letter of Acceptance.

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

Materials are all supplies, including consumable, used by the Contractor for incorporation in the Works.

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

The **Site** is the area defined as such in the Contract Data.

Site Investigation Reports are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.

Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.

The **Start Date** is given in the Contract Data. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a

Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.

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

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

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Procuring Entity, as defined in the Contract Data.

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| 2. Interpretation | <p>2.1 The documents forming the Contract shall be interpreted in the following order of priority:</p> <ol style="list-style-type: none"> (1) Agreement, (2) Letter of Acceptance, (3) Contractor's Bid, (4) Contract Data, (5) Conditions of Contract, (6) Specifications, (7) Drawings, (8) Bill of Quantities or Activity Schedule and (9) any other document listed in the Contract Data as forming part of the Contract. |
| 3. Language and Law | <p>3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.</p> |
| 4. Project Manager's Decisions | <p>4.1 Except where otherwise specifically stated, the Project Manager will decide contractual matters between the Procuring Entity and the Contractor in the role representing the Procuring Entity.</p> |
| 5. Delegation | <p>5.1 The Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.</p> |
| 6. Communications | <p>6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.</p> |
| 7. Subcontracting | <p>7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Procuring Entity in writing. Subcontracting shall not alter the Contractor's obligations.</p> |
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- 8. Other Contractors**
- 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Procuring Entity between the dates given in the Schedule of Other Contractors, as referred to in the Contract Data. The Contractor shall also provide facilities and services for them as described in the Schedule. The Procuring Entity may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.
- 9. Personnel**
- 9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the Contract Data, to carry out the functions stated in the Schedule or other personnel approved by the Project Manager. The Project Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Schedule.
- 9.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.
- 10. Procuring Entity's and Contractor's Risks**
- 10.1 The Procuring Entity carries the risks which this Contract states are Procuring Entity's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.
- 11. Procuring Entity's Risks**
- 11.1 From the Start Date until the Defects Correction Certificate has been issued, the following are Procuring Entity's risks:
- (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to
 - (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or
 - (ii) negligence, breach of statutory duty, or interference with any legal right by the Procuring Entity or by any person employed by or contracted to him except the Contractor.
 - (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the

Procuring Entity or in the Procuring Entity's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

11.2 From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Procuring Entity's risk except loss or damage due to

- (a) a Defect which existed on the Completion Date,
- (b) an event occurring before the Completion Date, which was not itself an Procuring Entity's risk, or
- (c) the activities of the Contractor on the Site after the Completion Date.

**12.
Contractor's
Risks**

12.1 From the Starting Date until the Defects Correction Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Procuring Entity's risks are Contractor's risks.

13. Insurance

13.1 The Contractor shall provide, in the joint names of the Procuring Entity and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks:

- (a) loss of or damage to the Works, Plant, and Materials;
- (b) loss of or damage to Equipment;
- (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
- (d) personal injury or death.

13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.

13.3 If the Contractor does not provide any of the policies and certificates required, the Procuring Entity may effect the insurance which the Contractor should have provided and

recover the premiums the Procuring Entity has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

13.4 Alterations to the terms of insurance shall not be made without the approval of the Project Manager.

13.5 Both parties shall comply with any conditions of the insurance policies.

14. Site Investigation Reports

14.1 The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the Contract Data, supplemented by any information available to the Bidder.

15. Queries about the Contract Data

15.1 The Project Manager will clarify queries on the Contract Data.

16. Contractor to Construct the Works

16.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.

17. The Works to Be Completed by the Intended Completion Date

17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.

18. Approval by the Project Manager

18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, who is to approve them if they comply with the Specifications and Drawings.

18.2 The Contractor shall be responsible for design of Temporary Works.

18.3 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary Works.

18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.

18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.

19. Safety

19.1 The Contractor shall be responsible for the safety of all

actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.

26.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted.

26.4 The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.

27. Extension of the Intended Completion Date

27.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.

27.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

28. Acceleration

28.1 When the Procuring Entity wants the Contractor to finish before the Intended Completion Date, the Project Manager will obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Procuring Entity accepts these proposals, the Intended Completion Date will be adjusted accordingly and confirmed by both the Procuring Entity and the Contractor.

28.2 If the Contractor's priced proposals for an acceleration are accepted by the Procuring Entity, they are incorporated in the Contract Price and treated as a Variation.

29. Delays

29.1 The Project Manager may instruct the Contractor to delay the

Ordered by the Project Manager	start or progress of any activity within the Works.
30. Early Warning	<p>30.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.</p> <p>30.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager.</p>

C. Quality Control

31. Identifying Defects	31.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.
32. Tests	32.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.
33. Correction of Defects	<p>33.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.</p> <p>33.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.</p>
34. Uncorrected	34.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager

Defects

will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

D. Cost Control

- 35. Bill of Quantities**
- 35.1 The Bill of Quantities (for lump sum contracts entire Clause 37 shall be replaced with a new Clause as indicated in Contract Data) shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.
- 35.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.
- 36. Changes in the Quantities**
- 36.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent (25%), provided the change exceeds one percent (1%) of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. (For lump-sum contracts, this clause shall be substituted by a new clause as indicated in Contract Data).
- 36.2 The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Procuring Entity.
- 36.3 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.
- 37. Variations**
- 37.1 All Variations shall be included in updated Programs or Activity Schedules produced by the Contractor.
- 38. Payments for Variations**
- 38.1 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.
- 38.2 If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 37.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the
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relevant items of work. (For lump sum contracts, this clause shall be deleted as indicated in Contract Data).

38.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.

38.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.

38.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

39. Payment Certificates

39.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.

39.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.

39.3 The value of work executed shall be determined by the Project Manager.

39.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed. (For lump sum contracts, this Clause shall be substituted by a new Clause as indicated in the Contract Data).

39.5 The value of work executed shall include the valuation of Variations and Compensation Events.

39.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

40. Payments

40.1 Payments shall be adjusted for deductions for advance payments and retention. The Procuring Entity shall pay the Contractor the amounts certified by the Project Manager within 28 days of the date of each certificate. If the Procuring Entity makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment

should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.

40.2 If an amount certified is increased in a later certificate or as a result of an award by Arbitration, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.

40.3 Unless otherwise stated, all payments and deductions will be paid or charged in the proportions of currencies comprising the Contract Price.

40.4 Items of the Works for which no rate or price has been entered in will not be paid for by the Procuring Entity and shall be deemed covered by other rates and prices in the Contract.

41. Compensation Events

41.1 The following shall be Compensation Events:

- (a) The Procuring Entity does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.
 - (b) The Procuring Entity modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.
 - (c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.
 - (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.
 - (e) The Project Manager unreasonably does not approve a subcontract to be let.
 - (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.
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- (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Procuring Entity, or additional work required for safety or other reasons.
- (h) Other contractors, public authorities, utilities, or the Procuring Entity does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (i) The advance payment is delayed.
- (j) The effects on the Contractor of any of the Procuring Entity's Risks.
- (k) The Project Manager unreasonably delays issuing a Certificate of Completion.
- (l) Other Compensation Events described in the Contract or determined by the Project Manager shall apply.

41.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

41.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.

41.4 The Contractor shall not be entitled to compensation to the extent that the Procuring Entity's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.

42. Taxes

42.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 28 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected

in the Contract Price or are a result of Clause 43.

43. Price Adjustment

43.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Contract Data. If so provided, the amounts certified in each payment certificate shall be adjusted by applying the respective price adjustment factor to the payment amounts. A formula of the type indicated below applies:

$$P = A + B \quad I_{mc} / I_{oc}$$

Where

P is the adjustment factor for the portion of the Contract Price.

A and B are coefficients specified in the Contract Data, representing the nonadjustable and adjustable portions, respectively, of the Contract Price; and

I_{mc} is the index prevailing at the end of the month being invoiced and I_{oc} is the index prevailing 28 days before Bid opening for inputs payable.

Note: The sum of the two coefficients A and B should be 1 (one) in the formula.

43.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.

44. Retention

44.1 The Procuring Entity shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.

44.2 On Completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected.

44.3 On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee.

45. Liquidated Damages

45.1 The Contractor shall pay liquidated damages to the Procuring Entity at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended

Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Procuring Entity may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

45.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in Sub-Clause 41.1.

46. Bonus

46.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the Contract Data for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.

47. Advance Payment

47.1 The Procuring Entity shall make advance payment to the Contractor of the amounts stated in the Contract Data by the date stated in the Contract Data, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Procuring Entity in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on the advance payment.

47.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.

47.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation

Events, Bonuses, or Liquidated Damages.

- 48. Securities** 48.1 The Performance Security shall be provided to the Procuring Entity no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Procuring Entity. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee.
- 49. Dayworks** 49.1 If applicable, the Dayworks rates in the Contractor's Bid shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.
- 49.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.
- 49.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.
- 50. Cost of Repairs** 50.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. Finishing the Contract

- 51. Completion** 51.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager will do so upon deciding that the work is completed.
- 52. Taking Over** 52.1 The Procuring Entity shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.
- 53. Final Account** 53.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 days a schedule that

states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.

54. Operating and Maintenance Manuals

54.1 If “as built” Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

54.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Project Manager’s approval, the Project Manager shall withhold the amount stated in the Contract Data from payments due to the Contractor.

55. Termination

55.1 The Procuring Entity or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

55.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- (a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;
- (b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;
- (c) the Procuring Entity or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (d) a payment certified by the Project Manager is not paid by the Procuring Entity to the Contractor within 84 days of the date of the Project Manager’s certificate;
- (e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
- (f) the Contractor does not maintain a Security, which is required; and

- (g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the Contract Data.
- (h) If the Contractor, in the judgment of the Procuring Entity, has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this paragraph:

“corrupt practice” means offering, giving, receiving or soliciting directly or indirectly of any thing of value to influence the action of a public official in the procurement process or in contract execution;

“fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract to the detriment of the Government of Jamaica, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition.

55.3 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under Sub-Clause 55.2 above, the Project Manager shall decide whether the breach is fundamental or not.

55.4 Notwithstanding the above, the Procuring Entity may terminate the Contract for convenience.

55.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

56. Payment upon Termination

56.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Procuring Entity exceeds any payment due to the Contractor, the difference shall be a debt payable to the Procuring Entity.

56.2 If the Contract is terminated for the Procuring Entity's

convenience or because of a fundamental breach of Contract by the Procuring Entity, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

57. Property

57.1 All Materials on the Site, Plant, 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.

**58. Release
from
Performance**

58.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Procuring Entity or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

Section III. Forms of Bid and Qualification Information and Letter of Acceptance

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Standard Form: Contractor's Bid

_____ [date]

To: _____ [name of Procuring
Entity]

Address: _____ [insert
address]

We offer to execute the _____ [name and identification number of
Contract] in accordance with the Conditions of Contract accompanying this Bid for
the Contract Price of _____ [amount in words and numbers]
(_____) [name of currency]
_____).

The advance payment required is: [insert amount and currency]

This Bid and your written acceptance of it shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby confirm that this Bid complies with the Bid validity and Bid Security required by the bidding documents and specified in the Bidding Data.

Authorized Signature:-

Name and Title of Signatory:

Name of Bidder:

Address:

*Note: Include the paragraph below in the Contractor's bid **ONLY** if the Procuring Entity has allowed the bidders to state their foreign currency requirements. Otherwise this paragraph should be deleted..*

The Contract shall be paid in the following currencies:

Currency	Percentage payable in currency	Rate of exchange: one foreign equals <i>[insert local]</i> (delete if no foreign currency is permitted) ₁	Inputs for which foreign currency is required (delete if no foreign currency is permitted)
(a) _____ _____ _____	_____ _____ _____	_____ _____ _____	_____ _____ _____ _____ _____

Standard Form: Qualification Information

1. Individual Bidders or Individual Members of Joint Ventures

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

Place of registration

Principal place of business:

Power of attorney of signatory of Bid *[attach]*

1.2 Total annual volume of construction 20 **NOT APPLICABLE**

work performed in three years, in 20 _____

local currency 20 _____

1.3 Work performed as prime Contractor on works of a similar nature and volume over the last three years. The values should be indicated in the same currency used for Item 1.2 above. Also list details of work under way or committed, including expected completion date.

Project name and country	Name of client and contact person	Type of work performed and year of completion	Value of contract
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>			

- 1.4 Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Sub-Clause 4.3(d) of the Instructions to Bidders. **NOT APPLICABLE**

Item of equipment	Description, make, and age (years)	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased (from whom?)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

- 1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data. Refer also to Sub-Clause 4.3(e) of the Instructions to Bidders and Sub-Clause 9.1 of the Conditions of Contract.

Position	Name	Years of experience (general)	Years of experience in proposed position
Project Manager	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>	_____	_____	_____
	_____	_____	_____

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

Sections of the Works	Value of subcontract	Subcontractor (name and address)	Experience in similar work
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

1.7 Financial reports for the last three years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

NOT APPLICABLE

1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents.

1.9 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Procuring Entity.

1.10 Information on current litigation⁴⁴ in which the Bidder is involved.

⁴⁴ *N.B. [The Procuring Entity reserves the right not to award a contract to any party with*

Other party(ies)	Cause of dispute	Amount involved
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

1.11 Statement of compliance with the requirements of Sub-Clause 3.1 of the Instructions to Bidders.

1.12 Proposed Program (work method and schedule). Descriptions, drawings, and charts, as necessary, to comply with the requirements of the bidding documents.

2. Joint Ventures

2.1 The information listed in 1.1 - 1.11 above shall be provided for each partner of the joint venture.

2.2 The information in 1.12 above shall be provided for the joint venture.

2.3 Attach the power of attorney of the signatory(ies) of the Bid authorizing signature of the Bid on behalf of the joint venture.

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

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

whom it is currently in litigation or with whom it has been previously involved in litigation]

3. Additional Requirements

- 3.1** Bidders should provide any additional information required in the Bidding Data or to fulfill the requirements of Sub-Clause 4.1.

Standard Form: Letter of Acceptance
[letterhead paper of the Procuring Entity]

_____ [date]

To: _____
[name of the Contractor]

[address of the Contractor]

This is to notify you that your Bid dated _____ for execution of the _____ *[name of the Contract and identification number, as given in the Contract Data]* for the Contract Price of the equivalent¹ of _____ (*[amount in numbers and words]* _____ *[name of currency]*), as corrected and modified² in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are hereby instructed to proceed with the execution of the said Works in accordance with the Contract documents.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Agreement

Standard Form: Agreement

AGREEMENT

This Agreement, made the _____ day of _____
20_____, between

_____ [name and address of Procuring
Entity] (hereinafter called "the Procuring Entity") and

_____ [name and address of Contractor] (hereinafter called "the Contractor") of the other
part.

Whereas the Procuring Entity is desirous that the Contractor execute
_____ [name and identification number of Contract] (hereinafter called "the Works") and
the Procuring Entity has accepted the Bid by the Contractor for the execution and
completion of such Works and the remedying of any defects therein.

Now this Agreement Witnesseth as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Procuring Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procuring Entity to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
3. The Procuring Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

In Witness whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of

was hereunto affixed in the presence of:

Signed, Sealed, and Delivered by the
said

in the presence of:

Binding Signature of Procuring

Entity _____

Binding Signature of Contractor _____

Section IV. Security Forms

Table of Forms

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Annex A Form: Bid Security (Bank Guarantee)

WHEREAS, _____ [*name of Bidder*] (hereinafter called "the Bidder") has submitted his Bid dated _____ [*date*] for the construction of _____ [*name of Contract*] (hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that We _____ [*name of Bank*] of _____ [*name of country*] having our registered office at _____ (hereinafter called "the Bank") are bound unto _____ [*name of Procuring Entity*] (hereinafter called "the Procuring Entity") in the sum of¹ _____ for which payment well and truly to be made to the said Procuring Entity, the Bank binds itself, its successors, and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 19____.

THE CONDITIONS of this obligation are:

- (1) If, after Bid opening, the Bidder withdraws his Bid during the period of Bid validity specified in the Form of Bid;
- or
- (2) If the Bidder having been notified of the acceptance of his Bid by the Procuring Entity during the period of Bid validity:
 - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or
 - (b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders; or
 - (c) does not accept the correction of the Bid Price pursuant to Clause 27,

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

This Guarantee will remain in force up to and including the date _____² days after the deadline for submission of bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Procuring Entity, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

[signature, name, and address]

¹ The Bidder should insert the amount of the Guarantee in words and figures denominated in the currency of the Procuring Entity's country. This figure should be the same as shown in Clause 16.1 of the Instructions to Bidders.

Annex B Form: Performance Bank Guarantee

To: _____ [*name of Procuring Entity*]
 _____ [*address of Procuring Entity*]

WHEREAS _____ [*name and address of Contractor*] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ [*name of Contract and brief description of Works*] (hereinafter called "the Contract");

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

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

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ [*amount of Guarantee*]¹ _____ [*amount in words*], such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [*amount of Guarantee*] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

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

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

This Guarantee shall be valid until a date 28 days from the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR _____
 Name of Bank _____
 Address _____
 Date _____

¹ An amount is to be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract, and denominated in the

currency of the Contract.

Annex C Form: Bank Guarantee for Advance Payment

To: _____ *[name of Procuring Entity]*
 _____ *[address of Procuring Entity]*
 _____ *[name of Contract]*

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Clause 51 (“Advance Payment”) of the above-mentioned Contract, _____ *[name and address of Contractor]* (hereinafter called “the Contractor”) shall deposit with _____ *[name of Procuring Entity]* a Bank Guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of _____ *[amount of Guarantee]* _____ *[amount in words]*.

We, the _____ *[Bank or Financial Institution]*, as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ *[name of Procuring Entity]* on his first demand without whatsoever right of objection on our part and without his first claim to the Contractor, in the amount not exceeding _____ *[amount of Guarantee]*¹ _____ *[amount in words]*.

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

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ *[name of Procuring Entity]* receives full repayment of the same amount from the Contractor.

Yours truly,

SIGNATURE AND SEAL: _____

Name of Bank/Financial Institution: _____

Address: _____

Date: _____

¹ _____
 An amount is to be inserted by the Surety, representing the percentage of the Contract Price specified in the Contract Data, and denominated in the currency of the Contract.

Section V. Bidding Data

This section should be filled out by the Procuring Entity before issuance of the bidding documents.

Instructions to Bidders Clause Reference

- (2.1) The Procuring Entity is **Ministry of Industry, Commerce, Agriculture and Fisheries / Agricultural Competitiveness Programme Bridging Project**
- (2.1) The Project is **Construction of Office Facilities at Top Mountain Research Station, St Andrew**
- (4.3) The information required from bidders in Sub-Clause 4.3 is modified as follows: Bidders submit the following with their bid:
- a) Not Modified
 - b) Not Modified
 - c) Not Modified
 - d) Not Modified
 - e) Not Modified
 - f) Not Modified
 - g) Not Modified
 - h) Not Modified
 - i) Not Modified
 - j) Not Modified
 - k) A valid Tax Compliance Certificate in the name of the Bidder; and
 - l) Proof of current registration with the NCC in the category Building Construction Grade 2 &3

Note:

Bids will be rejected if they fail to submit any of the above with their tender.

- (4.4) The qualification data required from bidders in Sub-Clause 4.4 are modified as follows: **NO MODIFICATION**
- (4.5) The qualification criteria in Sub-Clause 4.5 are modified as follows:
- To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria:
- (a) The minimum required annual volume of construction work for the successful Bidder in any of the last two years shall be **J\$ 18M.**

- (b) experience as prime contractor in the construction of at least two (2) works of a nature and complexity equivalent to the Works over the last 5 years (to comply with this requirement, works cited should be at least 70 percent complete);
- (c) proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment listed in the Bidding Data;
- (d) a Contract Manager with three years' experience in works of an equivalent nature and volume, including no less than one years as Manager; and
- (e) liquid assets and/or credit facilities of no less than **Ten Million Dollars (\$10,000,000.00)**.

A consistent history of litigation or arbitration awards against the Applicant or any partner of a Joint Venture may result in disqualification.

- (7.1) Bidders are strongly advised to visit the site before submitting a bid. All prospective bidders are therefore invited to visit the works site located at **Top Mountain Research Station, Top Mountain, St. Andrew on Wednesday June 26, 2019 at 10 am**. Please call to confirm and arrange visitation.
 - (8.1) The documents refer to **Bills of Quantities**
 - (12.1) The additional materials required to be completed and submitted by the bidder are as follows: **None**
 - (13.1) This shall be a "Unit Price Contract based on **Priced Bills of Quantities**"
 - (13.4) The Contract is not subject to price adjustment in accordance with Clause 44 of the Conditions of Contract.
 - (14.1) The currency of Bid shall be **Jamaican Dollars**
 - (15.1) The period of Bid validity shall be **90 days**
 - (16.1) The amount of Bid Security shall be **J\$250,000.00**
-

- (16.2) The Bid Security shall, be in the form of:
 a) a certified check, or
 b) a guarantee from a local financial institution which has been determined by the Bidder to be acceptable to the Procuring Entity. The format of the Bid Security shall be in accordance with the form of Bid Security included in Section 4 and in full conformity to the requirements of Ministry of Finance and Planning Public Expenditure Policy Coordination Circular No 2. Dated January 17, 2016.

Note:

Bids will be rejected if the form of Bid security included in section 4 is not used.

- (17.1) Alternative proposals to the requirements of the bidding documents will not be permitted
- (18.1) The number of copies of the Bid to be completed and returned shall be two (2).
- (19.2) The Procuring Entity's address for the purpose of Bid submission is
 a) The Facilities and Properties Management Conference Room, Ministry of Industry, Commerce, Agriculture and Fisheries, Hope Gardens, Old Hope Road, Kingston.
 b) Name of Contract: Construction of Office Facilities at Top Mountain Research Station, St Andrew
- Contract Number: 1700MICAF/ACPBP/MAY201905
- (20.1) The deadline for submission of bids shall be:
 10:00 a.m. July 12, 2019
- (23.1) Time, Date and Place of Bid Opening are 10:15 am on July 12, 2019 a.m. in The Facilities and Properties Management Conference Room at the Ministry of Industry, Commerce, Agriculture and Fisheries, Hope Gardens, Old hope Road.
- (25.3) The dispute resolution process shall be:

Amicable Settlement

Any claim for loss or damage arising out of breach or termination of Agreement shall be settled between the Procuring Entity and Supplier by negotiation. If this negotiation is not successfully settled within fifteen (15) days after the date of initiation or negotiation or within such longer period as the parties may mutually agree, then the parties will jointly agree, within ten (10) days after the date of expiration of the period in which the parties should have successfully concluded their negotiations, to appoint a Mediator to assist in reaching an amicable resolution of dispute. This procedure shall be private and without prejudice. If the parties fail to agree upon the

appointment of a Mediator within the stipulated period, then, within seven (7) days of expiration of this period, the Procuring Entity shall request appointment of a Mediator by the Dispute Resolution Foundation of Jamaica. The Mediator shall not have the power to impose a settlement on the parties. If the dispute is not resolved between the parties within thirty (30) days after the appointment of the Mediator by the Dispute Resolution Foundation of Jamaica, or after such longer period as the parties may mutually agree, the mediator shall advise the parties of the failure of the Mediation.

For the purposes of this clause, a negotiation is deemed to have been initiated as of the date of receipt of notice by one party of a request from the other party to meet and negotiate the matter in dispute.

For the purposes of this clause, a Mediator is deemed to have been appointed as of the date of notice of such appointment being given to both parties.

Dispute Settlement

In the event of the failure of the mediation between parties, the mediator will record those verifiable facts that the parties have agreed. Subsequently the case will be handled by arbitration. The parties agree to accept the award of the Arbitrator as binding and irrevocable within the provisions of the Arbitration Act of Jamaica. The mediator's role in the dispute resolution process shall cease upon appointment of the Arbitrator. During the dispute settlement process, the Supplier shall continue to perform the work in accordance with this contract. Failure to do so shall be considered a breach of contract.

Arbitration

The seat of the arbitration shall be Jamaica and disputes shall be settled in accordance with the Arbitration Act of Jamaica. Rules of procedure to be adopted shall be those as published by the United Nations Commission on International Trade Law (UNCITRAL) *Arbitration Rules of 1976*.

- (27.1(b)) In case of a lump-sum Contract, this Clause is deleted.
- (32.1) The Standard Form of Performance Security acceptable to the Procuring Entity shall be **Bank Guarantee**
- (33.1) The Advance Payment shall be limited to a maximum 15 percent of the Contract Price.
-

Section VI. Contract Data

Edit Header

Serial No.	Contract Clause Reference
1. The following documents are also part of the Contract:	
· Schedule of Operating and Maintenance Manuals N/A	[57]
· Schedule of Other Contractors N/A	[8]
· The Schedule of Key Personnel	[9]
· Site Investigation Reports N/A	[14]
2. The Procuring Entity is	[1.1]
Name: Ministry Industry, Commerce, Agriculture and Fisheries / Agricultural Competitiveness Programme Bridging Project	
Address: Hope Gardens, Old Hope Road	
Name of Authorized Representative: Dermon Spence, Acting Permanent Secretary	
3. The Project Manager is	[1.1]
Name: Agricultural Competitiveness Programme Bridging Project	
Address: Hope Gardens, Old Hope Road	
Name of Authorized Representative: Petronia Colley	
4. The name and identification number of the Contract is	
Name of Contract: Construction of Office Facilities at Top Mountain Research Station, St Andrew	
Contract Number: 1700MICA/ACPBP/MAY201905	[1.1]
5. The Works consist of Construction of Office Facilities at Top Mountain Research Station, St Andrew	
6. The Start Date shall be within ten (10) days of contract signing.	[1.1]
7. The Intended Completion Date for the whole of the Works shall be Six (6) Months after commencement.	[17, 27]
8. The following documents also form part of the Contract:	[2.1]
a) Drawings	
b) Work Programme	
9. The Contractor shall submit a revised Program for the Works within five (5) days of delivery of the Letter of Acceptance.	[26]
10. The Site Possession Date shall be: within ten (10) days of contract signing.	[21]

11. The Site is located at Top Mountain Research Station, St Andrew and is defined in drawings nos. [1]
- | | | |
|---------------------------------------|---|-----------|
| Existing & Proposed Site Plan | - | Sheet #1 |
| Existing Demolition Plan & Elevation | - | Sheet #2 |
| Proposed Floor Plan & Foundation Plan | - | Sheet #3 |
| Electrical & Plumbing Plan | - | Sheet #4 |
| R.C Arrangement Slab And Hvac Plan | - | Sheet #5 |
| Section Thru R.C Slab | - | Sheet #6 |
| Layout of Cupboard and Details | - | Sheet #7 |
| Cross Sections | - | Sheet #8 |
| Elevations | - | Sheet #9 |
| R.C Details | - | Sheet #10 |
| Drainage Details | - | Sheet #11 |
12. The Defects Liability Period is **Six (6) months**. [33]
13. The minimum insurance covers shall be: [13]
- a) For loss or damage to the Works, Plant and Materials: Two percent (2%) at risk
 - b) For loss or damage to Equipment: JA\$5,000,000.00
 - c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract JA\$5,000,000.00
 - d) for personal injury or death:
 - i. of the Contractor's employees: JA\$1,000,000.00
 - ii. of other people: JA\$1,000,000.00
14. The following events shall also be Compensation Events: [41]
- As per clause 41.**
15. The period between Program updates is **Fifteen (15) days**. [26]
16. The amount to be withheld for late submission of an updated Program is 10% of amounts payable to contractor on interim certificates. [26]
17. The amount to be retained from each payment due to the Contractor is 10% of amounts payable to contractor on interim certificates. [44]
18. The language of the Contract documents is **English**. [3]
19. The law that applies to the Contract is the law of **Jamaica**. [3]
20. Institution whose arbitration procedures shall be used: [25]
- The seat of the arbitration shall be Jamaica and disputes shall be settled in accordance with the Arbitration Act of Jamaica. Rules of procedure to be adopted shall be those as published by the United Nations Commission on International Trade Law (UNCITRAL) *Arbitration Rules of 1976*.

21. In case of lump sum contracts, clause 37 shall be replaced by the following [37]
new clause 37.
- "37. Activity Schedule
- 37.1 The Contractor shall provide updated Activity Schedules within 14 days of being instructed by the Project Manager. The activities on the Activity Schedule shall be coordinated with the activities on the Program.
- 37.2 The Contractor shall show delivery of Materials to the site separately on the Activity Schedule if Payment for Materials on site shall be made separately."
22. In case of lump sum contracts, clause 38.1 shall be replaced by the following [38]
- "38.1 The Activity Schedule shall be amended by the Contractor to accommodate changes of program or method of working made at the Contractor's own discretion. Prices in the Activity Schedule shall not be altered when the Contractor made such changes to the Activity Schedule."
23. In case of lump sum contracts, clause 40.2 is hereby deleted [40]
24. In case of lump sum contracts, clause 40.2 is replaced as follows [40]
- "40.2 The value of work executed shall comprise the value of completed activities in the Activity Schedule."
25. The Contract is not subject to price [43]
adjustment in accordance with Clause 44 of the Conditions of Contract, and the following information regarding coefficients does not apply
26. The coefficients for adjustment of prices are: [43]
NOT APPLICABLE
_____ percent nonadjustable element (coefficient A).
_____ percent adjustable element (coefficient B).
27. The liquidated damages for the whole of the Works are 1% [45.1]
per day.
28. The maximum amount of liquidated damages for the whole of the Works is [45.1]
ten (10) percent of the final Contract Price.
29. The Bonus for the whole of the Works is **NOT APPLICABLE** [percent of final [46]
Contract Price amount] per day. The maximum amount of Bonus for the whole of the Works is **Zero** percent of the final Contract Price.
30. The Advance Payment of 15% [insert currency and amount] [47.1]
shall be made to the Contractor within 10 days of contract signing
(If requested and the Contractor has submitted an acceptable Advance
Payment Guarantee)
-

31. The Performance Security shall be for the following minimum amount equivalent as a percentage of the Contract Price: **10% of Contract Price** [48.1]
32. The standard form of Bank Performance Security acceptable to the Procuring Entity shall be of the *Unconditional Bank Guarantee* [48.1]
33. The date by which operating and maintenance manuals are required is **Not Applicable** [54.1]
34. The date by which “as built” drawings are required is **Not Applicable** [54.1]
35. The amount to be withheld for failing to produce “as built” drawings and/or operating and maintenance manuals by the date required is ___ percent of the final Contract Price. [*amount in local currency*]. **Not Applicable** [54.2]
36. The percentage to apply to the value of the work not completed, representing the Procuring Entity's additional cost for completing the Works, is **15 percent**.

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Section V. Bidding Data

This section should be filled out by the Procuring Entity before issuance of the bidding documents.

Instructions to Bidders

Clause Reference

- (2.1) The Procuring Entity is:
Ministry of Industry, Commerce, Agriculture and Fisheries/
Agricultural Competitiveness Programme Bridging Project
- (2.1) The Project is:
Construction of Office Facilities at Top Mountain Research Station,
St Andrew
- (4.3) The information required from bidders in Sub-Clause 4.3 is modified as follows: Bidders must submit the following with their bid:
- m) A Valid Tax Compliance Certificate
 - n) Proof of National Contracts Commission (NCC) Registration in any of the following; Building Construction Grade 2 or 3
 - o) Bid security in the amount of \$250,000.00
 - p) Copies of original documents defining the constitution or incorporation, and principal place of business of the Bidder; written power of attorney of the signatory of the Bid to commit the Bidder
 - q) Proof of completing a minimum of two (2) works of a similar nature and size over the last five (5) years,
 - r) Details of work currently under way or contractually committed and clients who may be contacted for further information on those contracts;
 - s) Qualifications and experience of key site management and technical personnel proposed for the contract
 - e) Evidence of adequacy of working capital for this contract (access to lines(s) of credit and availability of other financial resources)
 - f) Authority to seek references from the Bidders bankers
 - g) information regarding any litigation, current or during the last three years in which the bidder is involved, the parties concerned and disputed amounts.

Note:

Bids will be rejected if they fail to submit any of the above with their tender.

(4.4) The qualification data required from bidders in Sub-Clause 4.4 are modified as follows: **NOT APPLICABLE**

(4.5) The qualification criteria in Sub-Clause 4.5 are modified as follows:

To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria:

- (a) annual volume of construction work performed in the last three (3) years **NOT APPLICABLE**
- (b) experience as prime contractor in the construction of at least two works of a nature and complexity equivalent to the Works over the last five (5) years (to comply with this requirement, works cited should be at least 70 percent complete);
- (c) a Contract Manager with three years' experience in works of an equivalent nature and volume, including no less than one year as Manager

Note:

Bids will be rejected if;

- i. they fail to submit any of the above with their tender,
- ii. they fail to provide information required on the Qualification Information Form.

Information not required will be labeled Not Applicable.

(4.5a) The minimum required annual volume of construction work for the successful Bidder in any of the last three years shall be at least **NOT APPLICABLE**

(4.5c) The essential equipment to be made available for the Contract by the successful Bidder shall be: **NOT APPLICABLE**

(4.5e) The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be at least **\$10M**

(7.1) Bidders are strongly advised to visit the site before submitting a bid. All prospective bidders are therefore invited to visit the works site located at Top Mountain Research Centre, St. Andrew on Wednesday June 26, 2019 at 10 am. Please call to confirm and arrange visitation.

(12.1) Firms must present the following as part of their submission:

- A Valid Tax Compliance Certificate
 - A Valid of National Contracts Commission (NCC) Registration in
-

- any of the following; Building Construction Grade 2 or 3
- Bid Security in the amount of \$250,000.00
- All items listed in 4.3

- (12.1 a) The additional materials required to be completed and submitted by the bidder are as follows: **None**
- (13.1) This shall be a "Unit Price Contract based on Priced Bills of Quantities"
- (13.4) The Contract **is not** subject to price adjustment in accordance with Clause 44 of the Conditions of Contract.
- (14.2) The currency of Bid shall be **Jamaican Dollars**
- (15.1) The period of Bid validity shall be **90 days**
- (16.1) The amount of Bid Security shall be **J\$250,000.00**
- Note:**
Bidders MUST use the Bid Security Form provided in this document. ALL other Forms will be rejected and the bid deemed none-responsive.
- (17.1) Alternative proposals to the requirements of the bidding documents **will not** be permitted
- (18.1) The number of copies of the Bid to be completed and returned shall be: **one (1) Original & two (2) Copies**
- (19.2) The Procuring Entity's address for the purpose of Bid submission is
- c) **The Facilities and Properties Management Conference Room, Ministry of Industry, Commerce, Agriculture and Fisheries, Hope Gardens, Kingston 6.**
 - b) **Name of Contract: Construction of Office Facilities at Top Mountain Research Station, St Andrew**
 - c) **Tender Number: MICAF/ACPBP/MAY201905**
- (20.1) The deadline for submission of bids shall be **July 12, 2019 at 10:00 a.m.**
- (23.1) Time, Date and Place of Bid Opening are **10:15 a.m. July 12, 2019 in The Facilities and Properties Management Conference Room at the Ministry of Industry, Commerce, Agriculture and Fisheries, Hope Gardens, Kingston 6.**
- (27.1(b)) In case of a lump-sum Contract, this Clause is deleted.

- (32.1) The Standard Form of Performance Security acceptable to the Procuring Entity shall be **Bank Guarantee**.
 - (33.1) The Advance Payment shall be limited to a maximum 15 percent of the Contract Price.
-

Section VII: Specifications for the Office Facility

SPECIFICATIONS

SPECIFICATION**I N D E X**

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2.00 SPECIFICATIONS

2.01 EARTHWORKS

2.01.01 INSPECTION

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

No backfilling shall be done until all formwork, bracing, etc., has been removed and the work inspected and approved by the Engineer. 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.

2.00 SPECIFICATIONS (Continued)**2.01 EARTHWORKS (Continued)****2.01.06 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 Engineer when excavations are ready to receive concrete. No concrete shall be placed in foundations until the excavation has been inspected and approved by the Engineer.

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 4.5mm² (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 Engineer.

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 Engineer 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 Engineer.

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.

2.00 SPECIFICATIONS (Continued)

2.02 CONCRETING (Continued)

2.02.06 CONCRETE

The concrete shall be mixed in the following proportions:-

QUALITY "A" 1:1 1/2:3 Nominal Mix

Cement	42.50 kg.
Dry Sand	0.040 cubic metres
Course Aggregate (graded 10mm maximum)	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 MINIMUM RESISTANCE

2.02.07 QUALITY CRUSHING (CUBE STRENGTH)
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.

2.00 SPECIFICATIONS (Continued)

2.02 CONCRETING (Continued)

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 at 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.

2.00 SPECIFICATIONS (Continued)**2.02 CONCRETING (Continued)****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 change is made whether in the cement aggregate, or in the consistence of the concrete.

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

Cubes shall be dispatched in stout wooden boxes of damp sand to the testing laboratory as directed by the Architect. 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 Architect. Should the tests prove unsatisfactory, the concrete work shall be stopped and only continue when directed by the Architect. 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 Architect.

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 absorbent 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.

2.00 SPECIFICATIONS (Continued)

2.02 CONCRETING (Continued)

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 allowed 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 Architect. The Contractor shall deliver bar-bending schedules for the Architect's approval before fixing.

All mill 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 bent to shape on the site of the Works. Bends and turns 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 signs of cracking at a bend must be rejected.

Reinforcement shall be bent to shape and placed 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 overlap and shall be securely wired.

Ends of plain rods in tension shall be bent over a radius of four diameters 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 curved 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 provided 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 than 1/2" 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.

2.00 SPECIFICATIONS (Continued)

2.02 CONCRETING (Continued)

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 Architect the concrete has not hardened sufficiently. Approved by the Architect 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 Architect. 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.

2.00 SPECIFICATIONS (Continued)

2.02 CONCRETING (Continued)

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 stoooped with cement mortar (1:3) to the requirements of the Architect. 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 Architect 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, coarse aggregate, cracks, exposed reinforcement or other imperfections. No patching is to be done on any surface without permission from the Architect.

2.03 WALLING AND MASONRY

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).

SPECIFICATIONS (Continued)**2.03 WALLING AND MASONRY (Continued)**

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 stretcher 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 below 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 LINTOLS

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 end and placed 25mm above their soffits as follow.

100mm Wide and under: 1 No. 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; 2 No. 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.

2.00 SPECIFICATIONS (Continued)**2.03 WALLING AND MASONRY (Continued)**

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.

2.04 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 Architect.

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 or 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

2.00 SPECIFICATIONS (Continued)

2.04 ROOFING (Continued)

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.

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

ASPHALT

- 2.04.07 BASE

No asphalt is to be applied to dirty or defectives surfaces. Prices for asphaltting 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 Architect, 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

2.00 SPECIFICATIONS (Continued)

2.04 ROOFING (Continued)

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 Architect. 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.

2.00 SPECIFICATIONS (Continued)

2.05 CARPENTRY AND JOINERY (Continued)

The prices for all items of carpentry and joinery 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 Architect. Fastenings in locations subject to wetting or high humidity shall be of an approved corrosion resisting material.

The rates for joiner'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 include for priming before fixing in position.

2.00 SPECIFICATIONS (Continued)

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 Engineer.

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 engineering 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 Engineer.

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 Engineer, who shall have the option to order at the Contractor's expense, splice plates to be used in addition if he feels that there is some doubt about the adequacy of the butt we

2.00 SPECIFICATIONS (Continued)

2.06 HARDWARE AND METALWORK (Continued)

(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 Engineer 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 contact 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 Engineer, 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 Engineer's permission.
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2.00 SPECIFICATIONS (Continued)

2.06 HARDWARE AND METALWORK (Continued)

2.06.08 SHEETING

Aluminium 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 engineering 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.

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 Architect.

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.

2.00 SPECIFICATIONS (Continued)**2.06 HARDWARE AND METALWORK (Continued)****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 then 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 Architect, 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 ironmongery 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 Architect. Where items are not specifically noted by manufacturer's name and catalogue number, samples are to be submitted to the Architect for approval at least two weeks before fixing is due to commence.

2.06.15 HARDWARE (Continued)

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.

2.00 SPECIFICATIONS (Continued)

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 Architect. 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 less than 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 angles 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 Architect'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.

2.00 SPECIFICATIONS (Continued)**2.07 RENDERING, PAVING AND TILING (Continued)****2.07.06 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 Architect.

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 Architect.

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 Architect.

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.

2.00 SPECIFICATIONS (Continued)

2.08 PLUMBING (Continued)

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 cauled 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 Architect.

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

2.00 SPECIFICATIONS (Continued)

2.08 PLUMBING (Continued)

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 Architect.

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.

2.00 SPECIFICATIONS (Continued)

2.08 PLUMBING (Continued)

Ensure all joining surfaces are free of dirt, grease and any foreign matter. The surest method is to wipe with a cloth dampened with methyl ethyl ketone. For pipe of sizes above 50mm, the use of 'MEK' is essential. Apply solvent cement with a natural bristle 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 specks, 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.

2.09.02 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.

2.00 SPECIFICATIONS (Continued)

2.10 PAINTING

2.10.01 MATERIALS

All painting materials, varnishes and colours shall be approved by the Architect 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, Whitmarl, 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 Architect 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 have left the work.

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

The protection 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.
-

2.00 SPECIFICATIONS (Continued)

2.10 PAINTING (Continued)

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 Architect. 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 Engineer.

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 two 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.

2.00 SPECIFICATIONS (Continued)

2.10 PAINTING (Continued)

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, etc., 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 Architect.

2.11 ELECTRICAL INSTALLATIONS

2.11.01 GOVERNMENT REGISTRATION

Any Sub-Contractor employed to undertake the electrical installations shall be registered with the National Contracts Commission at a sufficient grade to allow him to undertake the works 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 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 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 Engineers, 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 Engineers, American Refrigeration Institute and American Society of Mechanical Engineers specification respectively.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

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.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

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 architectural 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 architectural 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 Architects and /or Engineers 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 phrase "or equal" and "approved" it shall be understood that the decision of the Architect and/or Engineers 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 Architect and /or Engineers 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 Architects and /or Engineers.

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 phrase "or equal" the intent is that such items shall

be furnished as specified unless changed by mutual agreement.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

Where the designation is qualified by the phrase "or equal" or "or approved equal" alternative brands may be offered for acceptance provide these represent items of equivalent price, quality and performance. The Architects and/or Engineers 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 exact 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 Architect and/or Engineer 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, 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.

2.11.10 "AS INSTALLED" DRAWINGS

The Contractor shall deliver to the Architects and/or Engineers, 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 Engineers 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 of 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 Architects or Engineers shall direct.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

The Contractor shall also deliver to the Architects and/or Engineers 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 award of the Contractor, the Contractor shall submit to the Architects and/or Engineers 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 Architects and/or Engineers.

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 Architects and/or Engineers for comment correction, after which the Contractor shall submit not less than four (4) sets of corrected shop drawing prints to the Architects and/or Engineers. 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/Engineer 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.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

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 Engineer 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/Engineer 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 Engineer 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.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

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 labels 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 Contractor 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 be 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 or a 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. Diffusers for all Troffer Lighting Fixtures are to be fitted into a self-supporting tray capable 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 and equipment supplied under this Contract. Cutting and patching of

masonry will done under another Contract, provided that refurbishing of materials and undertaking the work required under this Contract are accomplished in ample time and in proper sequence to avoid unnecessary cutting.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

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 provide 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 disconnects 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 from 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 conduit shall be provided with PVC end and lock nut wherever it enters 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.

2.00 SPECIFICATIONS (Continued)**2.11 ELECTRICAL INSTALLATIONS (Continued)**

- 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 architectural drawings, and the necessary, confer with the Architect 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 Architect. 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 Engineers. 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.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

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 devices. 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.

2.00 SPECIFICATIONS (Continued)

2.11 ELECTRICAL INSTALLATIONS (Continued)

- 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:-

- I. 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:

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS

2.12.01 GOVERNMENT REGISTRATION

Any Sub-Contractor employed to undertake the mechanical installation shall be registered with the National Contracts Commission 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 Engineers, 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 Engineers, American Refrigeration Institute and American Society of Mechanical Engineers 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.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS

“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 interpreted 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 architectural 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 architectural drawings and specifications only.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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 Architects and/or Engineers 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 phrase "or equal" and "approved" it shall be understood that the decision of the Architects and/or Engineers 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 Architects and/or Engineers 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 Architects and/or Engineers.

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 phrase "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 phrase "or equal" or "approved equal" alternative brands may be offered for acceptance provided these represent items of equivalent price, quality and performance. the Architects and/or Engineers 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.

2.00 SPECIFICATIONS (Continued)**2.12 MECHANICAL INSTALLATIONS (Continued)**

Unless otherwise detailed, wiring, conduit and duct runs are diagrammed only. The exact routes shall be agreed with the Architect and/or Engineer 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 Architects and/or Engineers, 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 method of preparation of "as installed" drawings shall be as follows

The Engineers 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 Architects or Engineers shall direct.

The Contractor shall also deliver to the Architects and/or Engineers 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.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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 Architects and/or Engineers 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 Architects and/or Engineers.

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 Architects and/or Engineer for comment correction, after which the Contractor shall submit not less than four (4) sets of corrected shop drawing prints to the Architects and or Engineers. 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.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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/Engineer.

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 systems 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 Engineer. 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.

2.00 SPECIFICATIONS (Continued)**2.12 MECHANICAL INSTALLATIONS (Continued)**

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 Engineer, 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 Engineer'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.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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 or magnetic over load protection.

Recommended manufacture shall be of Carrier, York, Trane or 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 barrier 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.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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 Lock or Acme	Drive Slip or Pocket Lock
330m (13") thru 457mm (18")	24	Pittsburgh Lock or Acme	Drive Slip or Pocket Lock
483m (19") thru 762mm (30")	24	Pittsburgh Lock or Acme	Hemmed "S" Slip or Pocket Lock

787mm (31") thru' 1,067mm (42")	22	Pittsburgh or Acme Lock Slip or 38m	32mm"Bar Pocket Lock
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2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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.

2.00 SPECIFICATIONS (Continued)

2.12 MECHANICAL INSTALLATIONS (Continued)

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 daubed 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.

2.00 SPECIFICATIONS (Continued)

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 Architect and Engineer.

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 Engineer 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.

2.00 SPECIFICATIONS (Continued)

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 Contractor'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 Architect.

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 double 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 Architect, 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 Architect and the suitability of each part of the foundation for placing filling materials for use in filled areas construction will be determined by the Engineer.

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 Architect.

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.

2.00 SPECIFICATIONS (Continued)

2.14 EXTERNAL WORKS (Continued)

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 Architect.

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 than 10 percent dry of the standard optimum condition, or more than 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 Architect.

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 Architect 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 used for compacting the fill.

2.00 SPECIFICATIONS (Continued)

2.14 EXTERNAL WORKS (Continued)

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 Architect.

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 any position or direction on the surface and the whole of the base be left to the satisfaction of the Architect.

2.14.04 "BARBER-GREENE"

The surfacing shall be approved 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 by the Architect.

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 Architect 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 at 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.

2.00 SPECIFICATIONS (Continued)

2.14 EXTERNAL WORKS (Continued)

After the pipes have been laid and tested, 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 at least one foot with soil and chippings. At completion all water mains shall be chlorinated as directed by the Local Water Authority.

Section VIII. Drawing

The site is located at Top Mountain - St. Andrew and the works are defined in drawings Nos. RP 1-5.

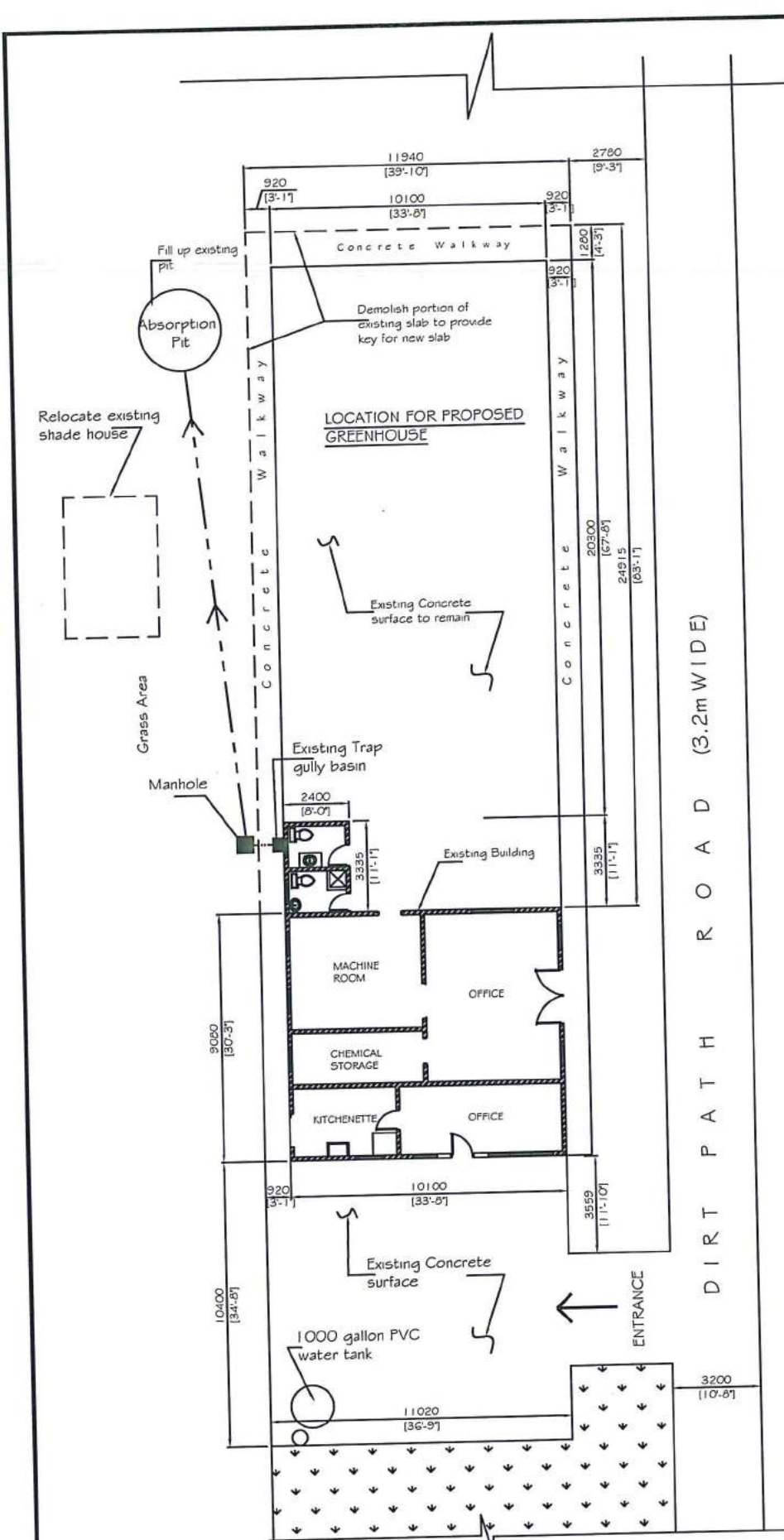
MINISTRY OF INDUSTRY COMMERCE AGRICULTURE
AND FISHERIES

PROPOSED OFFICE SPACE @ TOP
MOUNTAIN, ST. ANDREW

PREPARED BY:



Agricultural Competitiveness Programme
BRIDGING PROJECT

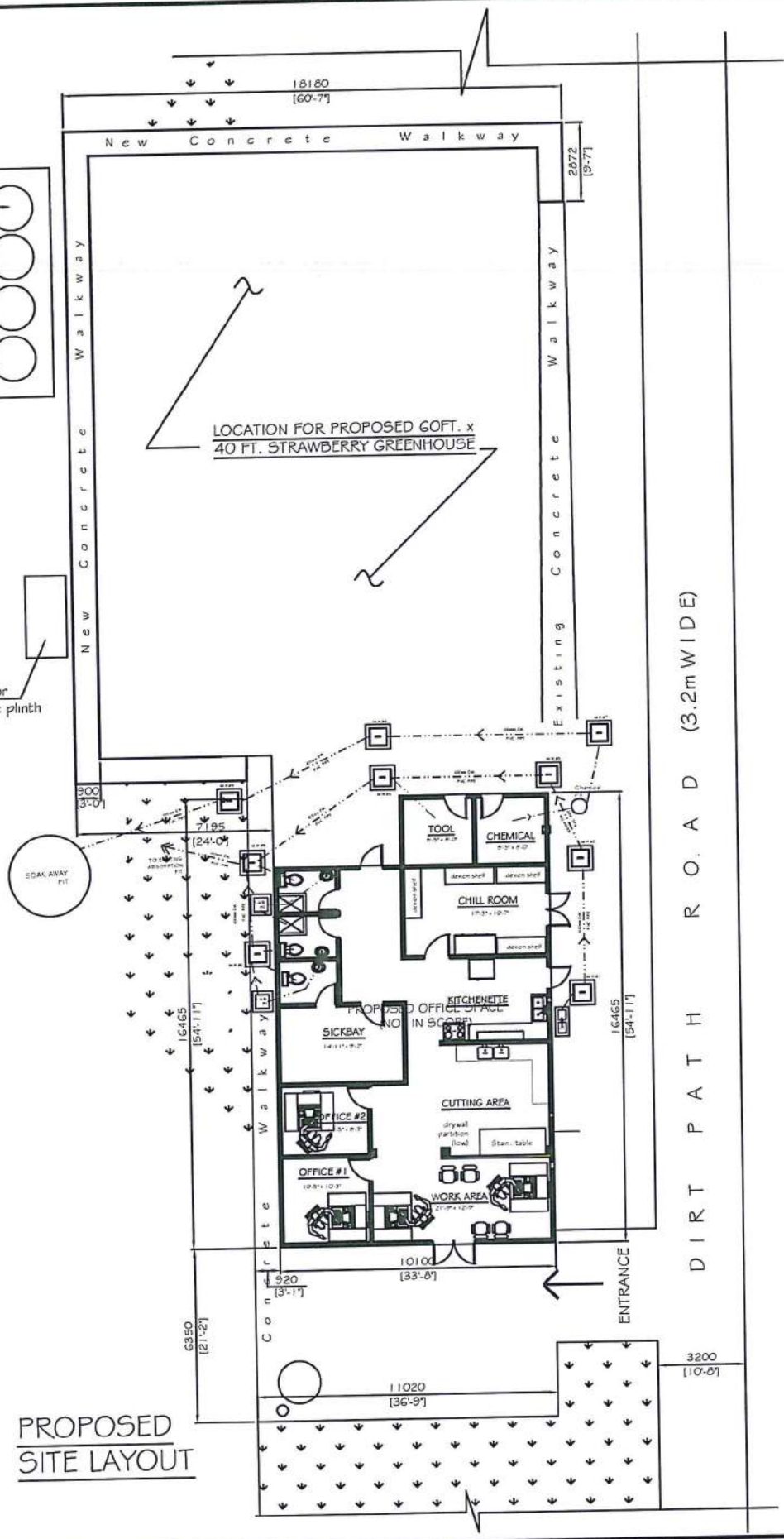


EXISTING SITE LAYOUT

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN
2. DO NOT SCALE DRAWING
3. ALL DIMENSIONS MUST BE CHECKED AND CROSS CHECKED BEFORE CONSTRUCTION.

MINISTRY OF INDUSTRY, COMMERCE, AGRICULTURE AND FISHERIES
 AGRICULTURAL COMPETITIVENESS PROGRAMME BRIDGING PROJECT (ACFPBP)
 HOPE GARDENS, KINGSTON 6
 TEL : 927-1731-50



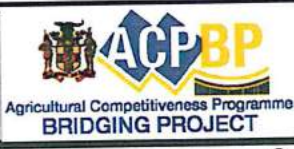
PROPOSED SITE LAYOUT

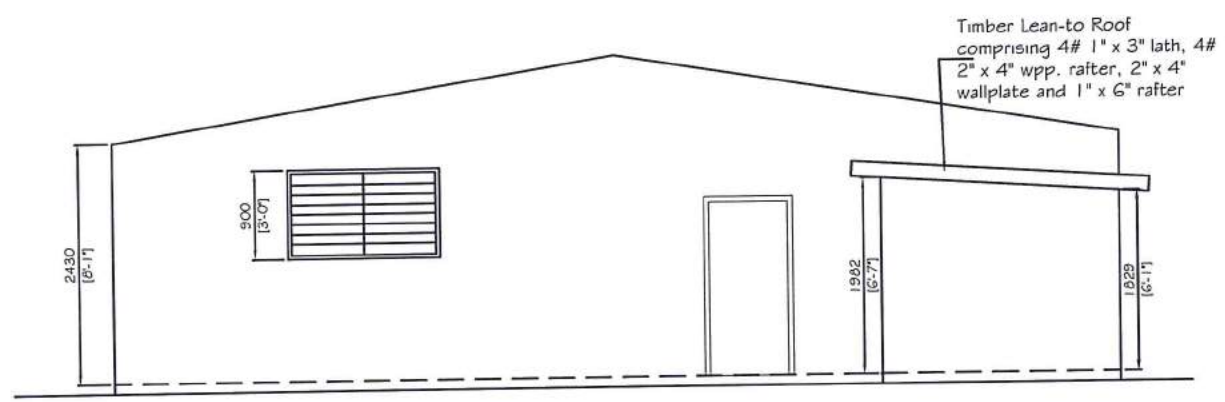
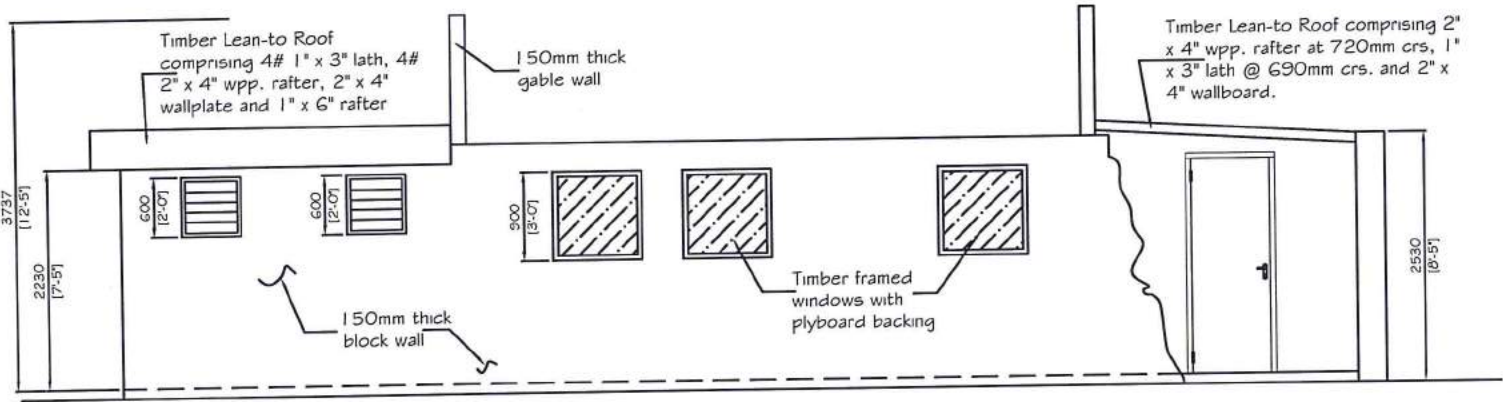
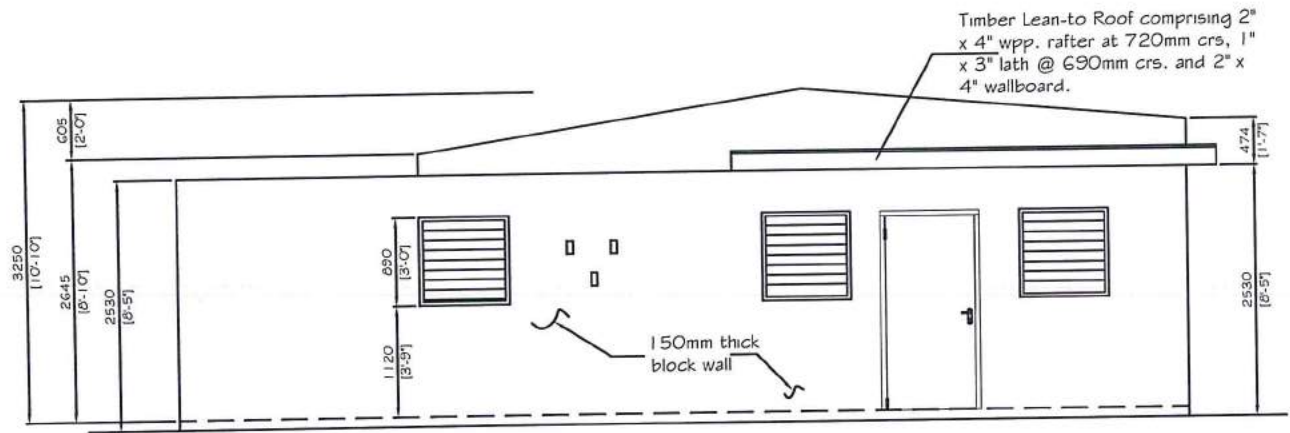
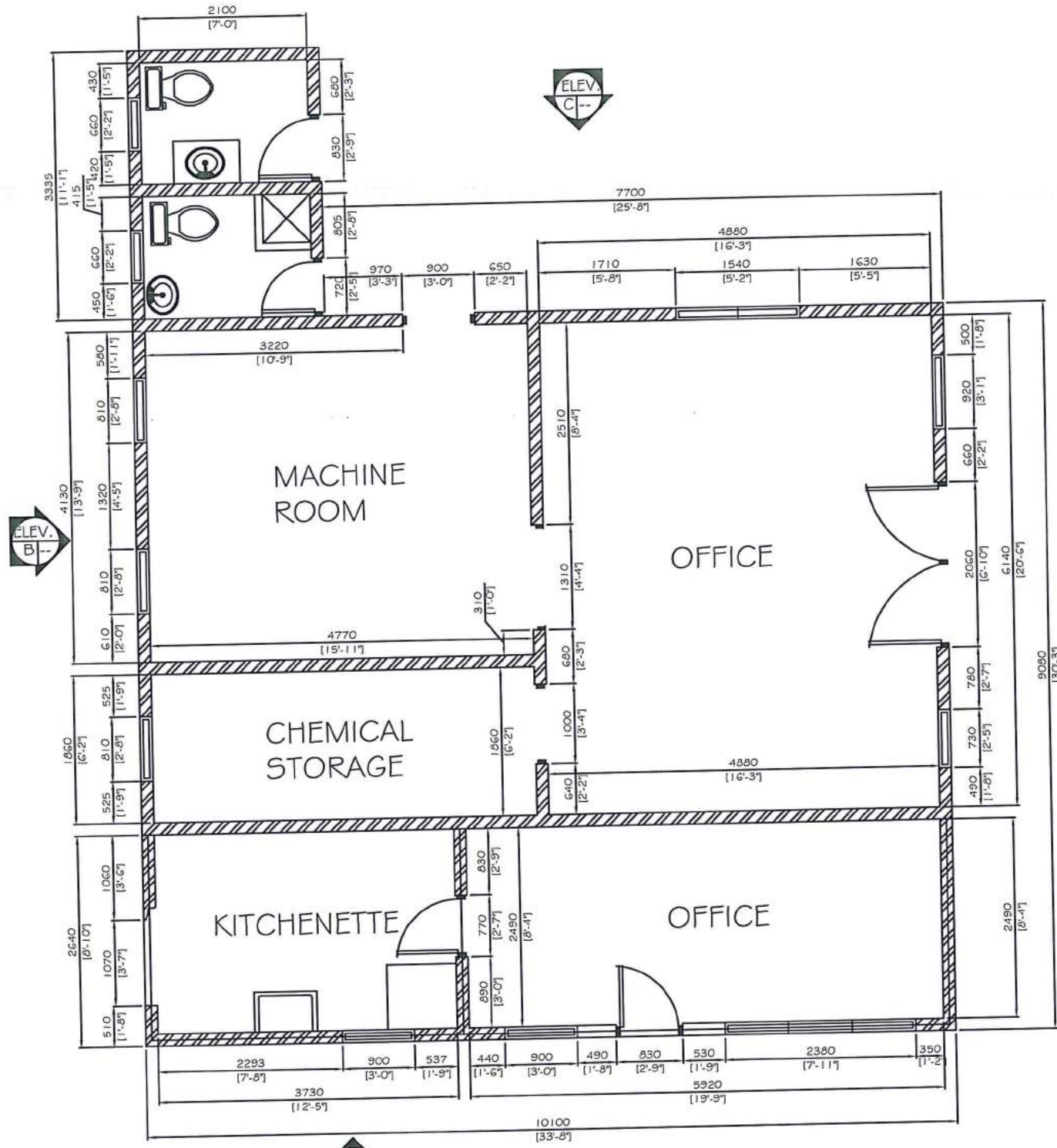
PROJECT NAME:
 CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW

DRAWN BY:
 K. MITCHELL
 CHECKED BY:
 P. REID

DATE
 FEB. 2019

SHEET TITLE:
 EXISTING & PROPOSED SITE PLAN





NOTES

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NOTES

MINISTRY OF INDUSTRY, COMMERCE, AGRICULTURE AND FISHERIES
 AGRICULTURAL COMPETITIVENESS PROGRAMME BRIDGING PROJECT (ACBPB)
 HOPE GARDENS, KINGSTON G
 TEL : 927-1731-50

PROJECT NAME:
 CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW

DRAWN BY:
 K. MITCHELL

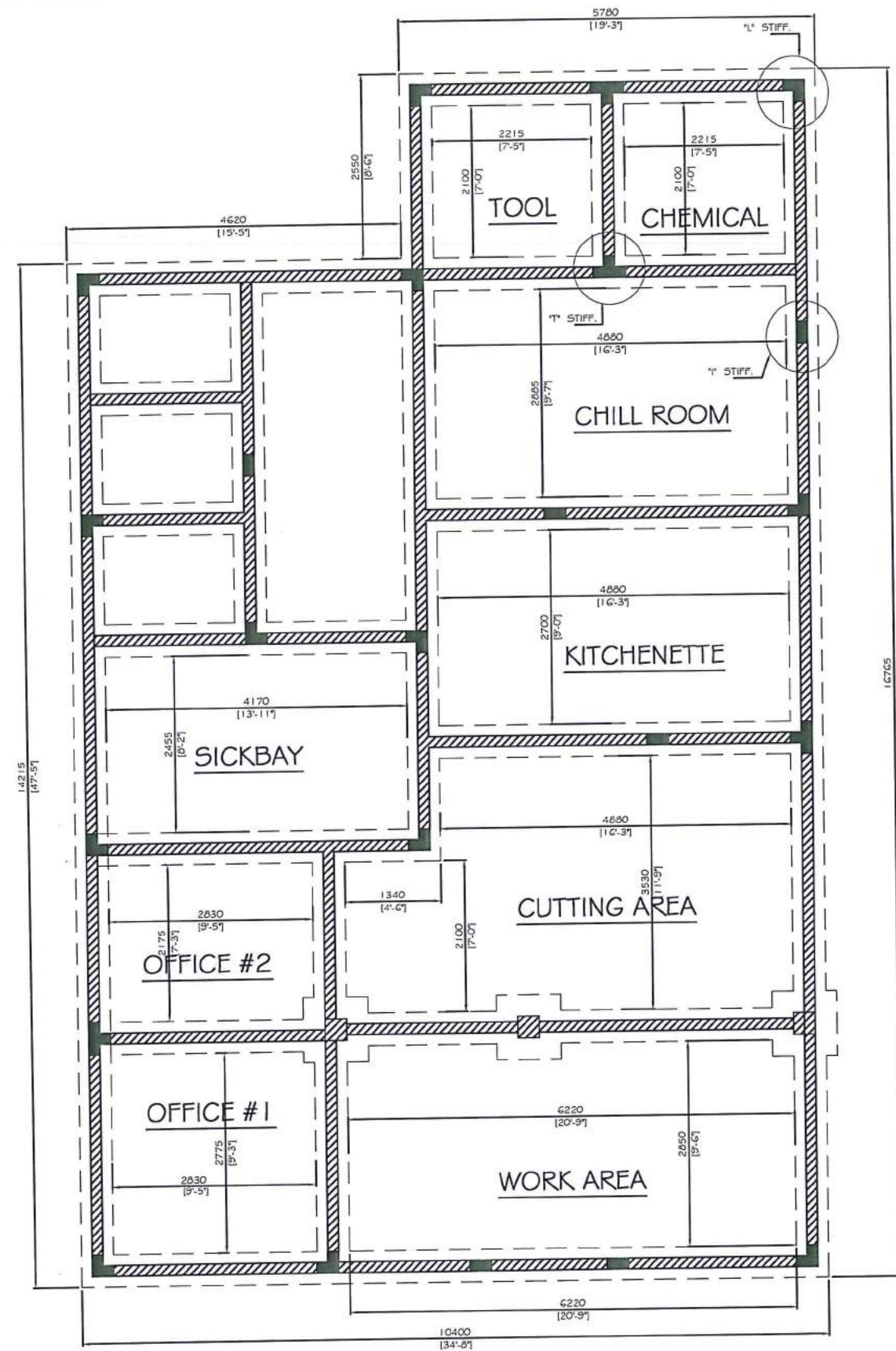
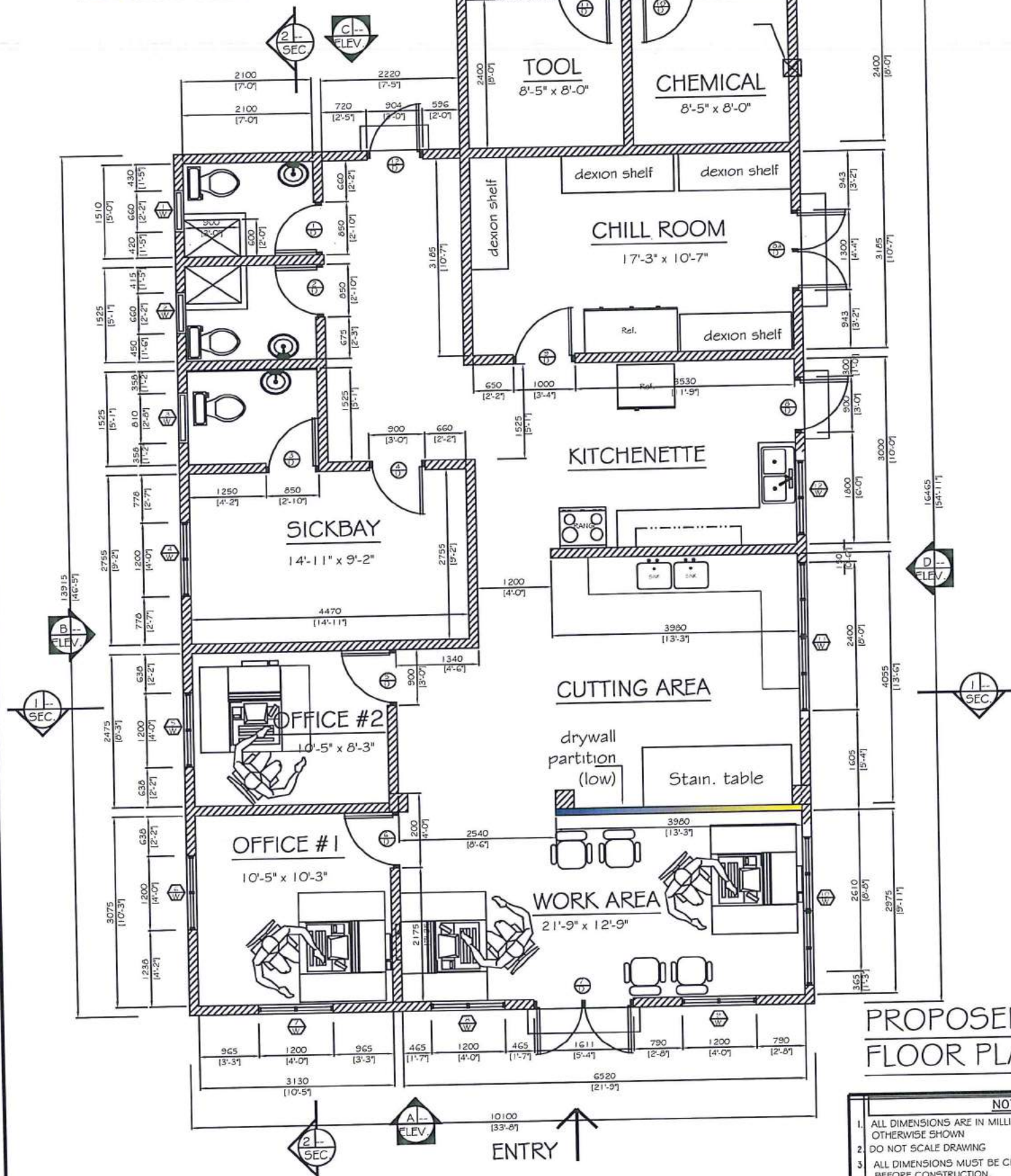
CHECKED BY:
 P. REID

DATE:
 FEB. 2019

SHEET TITLE:
 EXISTING DEMOLITION PLAN & ELEVATION



LEGEND	
SYMBOL	DESCRIPTION
	150mm thick blockwall
	100mm thick concrete board (1.0m high)



PROPOSED FLOOR PLAN

FOUNDATION PLAN

- NOTES**
- ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN
 - DO NOT SCALE DRAWING
 - ALL DIMENSIONS MUST BE CHECKED AND CROSS CHECKED BEFORE CONSTRUCTION.

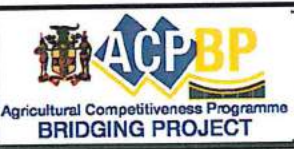
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CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW

DRAWN BY:
K. MITCHELL

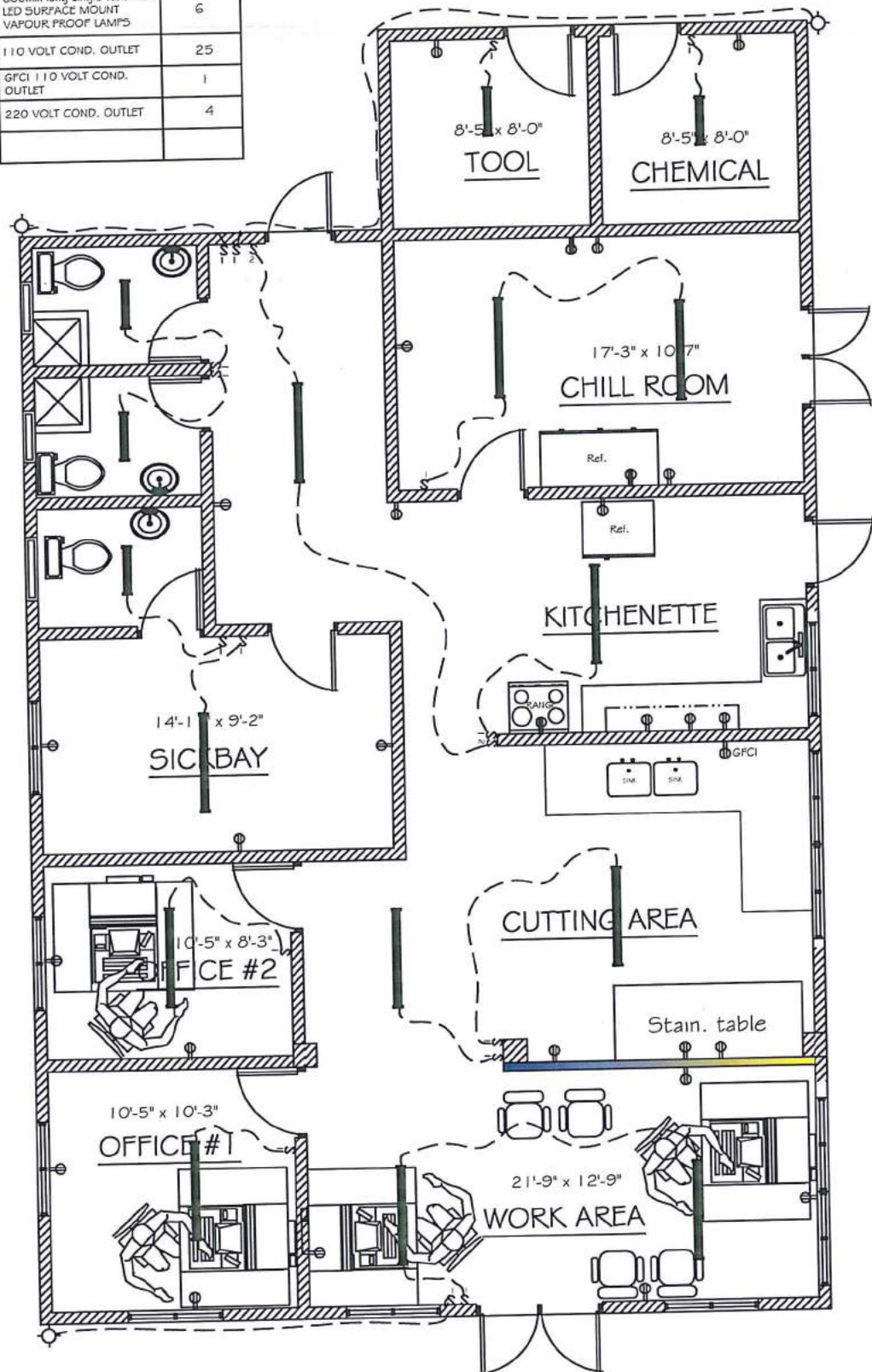
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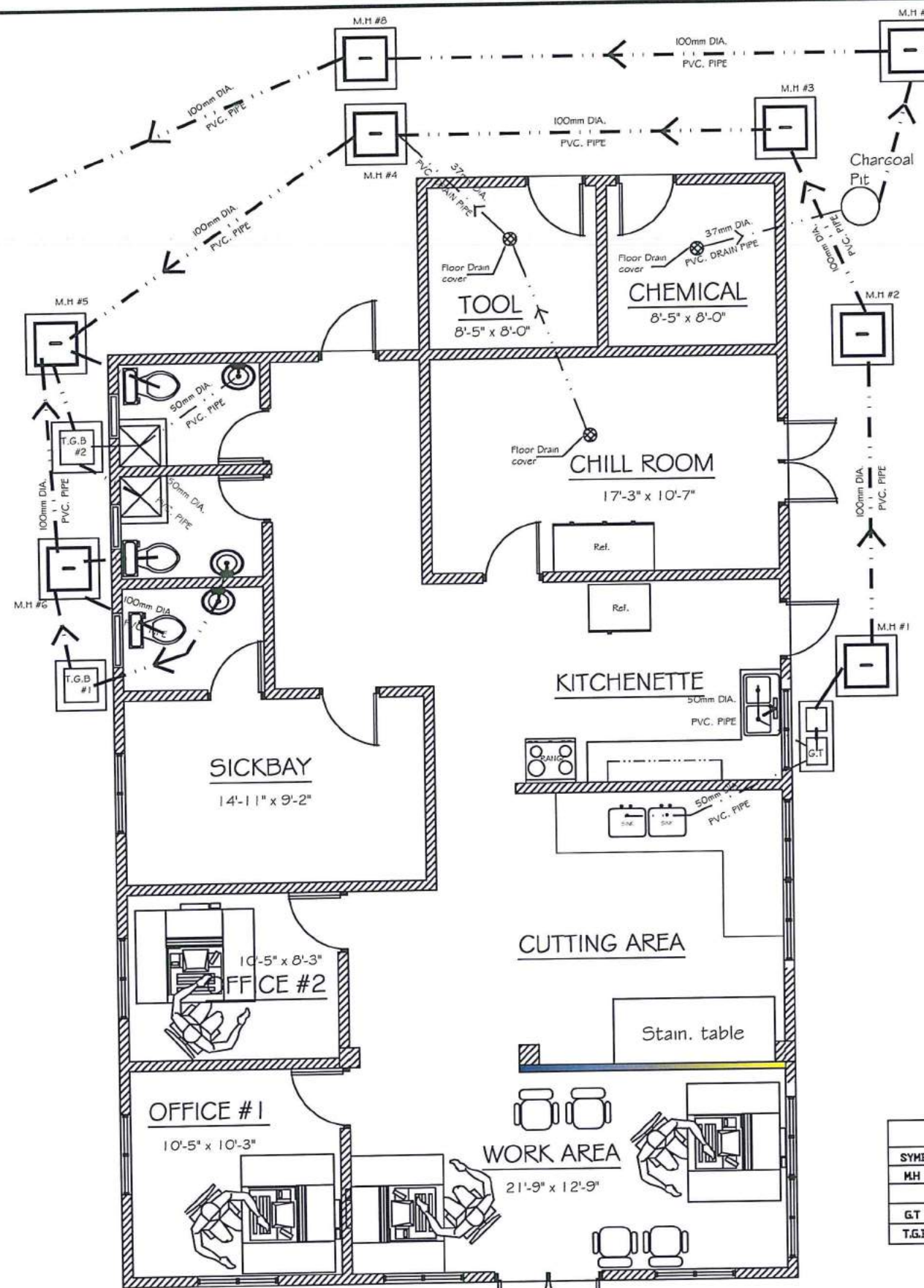
SHEET TITLE:
PROPOSED FLOOR PLAN & FOUNDATION PLAN



ELECTRICAL SCHEDULE		
SYMBOL	DESCRIPTION	AMOUNT
⚡	20Amp 5P ONE (1) Way Switch in Ganged Boxes as req. ch. cover plate	15
—	ELECTRICAL WIRE	
—	1200mm long 2tube 40W LED SURFACE MOUNT VAPOUR PROOF LAMPS	10
—	600mm long single tube 40W LED SURFACE MOUNT VAPOUR PROOF LAMPS	6
⚡	110 VOLT COND. OUTLET	25
⚡	GFCI 110 VOLT COND. OUTLET	1
⚡	220 VOLT COND. OUTLET	4



ELECTRICAL PLAN



PLUMBING PLAN

PLUMBING SCHEDULE		
SYMBOL	DESCRIPTION	AMOUNT
MH	Manhole (3'-0")	9
GT	Grease Trap	1
T.G.B	Trap Gully Bash	2

NOTES
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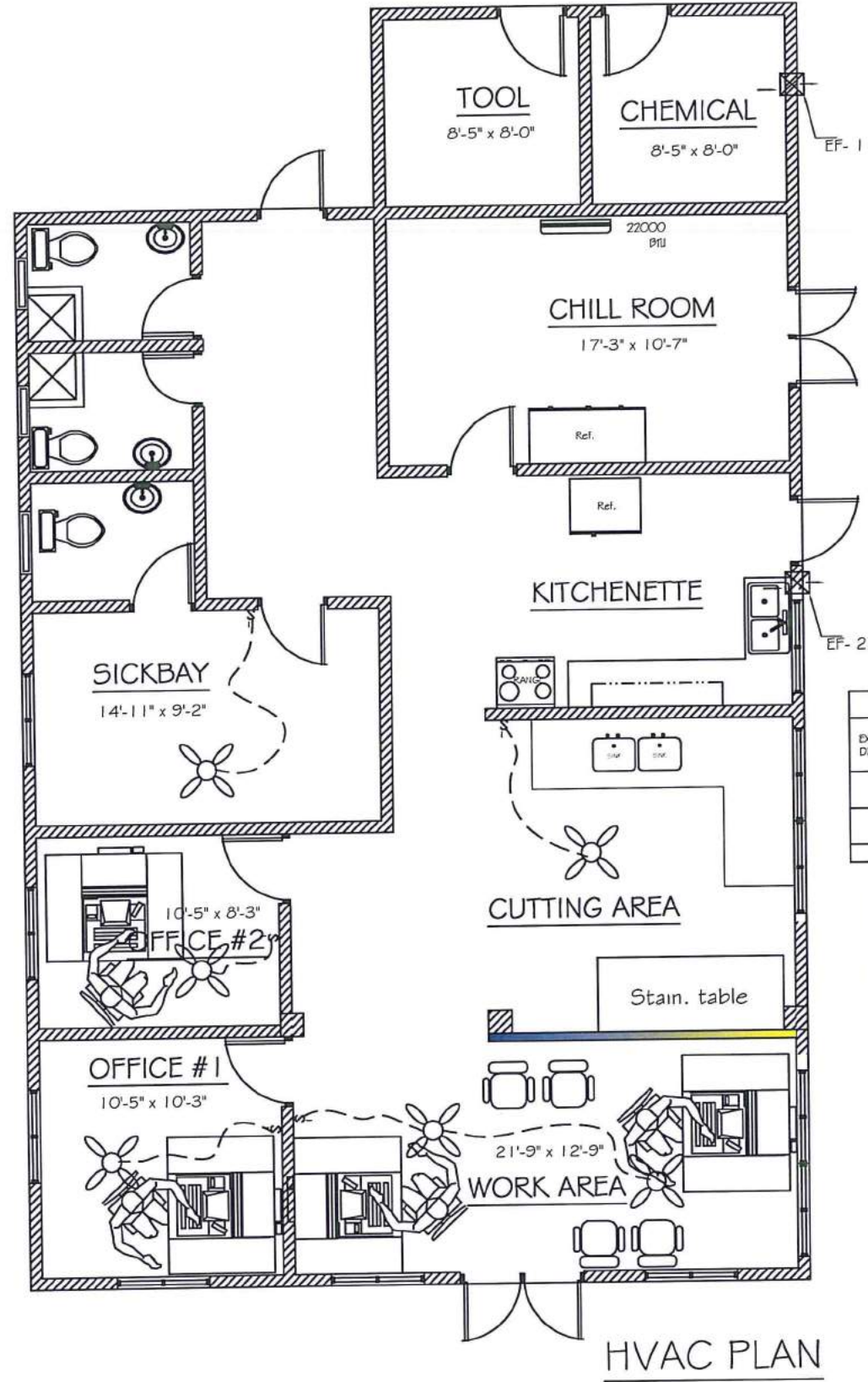
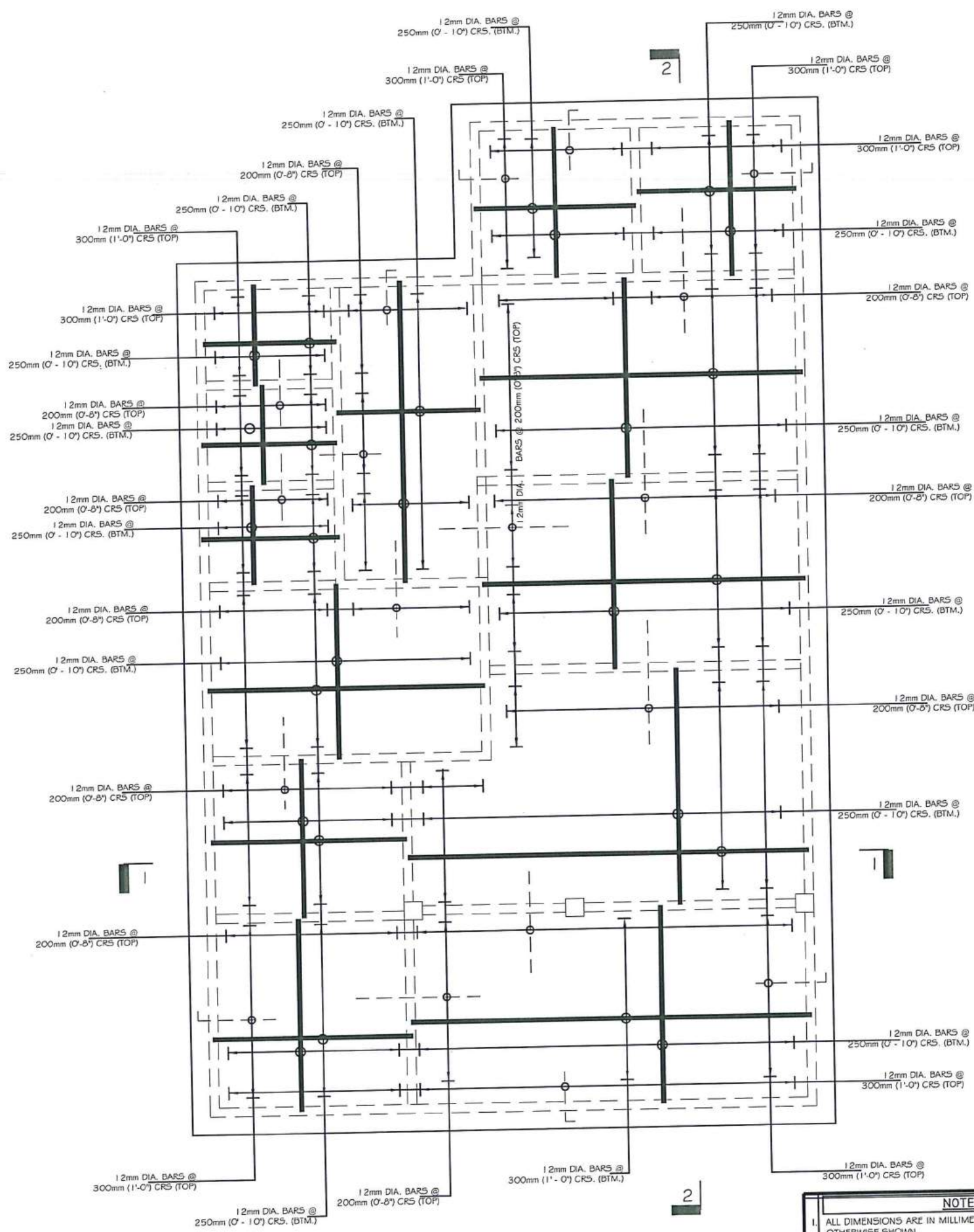
PROJECT NAME:
CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW

DRAWN BY:
K. MITCHELL
CHECKED BY:
P. REID

DATE
FEB. 2019
DATE
FEB. 2019

SHEET TITLE:
ELECTRICAL & PLUMBING PLAN





LEGEND	
SYMBOL	DESCRIPTION
	4 Blade 110V Industrial Ceiling Fan
	20Amp SP ONE (1) Way Switch in Ganged Boxes as req. c/w cover plate
	ELECTRICAL WIRE
	AIR CONDITION UNIT
EF-1	EXHAUST FAN

EXHAUST FAN SCHEDULE				
EXHAUST FAN DESIGNATION	LOCATION	AIR FLOW		VOLTAGE (V-Ph-Hz)
		CFM	[L/s]	
EF-1	PREPARATION ROOM	350	[165]	220-1-50
EF-2	STORAGE	120	[57]	220-1-50

- NOTE:**
- ALL REFRIGERANT PIPING MUST BE INSULATED
 - ALL INTERIOR CONDENSATE PIPING MUST BE INSULATED
 - MINIMUM CONDENSATE PIPING DIAMETER IS 1"
 - EXTERIOR REFRIGERANT PIPE TO BE COATED WITH WEATHERPROOF COATING (ROOFING COMPOUND)
 - USE WALL-MOUNTED BRACKETS FOR CONDENSING UNITS
 - FAN TREATED WITH ANTI-CORROSION TREATMENT

NOTES

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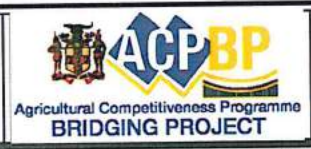
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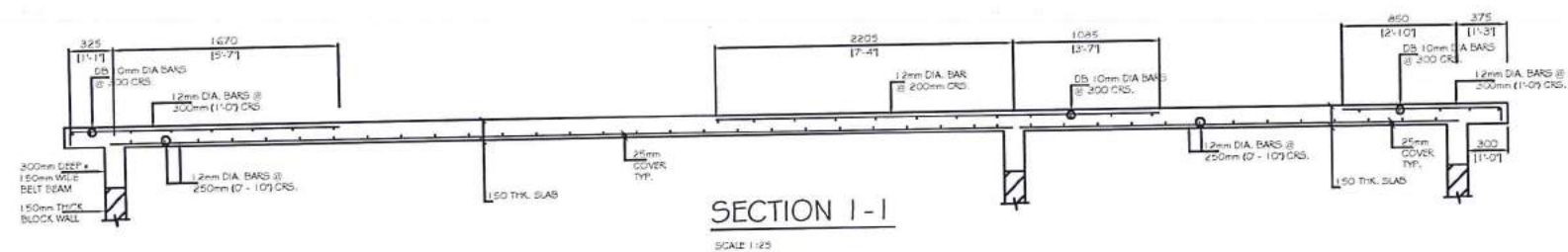
DRAWN BY:
K. MITCHELL

CHECKED BY:
P. REID

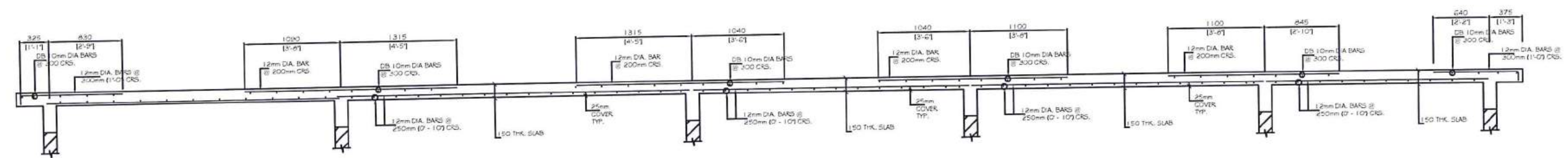
DATE:
FEB. 2019

SHEET TITLE:
R.C ARRANGEMENT SLAB AND HVAC PLAN



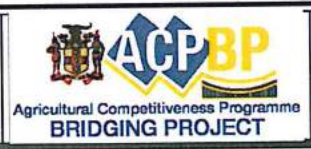


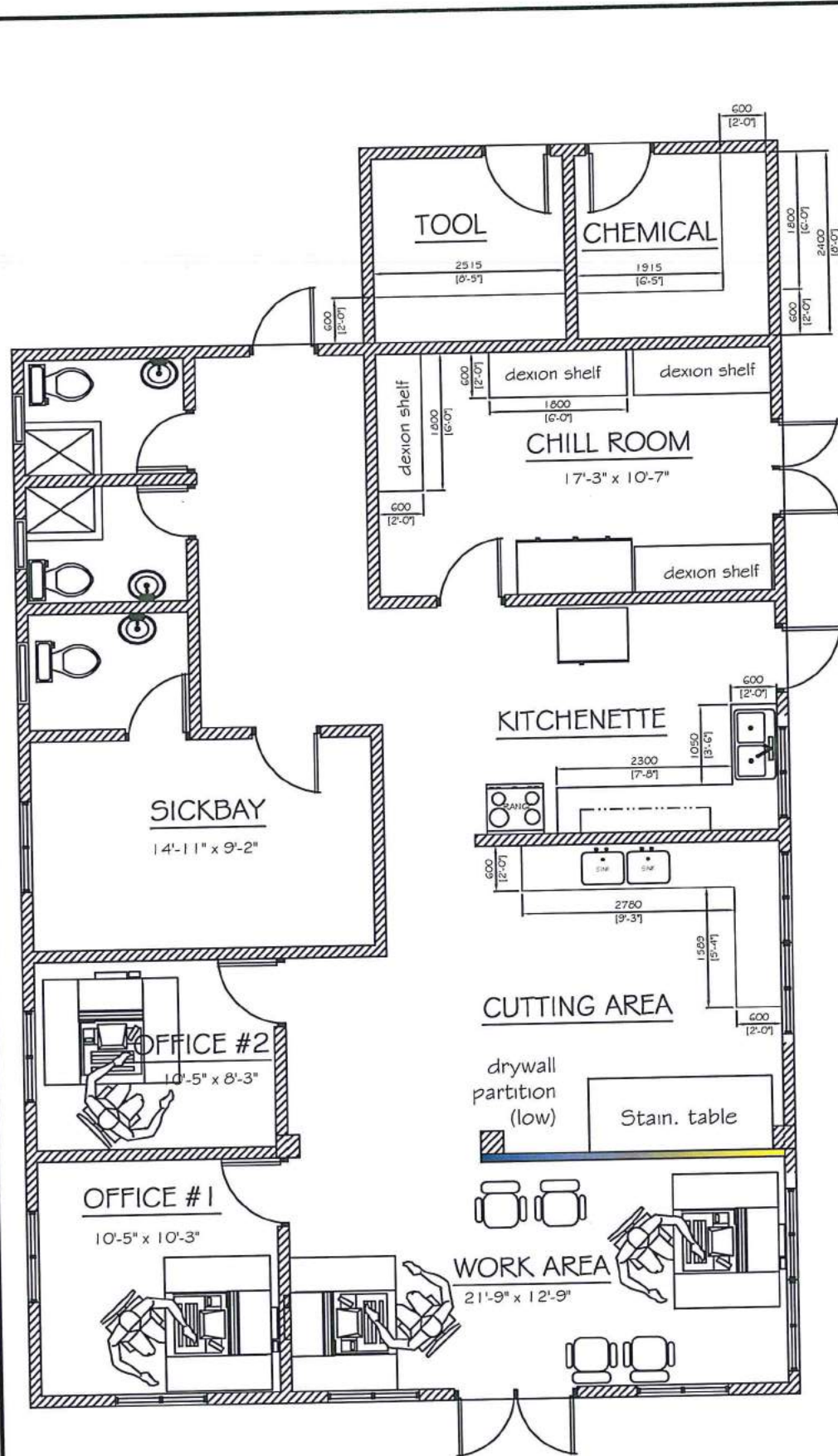
SECTION 1-1
SCALE 1:25



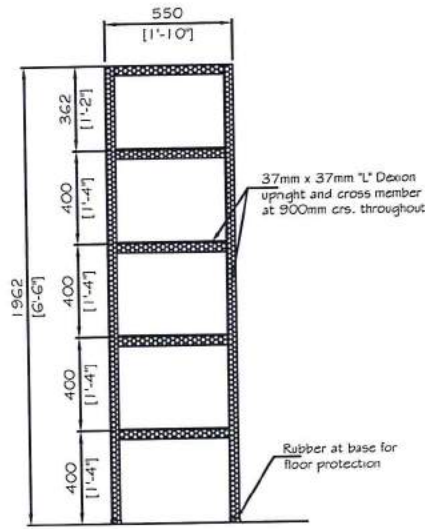
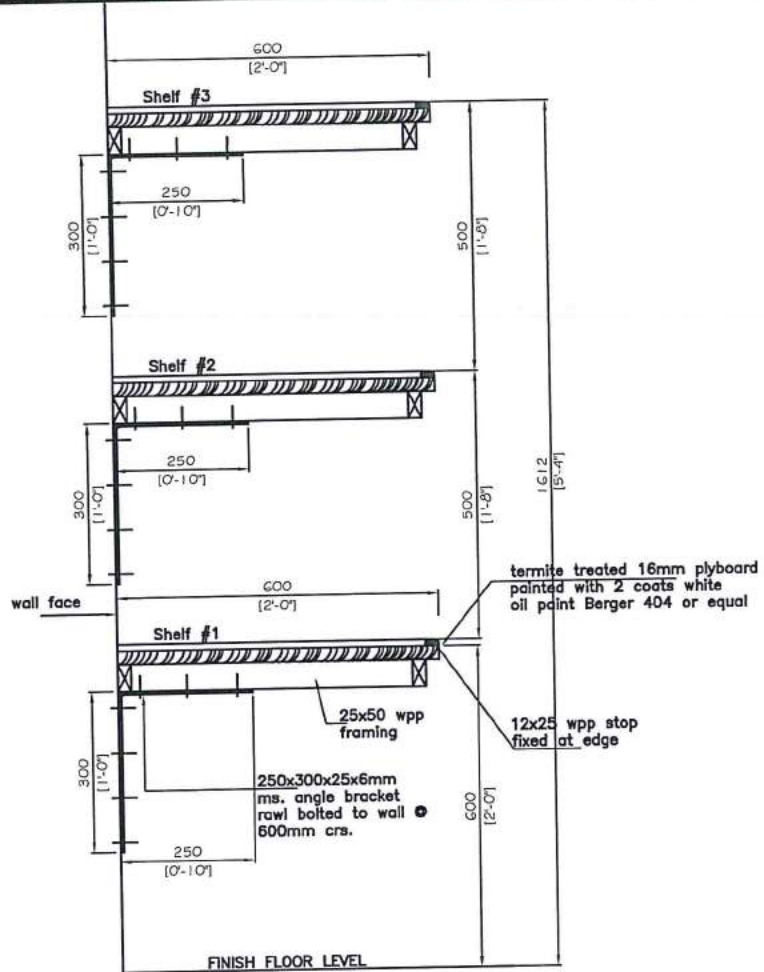
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1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN 2. DO NOT SCALE DRAWING 3. ALL DIMENSIONS MUST BE CHECKED AND CROSS CHECKED BEFORE CONSTRUCTION.	CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW	K. MITCHELL	FEB. 2019	SECTION THRU R.C SLAB
		CHECKED BY:	FEB. 2019	
		P. REID		

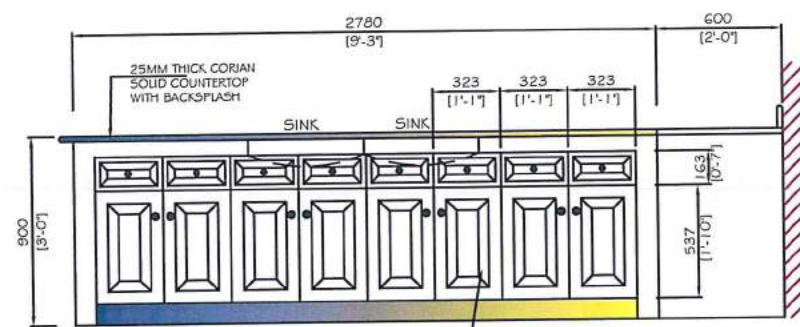




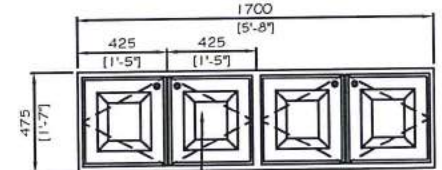
LAYOUT OF CUPBOARD AND SHELVES



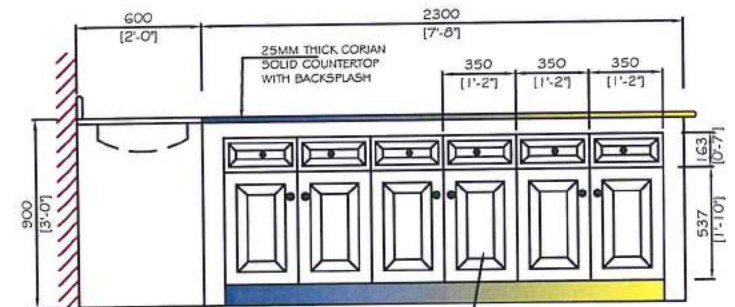
TYPICAL ELEVATION OF DEXION SHELF
(size 1.96m high x 0.55m wide x 1.2m long)



CUPBOARD MADE FROM TREATED PINWOOD FINISHED WITH SPRAYED WITH FURNITURE FINISH VARNISH, COMPLETE WITH ANTI-SLAM STOP ON CUPBOARD DOORS
ELEVATION "L" SHAPED CUPBOARD
Size = 4.97m long x 0.6m wide x 0.9m high (Cutting Area)



CUPBOARD MADE FROM TREATED PINWOOD FINISHED WITH SPRAYED WITH FURNITURE FINISH VARNISH, COMPLETE WITH ANTI-SLAM STOP ON CUPBOARD DOORS
ELEVATION OF OVERHEAD CUPBOARD
Size = 1.7m long x 0.35m wide x 0.475m high (Kitchenette)



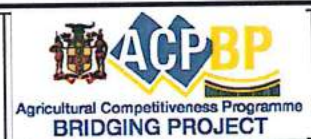
CUPBOARD MADE FROM TREATED PINWOOD FINISHED WITH SPRAYED WITH FURNITURE FINISH VARNISH, COMPLETE WITH ANTI-SLAM STOP ON CUPBOARD DOORS
ELEVATION "L" SHAPED CUPBOARD
size = 3.35m x 0.6m wide x 0.9m high (Kitchenette)

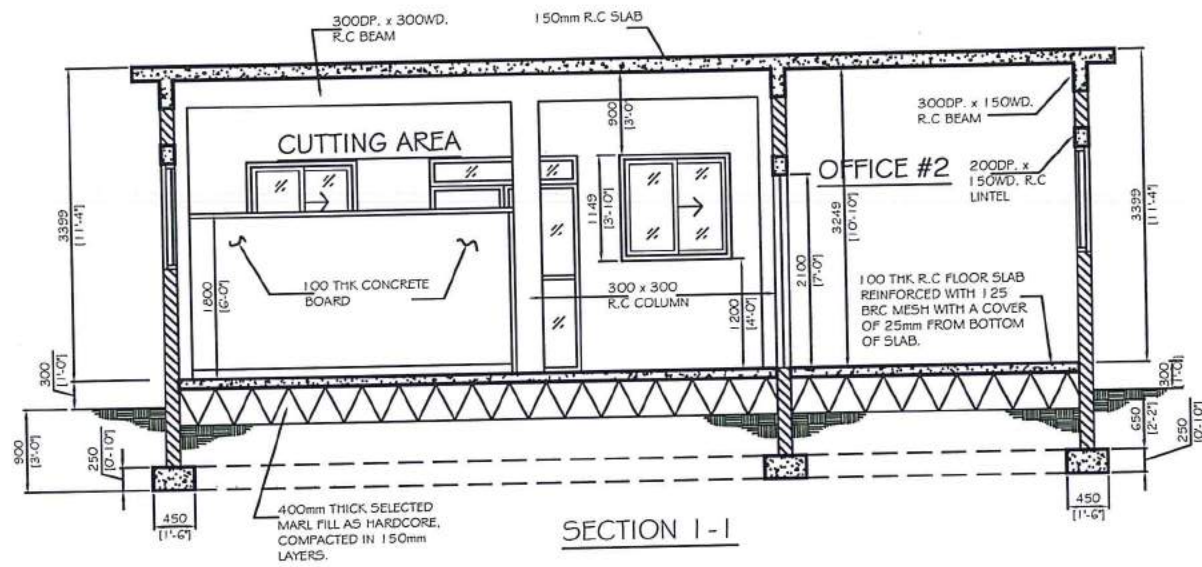
NOTES
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PROJECT NAME: CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW

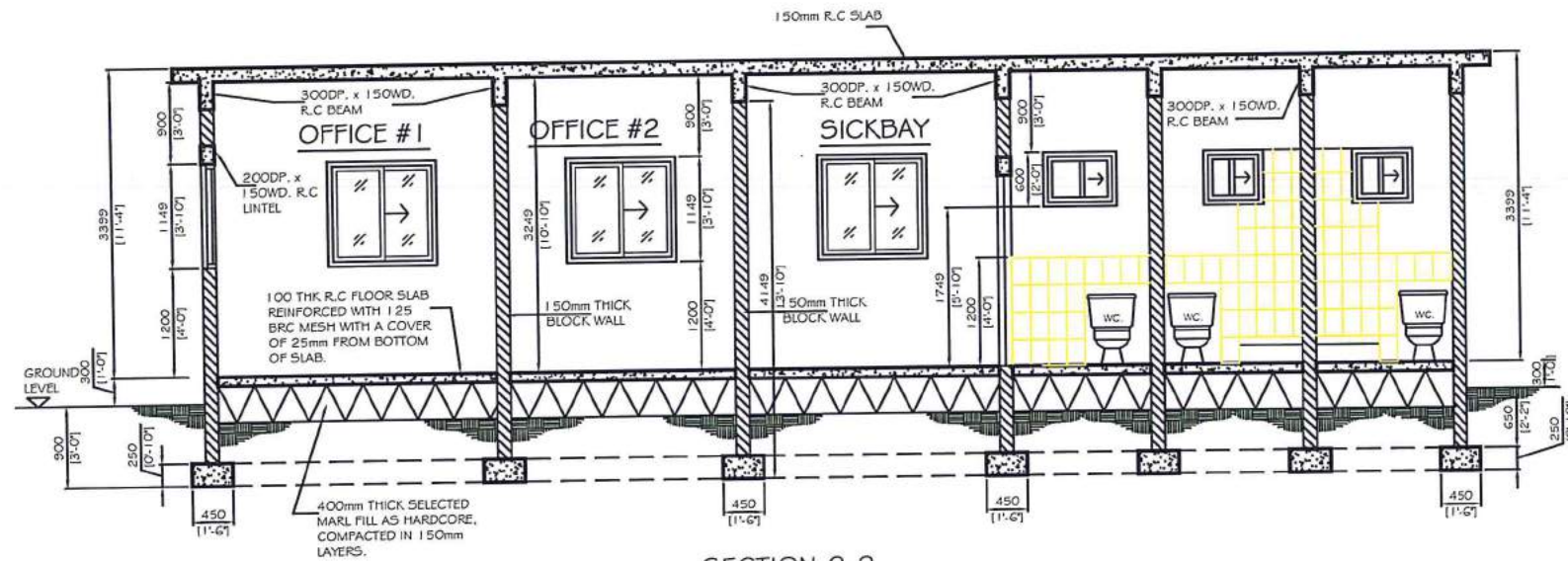
DRAWN BY: K. MITCHELL
DATE: FEB. 2019
CHECKED BY: P. REID
DATE: FEB. 2019

SHEET TITLE: LAYOUT OF CUPBOARD AND DETAILS





SECTION 1-1



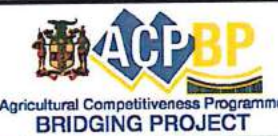
SECTION 2-2

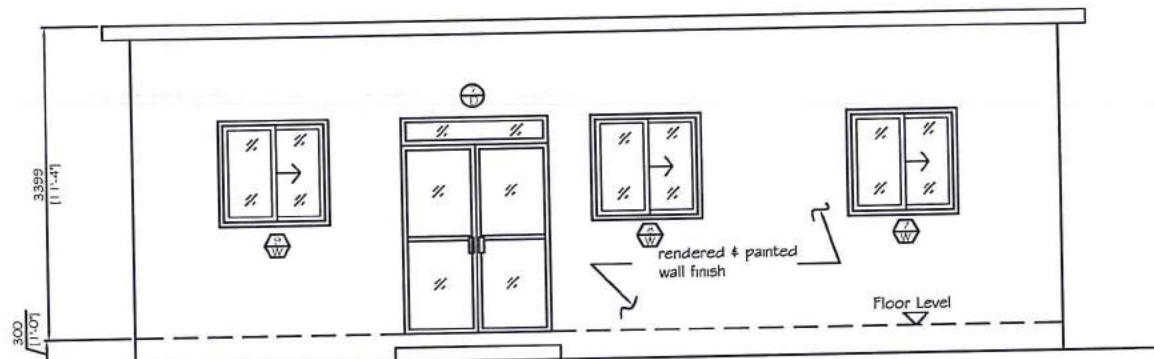
NOTES	
1.	ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN
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PROJECT NAME:	
CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW	

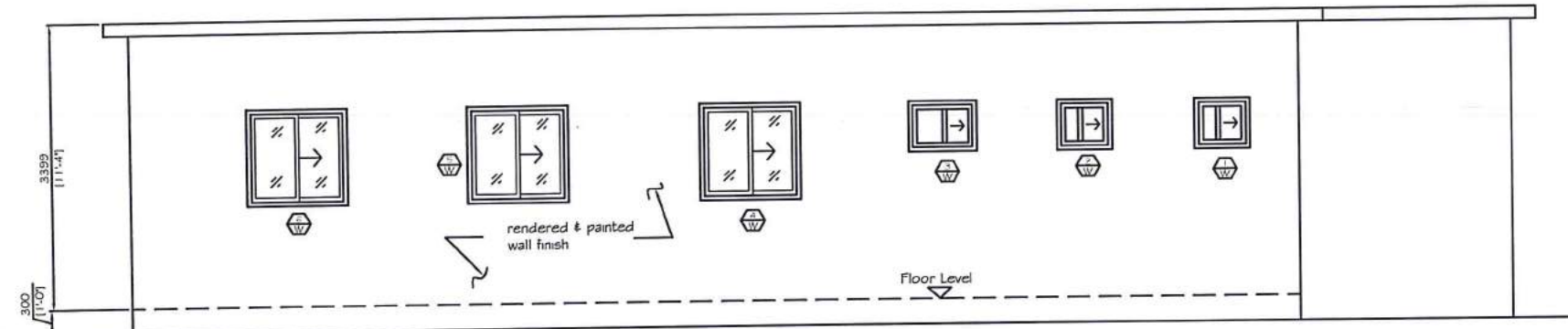
DRAWN BY:	DATE
K. MITCHELL	FEB. 2019
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P. REID	FEB. 2019

SHEET TITLE:	
CROSS SECTIONS	

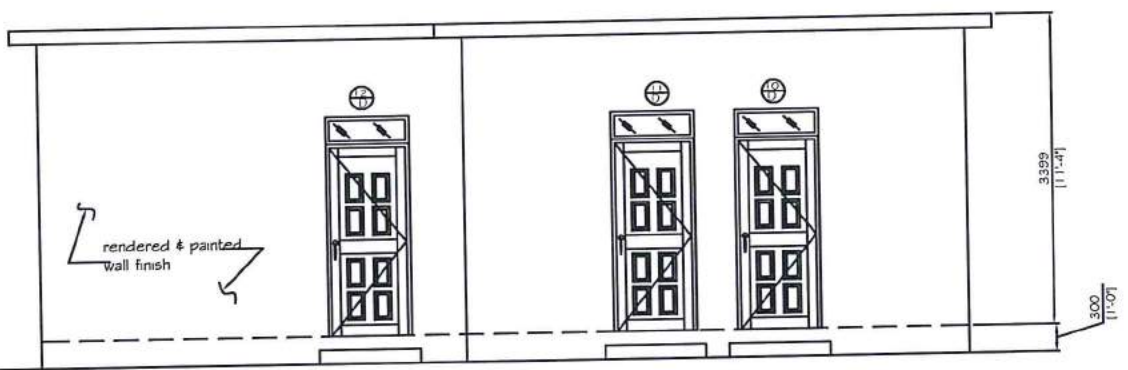




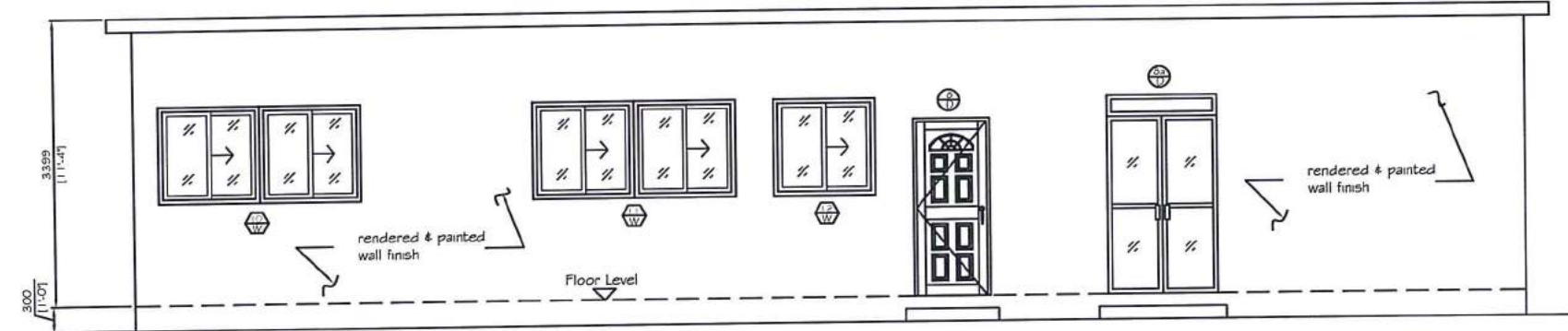
ELEVATION A



ELEVATION B

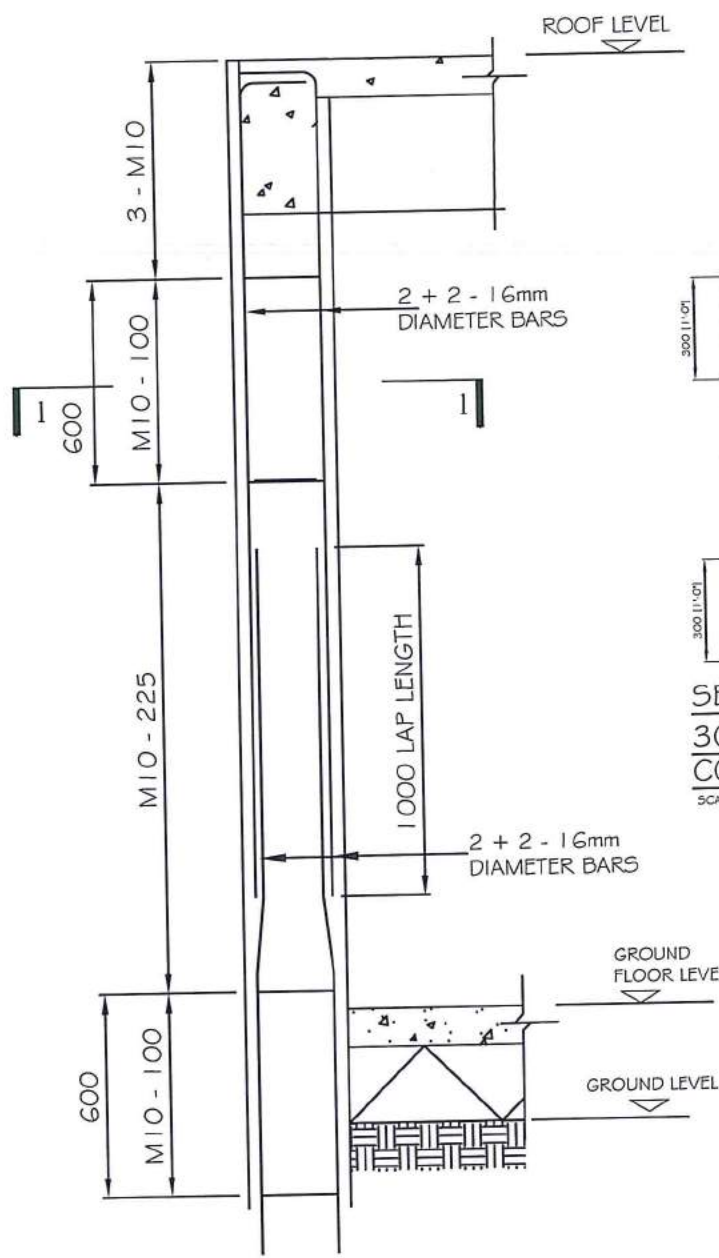


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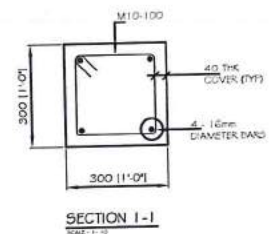


ELEVATION D

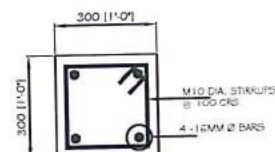
NOTES 1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN 2. DO NOT SCALE DRAWING 3. ALL DIMENSIONS MUST BE CHECKED AND CROSS CHECKED BEFORE CONSTRUCTION.	PROJECT NAME: CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW	DRAWN BY: K. MITCHELL	DATE: FEB. 2019	SHEET TITLE: ELEVATIONS		09
		CHECKED BY: P. REID	FEB. 2019			



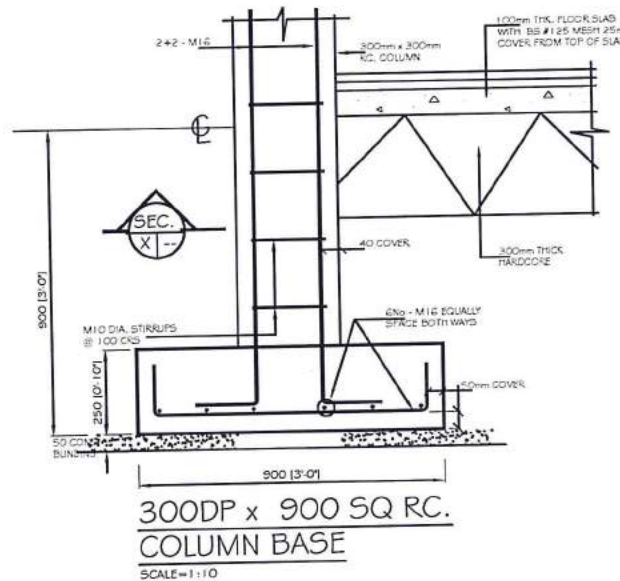
TYPICAL ELEVATION OF 300mm x 300mm R.C. COLUMN
SCALE - 1:20



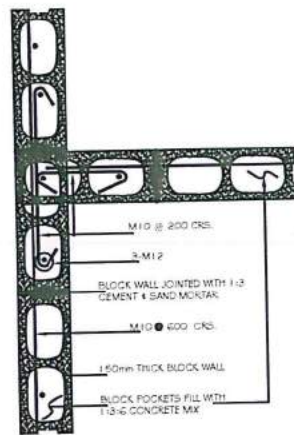
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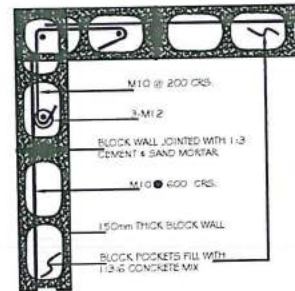
SECTION X-X
300 x 300 R.C. COLUMN
SCALE=1:10



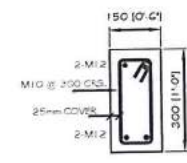
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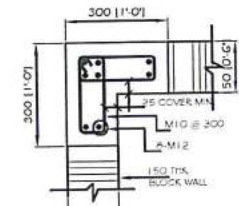
TYPICAL DETAIL (150mm THK. BLOCK WALL)
SCALE=1:10



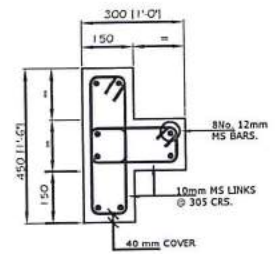
TYPICAL DETAIL (150mm THK. BLOCK WALL)
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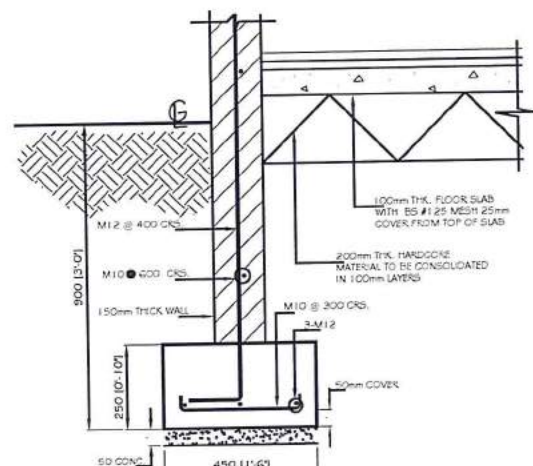
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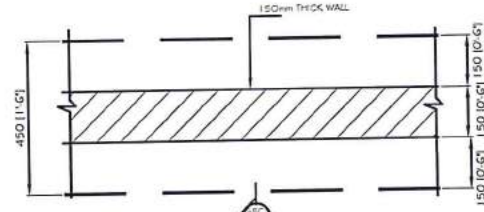
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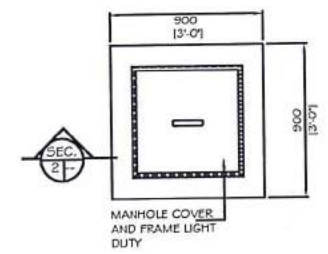
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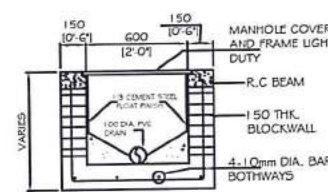
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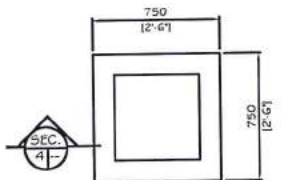
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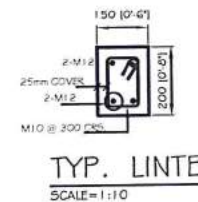
MANHOLE PLAN (MH) (900 SQ.)
SCALE - 1:20



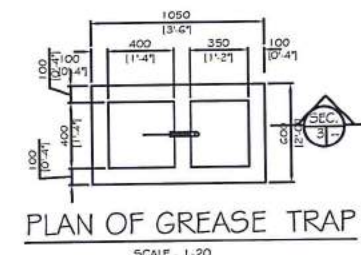
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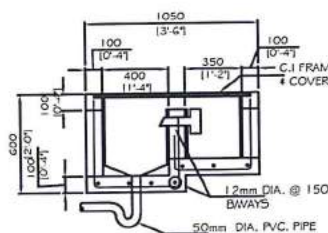
TGB PLAN (750 SQ.)
SCALE - 1:20



TYP. LINTEL
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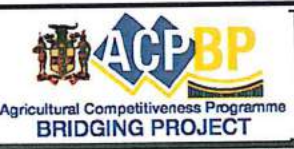


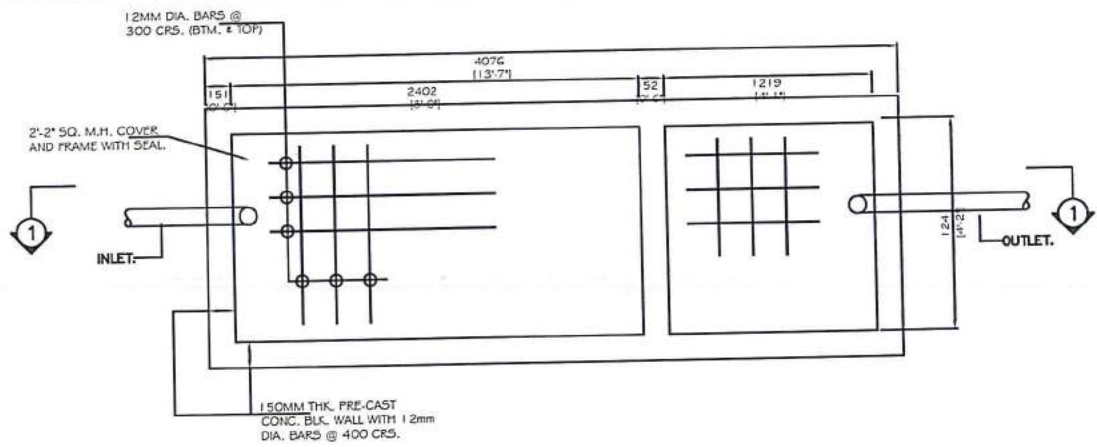
PLAN OF GREASE TRAP
SCALE - 1:20



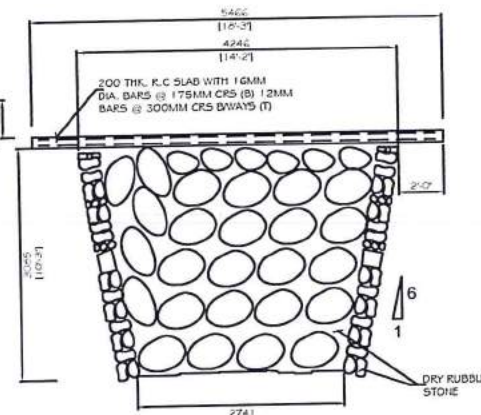
SECTION '3-3'
SCALE - 1:20

NOTES	PROJECT NAME:	DRAWN BY:	DATE	SHEET TITLE:
1. ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN 2. DO NOT SCALE DRAWING 3. ALL DIMENSIONS MUST BE CHECKED AND CROSS CHECKED BEFORE CONSTRUCTION.	CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW	K. MITCHELL	FEB. 2019	R.C. DETAILS
		CHECKED BY:	FEB. 2019	
		P. REID		

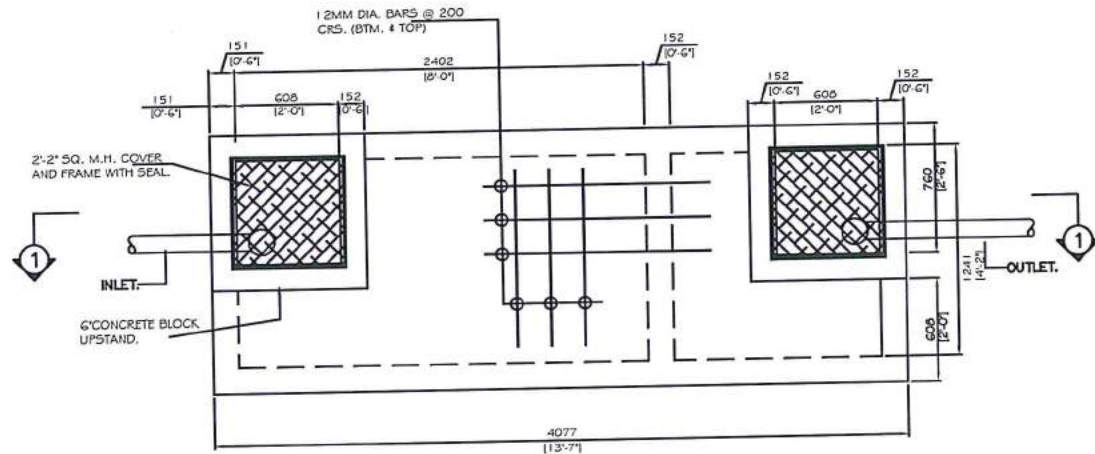




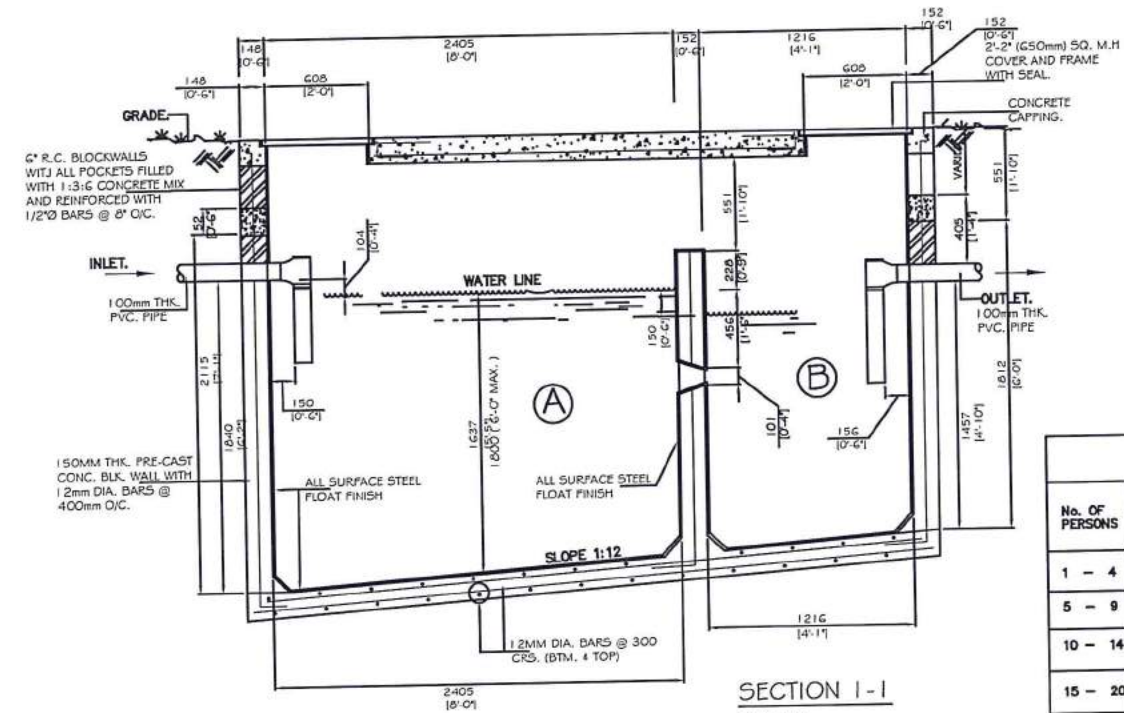
PLAN OF SEPTIC TANK BOTTOM SLAB
SCALE 1:20



SOAK-AWAY PIT
SCALE 1:50



PLAN OF SEPTIC TANK TOP SLAB
SCALE 1:20



No. OF PERSONS	CAPACITY		LENGTH		WIDTH	DEPTH	
	(GALLONS)	(LITRES)	A	B	C	D	E
1 - 4	325	1230	5'-0" [1525mm]	3'-0" [915mm]	3'-6" [1065mm]	3'-6" [1065mm]	3'-0" [915mm]
5 - 9	450	1705	6'-0" [1830mm]	3'-8" [1065mm]	3'-6" [1065mm]	4'-0" [1220mm]	3'-0" [915mm]
10 - 14	720	2725	7'-0" [2130mm]	3'-8" [1065mm]	3'-6" [1065mm]	4'-0" [1220mm]	3'-0" [915mm]
15 - 20	1000	3785	8'-0" [2440mm]	4'-0" [1220mm]	4'-0" [1220mm]	4'-0" [1220mm]	3'-0" [915mm]

NOTES

- ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE SHOWN
- DO NOT SCALE DRAWING
- ALL DIMENSIONS MUST BE CHECKED AND CROSS CHECKED BEFORE CONSTRUCTION.

PROJECT NAME:
CONSTRUCTION OF OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW

DRAWN BY:
K. MITCHELL

CHECKED BY:
P. REID

DATE:
FEB. 2019

DATE:
FEB. 2019

SHEET TITLE:
DRAINAGE DETAILS



Section IX. Bill of Quantities/Lump Sum Contracts

Item No.	WORK ITEM	Est.	Unit	Rate	Amount
	Description	Qty.		\$	\$
	<u>PRELIMINARY ITEMS</u>				
A	<p>Conditions of Contract and Specifications</p> <p>The Contractor will be required to execute all the works shown on the drawings and described in these Bills of Quantities upon the terms and conditions contained in or referred to in the General Conditions of Contract and Preliminaries and the General Specifications.</p>				
B	<p>Definitions</p> <p>The Contract Documents consist of the Agreement, General Conditions of Contract, the Drawings, Bills of Quantities and Specifications, including all Modifications thereof incorporated in the documents before their execution.</p> <p>The Employer, the Contractor and the Architect are those mentioned as such in the Agreement. They are treated throughout the Contract Documents as if each were of the singular number and masculine gender.</p> <p>The term "Sub-Contractor", as employed herein, includes only those having a direct contract with the Contractor and it includes one who furnishes material worked to a special design according to the Plans or Specification of this work, but does not include</p> <p>Written notice shall be deemed to have duly served if delivered in person to the individual or to a member of the firm or to an officer of the Corporation for whom it is intended or if delivered at or sent by registered mail to the last Business address known to him who gives the notice.</p> <p>The term "work" of the Contractor or Sub-Contractor includes labour or materials or both.</p> <p>All time limits stated in the Contract Documents are of the essence of the Contract.</p> <p>The Law of the place of building shall govern the Construction of this Contract.</p>				
	Carry to Summary				\$

Item No.	WORK ITEM	Est.	Unit	Rate	Amount
	Description	Qty.		\$	\$
A	<p>Contractor to Obtain own Information</p> <p>The Contractor shall visit and examine the site and satisfy himself as to the nature of existing roads and other means of communication, the layout of the existing building and the nature if all demolitions, alterations, and extensions, the character of the works. No extra charge made in consequences of any misunderstanding or incorrect information on any of these points, or on the grounds of insufficient information will be allowed.</p>				
B	<p>Avoidance of Nuisance and Damage to Adjoining Premises</p> <p>The works are to be carried out in such a manner as to cause as little nuisance as possible to adjoining owners or tenants, and the Contractor will be held responsible for any claims which may arise from the disregard of this Clause.</p> <p>Should any damage or injury occur to roads, drains or surrounding properties from the carrying out of the Architect, the Contractor shall make good the same at his own cost to the entire satisfaction of the Architect.</p> <p>No shade trees shall be removed, excepting from within the actual building area, without prior approval of the Architect. The Contractor is to arrange for adequate protection during the execution of the works of any tree, shrubs or other features which are to be retained.</p>				
C	<p>Enclosure of Site and General Protection</p> <p>Allow for providing all means necessary, other than watching and lighting to preserve the Site, Work, unfixed materials and plant, etc from trespass, damage or theft and to protect all persons from injury or inconvenience due to the operation of this Contract including temporary fences, screens, etc all to be in accordance with the requirements of statutory or other regulations.</p>				
D	<p>Temporary Crossings and Roads</p> <p>The Contractor shall allow for providing all necessary temporary crossings and roads for access to and within the site, alter and adapt as required, maintain and clear away at completion including making good all disturbed and paying all charges in connection with temporary measures.</p>				
E	<p>Tenders to be Completed</p> <p>Tenders will be deemed to be inclusive of suitable and sufficient labour, all materials, transport workshops, bonus, and incentive schemes, height pay, depth pay, working in water pay, over water pay, sick leave pay or severance pay, travelling time, expenses, subsistence and welfare measures.</p>				
	Carry to Summary				

Item No.	WORK ITEM	Est.	Unit	Rate	Amount
	Description	Qty.		\$	\$
A	<p>Holidays with Pay and Public Holiday Schemes</p> <p>Allow for all costs and expenses in connection with Holidays with Pay and Public Holiday Schemes.</p>				
B	<p>National Insurance, N.H.T., H.E.A.R.T., Schemes, etc.</p> <p>Allow for costs and expenses in connection with the Government of Jamaica National Insurance, N.H.T., and H.E.A.R.T. Schemes.</p>				
C	<p>Watching and Lighting</p> <p>The Contractor shall provide all necessary day and night watching, security and temporary lighting to ensure the safety of the Works and of materials delivered to the site during the Contract.</p>				
D	<p>Temporary Lighting and Power</p> <p>Adequate temporary electricity for lighting and power is to be provided and paid for by the Contractor for use on the works, including that required by Sub-Contractors.</p>				
E	<p>Water for Works</p> <p>The Contractors shall make such provisions as may be necessary and pay for an ample and sufficient supply of water for the works, and shall provide all necessary temporary pipes, plumbing storage, etc and clear away on completion and make good all disturb.</p>				
F	<p>Telephone</p> <p>Provide a telephone on site for use by all trades as well as the Architect, for the purposes of this Contract only, including paying all charges in connection therewith for installation and removal.</p>				
G	<p>Contractor's Site Office</p> <p>Allow for providing site offices, erect in approved positions, maintain and clear away at completion including making good all disturbed and paying all rate levies. Allow for allocating to the Architect or his representative a room approximately 10'0" x 12'0" with a work counter 10'0" x 2'6" wide, stool, lock up door, two windows and maintaining a clean condition.</p>				
H	<p>Sheds</p> <p>Allow for providing suitable sheds for the dry storage of materials, erect in approved positions and clear away at completion, including making good all disturbed.</p>				
I	<p>Mess Rooms</p> <p>Allow for providing mess rooms and other accommodation for the workmen, erect in approved positions and clear away at completion including keeping clean and making good all disturbed.</p>				
	Carry to Summary				

Item No.	WORK ITEM	Est.	Rate	Amount
	Description	Qty.	\$	\$
A	<p>Latrines</p> <p>Allow for providing properly screened latrine accommodation for the workmen, together with suitable washing facilities, erect in approved positions and clear away at completion including regularly clearing and keeping clean and disinfected.</p>			
B	<p>Safety and Welfare Measures</p> <p>Allow for affording full safety precautions and first aid equipment at both site and workshops.</p> <p>Provide and maintain all requisite shelters from inclement weather, accommodation for clothing, accommodation for provision of meals, drinking water, washing and first aid facilities, etc for fully complying with the requirements of welfare regulations.</p>			
C	<p>Plant and Small Tools</p> <p>The Contractor shall provide all items of plant, scaffolding and other small tools for the proper execution of the work (other than plant, scaffolding and small tools property provided by specialist Sub-Contractor) and shall clear away on completion.</p>			
D	<p>Trespass</p> <p>The Contractor shall prevent and trespass on the adjoining properties by his own employees or those of Sub-Contractor and shall indemnify the Employer against any claims, costs or proceeding whatsoever arising out of any trespass or alleged trespass or theft.</p>			
E	<p>Site Documents</p> <p>The Contractor shall keep on the site at all times a complete and up-to-date set of documents and drawings in legible condition.</p>			
F	<p>Site Instructions</p> <p>The Contractor shall keep on the site at all times an 8-1/2" x 5" triplicate book with sufficient carbons in which the Architect can record site instructions. All instructions recorded in the book shall be deemed equal to instructions delivered to the Contractor and shall be acted upon without further confirmation.</p>			
G	<p>Site Meetings</p> <p>The Contractor shall arrange in agreement with the Architect regular site meetings at monthly intervals to consider progress and other relevant matters and shall provide suitable accommodation, furnishings, equipment and facilities for the meetings. The Employer's Consultants are to be notified at least 7 days in advance of the meetings. Within 7 days after each meeting the Contractor shall circulate minutes of those meetings to each concerned.</p>			
	Carry to Summary			

Item No.	WORK ITEM	Est.		
	Description	Qty.		
A	<p>Samples</p> <p>Allow for obtaining and submitting samples of materials as required by the Architect before use or application in the Works. Any samples rejected are not to be replaced until approved and all such materials subsequently used in the work are to be equal to the approved samples in all respects.</p>			
	<p>Where trade names or maker's catalogue numbers are mentioned in the Bills of Quantities, the reference is intended only as a guide for estimating purposes to the type of material required and to establish a degree of quality and the Contractor may use any article or material similar or equal to those described by reference to trade names or catalogue numbers SUBJECT TO THE APPROVAL OF THE ARCHITECT.</p>			
B	<p>Manufacturer's Instruction</p> <p>All manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in strict accordance with the manufacturer's printed instructions, unless herein specified to the contrary. Where reference is made to manufacturer's directions, the Contractor shall submit copies of such direction to the Architect. If the Contractor is in doubt of any instruction he shall not proceed but shall refer the decision to the Architect for approval.</p>			
C	<p>Royalties and Patent</p> <p>The Contractor shall pay all royalties and license fees. He shall defend all suits and claims for infringement of any patent rights and shall save the Employer harmless from loss on account thereof except that the Employer shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has information that the process of article specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Architect or Employer.</p>			
D	<p>Testing</p> <p>Allow for testing materials as and when called upon to do so by the Architect. Any material or work found to be defective or not complying with the tests shall be immediately removed from the site or cut and made good at the Contractor's own expense.</p>			
E	<p>Programme and Progress Schedules</p> <p>The Contractor shall prepare a programme and progress chart and shall submit it to the Architect before taking possession of the site. The Contractor shall within a further 2 months elaborate this programme to show the Coordination of all major sub-contracts and again submit it to the Architect. After approval the Contractor shall keep a copy of the programme on the site and record current progress thereon and submit a copy to the Architect upon application for monthly payments together with a progress report for the Employer.</p>			
	<p>Carry to Summary</p>			

Item No.	WORK ITEM Description	Est. Qty.	Rate \$	Amount \$
A	<p>Programme and Progress Schedules (Cont'd.)</p> <p>The Contractor shall provide progress photographs at monthly intervals during the contract period. Photographs shall be taken from two different angles on the site agreed with the Architect and shall show the progress of the works. The Contractor shall submit to the Architect two black and white prints size 8" x 11" of each negative.</p>			
B	<p>Cover up and Protect</p> <p>Allow for covering up and protecting the Works from weather or other causes and for making good any damage which may be so caused as covered by insurance hitherto described.</p> <p>Allow for protecting from trespass, loss or damage arising from the operation of this Contract, all existing property including buildings, temporary fences, walls, trees, grass, vegetation, roads, paths, drains, sewers, water, electric and gas pipes and mains and the like, whether public or private and both inside and outside the Site and for making good any damage occasioned through the operation of this Contract and pay all charges in connection. The contractor shall not interfere with any of the foregoing without the consent of the public authority or private owner concerned.</p> <p>The Contract will be required where possible to leave all existing trees, plants and shrubs and shall include for all protection and any inconvenience caused.</p>			
C	<p>Defective or Imperfect Work</p> <p>If, at any time during the progress of the works, the Architect shall disapprove of any materials employed, the Contractor is to remove forthwith such materials from the site and to substitute materials of approved quality. Where any portion of the work executed shall be considered by the Architect to be defective or imperfect or not in accordance with the terms of the Contract, such defective or imperfect work shall be removed forthwith and the work re-executed in an approved manner at the Contractor's expense.</p> <p>Re-examination of questioned work may be ordered by the Architect and if so ordered the work must be uncovered by the Contractor. If such work be found not in accordance with the Contract Documents the Contractor shall pay such cost unless it be found that the defect in the work was caused by a Contractor employed as provided in Clause 23 and in that event the Employer shall pay such cost.</p>			
D	<p>Temporary Storm-Water Drainage</p> <p>The Contractor is to ensure that the whole Site is kept free from damage by storm-water flooding and he is deemed to have allowed in his prices for providing such temporary ditches, gullies and the like as may be necessary and for subsequently backfilling excavations, reinstating surfaces and generally making good. Any damage arising from non-compliance with this Clause is to be made good at the Contractor's own expense.</p> <p>Carry to Summary</p>			

Item No.	WORK ITEM	Est.	Rate	Amount
	Description	Qty.	\$	\$
A	<p>Measurement of Work</p> <p>Allow for affording to the Architect and Quantity Surveyor all reasonable assistance in measuring variations and checking labour and materials and the like. Allow for giving the Quantity Surveyor at least three clear days notice before covering up and variation work in excavations, foundations, drains, and the like, in order that proper measurements may be taken as executed and in the event of the Contractor failing to provide such notice, he is to uncover and reinstate as required at his own expense.</p>			
B	<p>Advertisements</p> <p>Allow for providing and erecting a board size 12'0" x 8'0" on supports with colours and lettering listing all consultants, the Contractor and principal Sub-Contractors, all to be strictly in accordance with the Architect's requirements. Allow for maintaining in good condition and clearing away at completion. Erection of signs for the safety of worker on site.</p>			
C	<p>Antiquities</p> <p>The Contractor shall carefully preserve for the Employer, uncleaned and as excavated, all antiquities and objects of interest and value which may be found on the Site and is to deliver them to the Architect immediately after discovery.</p>			
D	<p>General Attendance</p> <p>Allow for each trade attending on all others.</p>			
E	<p>Provision by Employer</p> <p>Where goods, services, equipment, etc., are provided direct by the Employer for use in the work, the Contractor shall not be entitled to receive any percentage addition or remuneration in respect of profit on such items.</p>			
F	<p>Remove Rubbish and Debris</p> <p>Allow for keeping the Works reasonably clean during the progress of the Contract, clearing away all rubbish and debris as it accumulates and finally cleaning glass both sides, scrubbing or otherwise cleaning all floors, paving and steps, cleaning out cisterns and gutters, cleaning sanitary fittings and other fittings, cutting all grass and weed and leave the Site and premises clean and ready for occupation at completion to the satisfaction of the Architect.</p>			
G	<p>Permits and Taxes</p> <p>Allow for obtaining permits and paying all fees connected therewith and for paying all taxes of whatever description and character incidental to the Performance of the Contract.</p>			
H	<p>Foreman on site</p>			
	Carry to Summary			

Item No.	WORK ITEM Description	Est. Qty.	Rate \$	Amount \$
A	<p data-bbox="282 331 493 361">Performance Bond</p> <p data-bbox="282 394 1068 596">The Contractor shall enter into a performance bond for 10% of the Contract Sum with a guarantor to be approved by the Employer for the due performance and completion of the Contract and he shall allow for all costs and expenses in connection therewith. The performance bond shall be produced before the signing of the contract for the inspection of the Employer and it shall be operative from the commencement of the Contract until the end of the defects liability period.</p> <p data-bbox="282 1449 493 1478">Carry to Summary</p>			

Item	Description	Qty	Unit	Rate	Amount
	<p><u>PROPOSED OFFICE SPACE AT TOP MOUNTAIN, ST. ANDREW</u></p> <p><i>Note: The Contractor must visit the site in order to assess for himself the existing conditions and extent of the work to be executed in order to supplement, if necessary, the descriptions contained in this bill, as prices inserted will be taken to include all items necessary to carry out and complete all the works to the of the Building Administrator.</i></p> <p>BUILDING DEMOLITION</p> <p>Restroom</p> <p><u>Provide labour and equipment to demolish and cart away from site the following items:</u></p>				
1	150mm thick reinforced block wall structure comprising 2#v-joint wooden door, 2#wooden louvre window, 2# water Closet, 1# wall mounted face basin, 1# timber base cupboard including single sink and 0.8m long x 0.8m shower stall. Roof measured separately	19.0	m ²		
2	Timber Lean-to zinc Roof comprising 4# 1" x 3" lath, 4# 2" x 4" wpp. rafter, 2" x 4" wallplate and 1" x 6" rafter	10.0	m ²		
	Main Building				
3	150mm thick reinforced block wall structure comprising 1# single wooden door, 1# double wooden door, 5# single bay wooden window, and 1# double bay wooden window and shower stall.	120.0	m ²		
	<i>Page 1 - Carried to Summary on page 16</i>				

Item	Description	Qty	Unit	Rate	Amount
BUILDING DEMOLITION (Continue)					
Office					
4	150mm thick reinforced block wall structure comprising 1# single bowl concrete sink, 1#concrete counter, 2# single wooden door, 2# single bay wooden window, 1# tripple bay wooden window, 1# 2ft. Double tube flourescent lamp, twin and earth cable, 2# junction box, and 1# plug. Roof measured separately	42.0	m ²		
5	Timber Lean-to zinc Roof comprising 4# 1" x 3" lath, 4# 2" x 4" wpp. rafter, 2" x 4" wallplate and 1" x 6" rafter	19.0	m ²		
6	Load up and cart away material to dump not exceeding 70km	30.0	m ³		
BUILDING DEMOLITION					
<i>Page 2 - Carried to Summary on page 16</i>					

Item	Description	Qty	Unit	Rate	Amount
	<u>SUBSTRUCTURE</u>				
7	Excavate over site average 150mm deep to remove vegetable soil and cart away from site	24.00	m ³		
8	Excavate for foundation trench 450mm wide, commencing at strip site level not exceeding 1.5m deep and get out.	22.00	m ³		
9	Extra over excavation for excavating in and breaking up rock, or other likes obstructions, get out including disposal (Provisional)	10.0	m ³		
10	Extra over excavation for excavating existing concrete footing (Provisional)	60.0	m ³		
11	Include Provisional Sum of \$100,000.00 for de-rooting, transportation and dispose of all debris off site to dump		Sum		\$100,000.00
12	Allow for keeping excavation free from storm or percolating water by whatever means necessary (Provisional)		Item		
13	Load surplus excavated material and cart away from the site not exceeding 200m	8.0	m ³		
14	Backfill and ram selected material around foundation	15.0	m ³		
	<u>The following materials to be from National Works Agency (NWA) approved Quarry or otherwise approved by Building officer:</u>				
15	Filling to make up levels, 400mm thick marl spread, level and well compacted in 150mm layers to modified density A.A.S.H.O density of 95% or equally approved by Project Officer	59	m ³		
	Page 3 - Carried to Summary on page 16				

Item	Description	Qty	Unit	Rate	Amount
	<u>SUBSTRUCTURE (Continue)</u>				
	<u>Termite Treatment</u>				
	<u>Note: The sub-contractor must possess a valid termite applicator and operator license. The termite Applicator must submit the list of chemicals to be used and procedure/method of treatment before commencement. A minimum of five (5) year warranty must be given on the job.</u>				
15	Treat the surface of the ground under floor sides and bottom of pits and trenches with soil poisoning to eradicate sub-terrestrial termites	163.0	m ²		
16	Ditto to building perimeter 600mm girth	33.0	m ²		
	<u>Reinforced concrete (21MPa) in:</u>				
17	Strip Footing	8.0	m ³		
18	100mm Thick floor slab surface wood float finished	147.0	m ²		
	<u>Mild steel rod reinforcement</u>				
19	12mm Diameter in Footing	200	kg		
20	10mm Diameter as links in Footing	105	kg		
21	Layer of steel fabric mesh reinforcement (JRC Nr 126 weighing 2.06 kg per square metre or other equal and approved) embedded in concrete slab on and including chairs and including 150mm side and end laps (measured net - no allowance made for laps)	147.0	m ²		
	<i>Page 4 - Carried to Summary on page 16</i>				

Item	Description	Qty	Unit	Rate	Amount
	<u>WALLING AND FRAME</u>				
	<u>Reinforced concrete (21MPa) in:</u>				
22	"I" Stiffeners (6 no. thus)	1.0	m ³		
23	"L" Stiffeners (13 no. thus)	3.4	m ³		
24	"T" Stiffeners (4 no. thus)	1.4	m ³		
25	300mm x 300mm column and 900mm x 900mm column footing (3 no. thus)	1.7	m ³		
26	Belt beams	3.0	m ³		
27	Lintels	1.00	m ³		
	<u>Bar Reinforcement as per Drawing Detail</u>				
28	12mm Diameter in "I" Stiffeners (6 no. thus)	92	kg		
29	12mm Diameter in "L" Stiffeners (13 no. thus)	398	kg		
30	12mm Diameter in "T" Stiffeners (4 no. thus)	123	kg		
31	ditto in Belt Beam	260	kg		
32	ditto in Lintels	121	kg		
33	10mm Diameter as stirrups in "I" Stiffeners (6 no. thus). <u>13#in each, 78# total</u>	42	kg		
34	10mm Diameter as stirrups in "L" Stiffeners (13 no. thus) <u>13#in each, 169# total</u>	150	kg		
35	10mm Diameter as stirrups in "T" Stiffeners (4 no. thus) <u>13#in each, 52# total</u>	71	kg		
36	ditto in Column, <u>93# in total</u>	77	kg		
37	ditto in Belt Beam, <u>221# in total</u>	118	kg		
38	ditto in Lintels, <u>103# in total</u>	41	kg		
39	16mm Diameter in column and footing (3 no. thus) <u>4 # in each</u>	162	kg		
	<i>Page 5 - Carried to Summary on page 16</i>				

Item	Description	Qty	Unit	Rate	Amount
40	<u>Wrot formwork to:</u> Sides of stiffener	106	m ²		
41	Sides of Belt beams	50	m ²		
42	Sides of Lintels	17	m ²		
43	<u>Hollow precast concrete blocks (Class A) laid bedded and jointed in cement mortar (1:3) around reinforcement (measured separately) and filling alternate cavities with concrete (17Mpa) in:</u> 150mm Thick walling	214	m ²		
44	<u>Reinforcement as per Drawing Detail:</u> 12mm Diameter mild steel rod reinforcement set vertically at 400mm o/c in cavities of block walls	675	kg		
45	10mm Diameter ditto horizontally at 600mm o/c in joints of block walls	317	kg		
46	Concrete Board Supply and install 100mm Thick wall partition framed with 50mm x 100mm metal stud framing and clad with 12mm thick concrete board (both sides), including tape, plaster to joints and surecoat to surfaces to receive paint. Height = 1.8m	7.2	m ²		
47	<u>Sanitary Base Skirting</u> Supply and apply 1:3 (12mm thick) cement and sand mortar to form 75mm x 75mm fillets as sanitary skirting along block walls (Chill, Tool Storage, Chemical Storage)	32	m		
<i>Page 6 - Carried to Summary on page 16</i>					

Item	Description	Qty	Unit	Rate	Amount
	<u>Steps</u>				
48	Reinforced 1:3:6 concrete platform as step consisting of 1# 1100mm x 400mm treads and 150mm risers and reinforced with 126 BRC mesh (External single Doors)	4	Nr.		
49	Ditto but size 1500mm x 400mm (Chill Room)	1	Nr.		
50	Ditto but size 1811mm x 400mm (Entrance)	1	Nr.		
51	Include a provisional sum of \$500,000.00 for Masonary Works. To be used as directed by Project Officer				\$500,000.00
	<u>ROOF</u>				
	<u>Reinforced concrete (21Mpa) in:</u>				
52	150mm thick Roof slab	171	m ²		
	<u>Mild steel rod reinforcement in Roof as per Drawing Detail</u>				
53	12mm Diameter to slab	2736	kg		
54	10mm Diameter to slab	1642	kg		
	<u>Formwork to:</u>				
55	Soffit of roof slab	171	m ²		
56	Edge of roof slab	56	m		
<i>Page 7 - Carried to Summary on page 16</i>					

Item	Description	Qty	Unit	Rate	Amount
	<u>FLOOR FINISHES</u>				
57	Supply and install Grade "A" 450mm x 450mm Ceramic_Tile laid on (1:3) screed and including thinset mortar and grouted in matching cement around partitions Note: contractor must use a minimum PC of \$400.00 PC sum per tile and include in rate.	147.00	m ²		
58	<u>Extra</u> over tiling for chrome tile strip at edge of all external doors	10.00	m		
	<u>WALL FINISHES</u>				
59	Hack concrete surfaces as key for rendering or equally approved by Project Officer.	460	m ²		
	<u>12mm Thick cement and sand (1:3) rendering in two coats and finished with wood float finish to:</u>				
60	Block wall Surfaces	460	m ²		
61	Soffit of slab	171	m ²		
62	Return or reveals exceeding 75mm and not exceeding 150mm wide including two arises.	60	m		
	<u>Wall tiles</u>				
63	Supply and install Grade "A" 200mm x 300mm Ceramic Tile laid on (1:3) screed and including thinset mortar and grouted in matching cement around partitions Note: contractor must use a minimum PC of \$400.00 PC sum per tile and include in rate. (Tile height=1.2m)	25	m ²		
	<u>Prime surface, then supply and apply three (3) coats "mixed" Berger emulsion paint or equally approved by Project Officer to the following surfaces:</u>				
64	Internal Concrete Surfaces	400.00	m ²		
65	Ceiling	171.00	m ²		
66	Drywall surfaces	15.00	m ²		
67	External Concrete Surfaces	150.00	m ²		
	<i>Page 8 - Carried to Summary on page 16</i>				

Item	Description	Qty	Unit	Rate	Amount
	<u>Prime surface, then supply and apply three (3) coats oil paint to the following surfaces:</u>				
68	External Skirting, 300mm high	16.00	m ²		
	<i>Food Grade Paint</i> <u>Prepare existing block wall surface as per manufacturer instructions, then supply and apply Hi-Solids Catalyzed Epoxy paint to:</u>				
69	Wall Surfaces (Chill Room)	50	m ²		
70	Ceiling(Chill Room)	16	m ²		
	<u>JOINERY AND HARDWARE</u>				
	<u>Windows</u>				
	<u>Aluminium framed "grey tinted" glass sliding windows comprising: powder coated "Satin Nickel Finish" aluminium members, Insect mesh, locks, fittings and accessories, 6mm thick laminated glass beaded in cushioning material fixed with glazing beads, 51mm x 102mm frames plugged and screwed into masonry openings, having junctions of frame and walls caulked with non-hardening mastic:</u>				
71	Size = 0.66m wide x 0.6m high	2	Nr.		
72	Size = 0.81m wide x 0.6m high	1	Nr.		
73	Size = 1.2m wide x 1.15m high	9	Nr.		
74	Size = 2.4m wide x 1.15m high	2	Nr.		
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Item	Description	Qty	Unit	Rate	Amount
	<u>JOINERY AND HARDWARE</u>				
	<u>Doors</u>				
	<u>Supply and install the following:</u>				
	<u>Aluminum Doors</u>				
	<u>Aluminium framed "grey tinted" glass doors composing powder coated "Satin Nickel Finish" aluminium members plugged and screwed into masonry openings. Complete including, locks, hinges ,100mm threshold, automatic closures :</u>				
	<u>Single Door</u>				
75	Single door, opening size 1000mm wide x 2100mm high (Chill Room)	1.00	no.		
	<u>Double Door</u>				
76	Double door, opening size 1611mm wide x 2100mm high with 300mm high (Entrance Door)	1	no.		
	<u>Timber Doors</u>				
	<u>Hollow Core Door</u>				
77	Supply and install hollow core door, opening size 850mm x 2100mm complete including, 50mm x 100mm jamb and 12mm x 38mm Door stop, privacy locks, hinges, varnish and stain upon completion. (Restrooms and Sickbay)	3.0	no		
78	Solid core door, opening size 900mm x 2100mm complete including, 500mm x 650mm viewing panel with 6mm grey glass in timber frame, 50mm x 100mm jamb and 12mm x 38mm Door stop, locks, hinges & finished with three (3) coats stain and varnish upon completion (Office 1 &2, Sickbay)	3.00	Nr.		
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Item	Description	Qty	Unit	Rate	Amount
	<u>PVC Coated Doors</u>				
79	Supply and install 44mm thick hollow core metal raised panel door with six panels on both sides, complete including 300mm x 900mm glass transom in timber frame, door jamb and stop, butt hinges, entrance door lock, door sweep and finished with three (3) coats oil paint. Opening Size = 900mm x 2100mm.(Tool storage, Chemical Storage, Kitchenette, Passage to exterior))	4	Nr.		
	<u>Metal Door</u>				
80	Supply and install double leaf metal door, complete with metal jamb, locks, door closure and three coats oil paint. Opening size 1300mm x 2100mm. (Chill Room)	1	Nr.		
	<u>Stainless Steel Table</u>				
81	Supply and install stainless steel table, size = 750mm wide x 1200mm long	1	Nr.		
	<u>Cupboard</u>				
	<u>Base Cupboard</u>				
82	Supply and install "L" shape Base Cupboard from treated pinewood, complete including Corian solid counter top with 100mm flash back and 38mm bull nose secured to wall, double bowl sink and faucet, draw and cupboard as per drawing details.Size = 4.97m long x 0.6m wide x 0.9m high (Cutting Area)	4.97	m		
83	Ditto but size = 3.35m x 0.6m wide x 0.9m high (Kitchenette)	3.35	m		
	<u>Overhead Cupboard</u>				
84	Supply and install wall mounted cupboard from wpp. as per Drawing. Size = 1.7m long x 0.35m wide x 0.475m high	1.7	m		
	<u>Dexion Shelf</u>				
85	Supply and Install dexion shelf (size 1.96m high x 0.55m wide x 1.2m long), 4 compartment, 37mm x 37mm "L Shapped" Dexion upright and cross members @ 900mm crs. Throughout and rubber at base for floor protection	4	Nr.		
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Item	Description	Qty	Unit	Rate	Amount
	<u>Wall Shelves</u>				
86	Supply and install 16mm plyboard shelves framed with 25mm x 50mm wpp. complete as per Drawing detail. Size = 0.6m wide x 2.52m long each. (Tool Storage)	3	row		
87	Ditto but "L" shape and Size = 0.6m wide x 3.72m long each. (Chemical Storage)	3	row		
	<u>ENGINEERING SERVICES</u>				
	<u>Electrical</u>				
	<i>Note: The Contractor must visit the site in order to assess for himself the existing conditions and extent of the work to be executed in order to supplement, if necessary, the descriptions contained in this bill, as prices inserted will be taken to include all items necessary to carry out and complete all the works to the of the Building Administrator satisfaction and in accordance with JS21 and all amendment made by the Government Electrical Inspectorate (GEI). All connections should to be Electrically and Mechanically Sound.</i>				
	<u>ALL ELECTRICAL ACTIVITES SHOULD INCLUDE ALL NECESSARY CHASING OF WALLS, INSTALLATION OF CONDUITS, WIRING, OCTAGONAL BOXES, JUNCTION BOXES, P.V.C WIRE, CONNECTORS ETC. AND MAKING GOOD ALL WORK DISTURBED</u>				
88	20 Amp SP (1) way switch in ganged boxes complete with cover plate	17	Nr.		
89	110V 3 pin duplex convenience outlet	30	Nr.		
90	110 Double Tube Bug Proof Frosted LED Lights (2'-0", equivalent to 60Watt)	5	Nr.		
91	110 Double Tube Bug Proof Frosted LED Lights (4'-0", equivalent to 60Watt)	11	Nr.		
92	220 volt convenience Outlet	3	Nr.		
93	110v convenience Outlet GFCI plug	1	Nr.		
94	Include a provisional sum of <u>\$1,000,000.00</u> for other Electrical Works to be used as directed by Project Offiser				\$1,000,000.00
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Item	Description	Qty	Unit	Rate	Amount
	<u>Extractor Fan</u>				
95	Supply and install 300mm x 300mm extractor fan complete including electrics, fittings and piping (Chemical Storage).	1	Nr.		
	<u>Ceiling Fan</u>				
96	Supply and install 4 blade 110V Industrial Ceiling Fan.	6	Nr.		
	<u>AC Unit</u>				
97	Supply and install 18000 BTU Inverter air conditioning unit including all necessary electrical works, chasing of walls and making area good after connection. Units must have three (3) years warranty (Chill Room)	1	nor		
	<u>PLUMBING</u>				
	<u>Sanitary Appliances</u>				
	<u>Supply and install the following sanitaryware (American Standard or other equal and approved) including assembling and making all joints and watertight connections to existing and new supply and waste pipes and making good in all trades</u>				
98	Supply and install low level Vitreous china Bone water closet complete with all fixtures and fittings	3.00	Nr.		
99	White vitreous china pedestal lavatory basin complete with all fixtures and fitting	3.00	Nr.		
100	Chromium plated toilet paper holder plugged and screwed to blockwall	3	Nr.		
101	Supply and install polish plate glass mirror Size 450mm x 450mm x 6mm thick screwed to 75mm wide pine wood frame, furniture finish as instructed by Building Officer.	3.00	Nr.		
102	Include a Provisional Sum of <u>\$600,000.00</u> to Supply and install Eye and Body wash Station		Sum		\$600,000.00
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Item	Description	Qty	Unit	Rate	Amount
	<u>Shower Stall</u>				
103	Shower tray size 600mm long x 900mm wide comprising 38mm thick (average) finished with 200mx 300mm ceramic tiles dished to waste outlet and finished with a woodfloat including kerb 200mm high of 100mm thick hollow concrete block finished with cement and sand (1:3) rendering finished with a woodfloat	2	Nr.		
104	Chromium plated shower mixer complete with shower arm and rose	2	Nr.		
105	25mm Diameter Chromium plated shower curtain rail 1200mm long plugged and screwed to rendered wall	2	Nr.		
106	38mm Diameter chromium plated waste outlet in floor	2	Nr.		
	<u>Floor Drain</u>				
107	Supply & install 37.5mm PVC drain pipe with necessary fittings complete including connection to Manhole (Chill Room and Storsge Areas)	8.0	m		
108	Supply & install floor drain cover	3	Nr.		
109	Include a Provisional Sum of \$300,000.00 for construction of Charcoal Pit, to be used as directed by Project Officer		Sum		\$300,000.00
110	Include a Provisional Sum of \$500,000.00 for plumbing works, to be used as directed by Project Officer		Sum		\$500,000.00
111	Include a Provisional Sum of \$500,000.00 to improve Heritage site, to be used as directed by Project Officer		Sum		\$500,000.00
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Item	Description	Qty	Unit	Rate	Amount
	<u>ENGINEERING SERVICES</u>				
	<u>Drainage</u>				
112	Trapped gully basin size 750mm x 750mm x 600mm deep (externally) with 100mm diameter PVC 'P' trap having 125mm cast iron iron grating, 100mm thick concrete (1:3:6) bottom dished outlet, 100mm block wall all round, render all internal and exposed surfaces with cement and sand (1:3) morar finished with a steel float,formed recess on top 750mm x 750mm light duty cast iron manhole frame and cover including all necessary excavations , dispoal, formwork as per drawing detail	2	Nr.		
113	Manhole size 900mm x 900mm x 700mm deep externally consisting of 150mm thick concrete (2500 psi) base slab 150mm thick reinforced concrete (3000psi) cover slab 150mm thick rienforced concrete blockwalls sides with all cavities filled with concrete (2500psi) all internal surfaces rendered in cement and sand (1;3) mortar finished with a steel float, including steep benching to bottom and forming necessary channels and including holes for 100 mm diameter pipe making good and including all necessary earthworks, formwork, reinforcement etc. as per drawing detail	9	Nr.		
114	Suppy and install Prime Grade Linear Polyetyylene Rhino Septic Tank 1500 US Gallon (double Compartment with filter). Size=4.5m long x 1.30m wide x 2.0m high	1	Nr.		
115	Supply and construct Soakaway, size 4.25m diameter x 3.85m deep (externally), complete, including 0.6m wide x 0.6m long inspection chamber with cast iron frame and cover as per drawing detail	1	Nr.		
116	Test the entire waste water drainage system and leave in proper working condition to the approval of the Project Officer		Item		
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Item	Description				Amount
<u>SUMMARY</u>					
A	Preliminary				
B	<i>PAGE 1</i>				
C	<i>PAGE 2</i>				
D	<i>PAGE 3</i>				
E	<i>PAGE 4</i>				
F	<i>PAGE 5</i>				
G	<i>PAGE 6</i>				
H	<i>PAGE 7</i>				
J	<i>PAGE 8</i>				
K	<i>PAGE 9</i>				
L	<i>PAGE 10</i>				
M	<i>PAGE 11</i>				
N	<i>PAGE 12</i>				
P	<i>PAGE 13</i>				
Q	<i>PAGE 14</i>				
R	<i>PAGE 15</i>				
S	Include the Provisional Sum of <u>\$2,500,000.00</u> for Contingencies to be used as directed by the Project Supervisor or to be deducted in whole or in part if not required.				\$2,500,000.00
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