



Procurement of Works

BIDDING DOCUMENT

CONSTRUCTION OF PRIMARY HEALTH CENTER AT BO-WATERSIDE, GRAND CAPE MOUNT COUNTY

Owner

Ministry of Health of Liberia

Funding

West Africa Organization (WAHO) - Budget 2017

Web site: <http://www.wahooas.org>

August, 2017

PART 1 – Bidding Procedures

Section 1 - Instructions to Bidders

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Section I - Instructions to Bidders

A. General

1. **Scope of Bid**
 - 1.1 In connection with the Invitation for Bids **specified in the Bid Data Sheet (BDS)**, the Employer, as **specified in the BDS**, issues these Bidding Documents for the procurement of the Works as specified in Section VII, Works Requirements. The name, identification, and number of lots (contracts) of this bidding are **specified in the BDS**.
 - 1.2 Throughout this Bidding Document:
 - (a) the term “in writing” means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) “day” means calendar day.
2. **Source of Funds**
 - 2.1 The WAHO or Recipient (hereinafter called “WAHO”) **specified in the BDS** has received or has applied for financing (hereinafter called “funds”) from ECOWAS in an amount **specified in the BDS**, toward the project named **in the BDS**. The WAHO intends to apply a portion of the funds to eligible payments under the contract(s) for which these Bidding Documents are issued.
3. **Corrupt and Fraudulent Practices**
 - 3.1 The WAHO requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Section VI.
 - 3.2 In further pursuance of this policy, Bidders shall permit and shall cause its agents (whether declared or not), sub-contractors, sub-consultants, service providers, or suppliers and any personnel thereof, to permit the Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.
4. **Eligible Bidders**
 - 4.1 A Bidder may be a firm that is a private entity, or a government-owned entity—subject to ITB 4.5—or any combination of them in the form of a joint venture (JV), under an existing agreement, or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on

behalf of any and all the members of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution. **Unless specified in the BDS**, there is no limit on the number of members in a JV.

- 4.2 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest for the purpose of this bidding process, if the Bidder:
- (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
 - (b) receives or has received any direct or indirect subsidy from another Bidder; or
 - (c) has the same legal representative as another Bidder; or
 - (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
 - (e) participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which such Bidder is involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or
 - (f) or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid; or
 - (g) or any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the Contract implementation;
 - (h) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm;
 - (i) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the bidding documents or specifications of the contract, and/or the bid evaluation process of such contract; or (ii) would be involved in the implementation or supervision of such contract unless the conflict stemming from such relationship has been

resolved in a manner acceptable to the Bank throughout the procurement process and execution of the contract.

- 4.3 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.7. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.
- 4.4 A Bidder that has been sanctioned by the Bank in accordance with the above ITB 3.1, including in accordance with the Bank's Guidelines on Preventing and Combating Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants ("Anti-Corruption Guidelines"), shall be ineligible to be prequalified for, bid for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address **specified in the BDS**.
- 4.5 Bidders that are Government-owned enterprises or institutions in the Employer's Country may participate only if they can establish that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not dependent agencies of the Employer. To be eligible, a government-owned enterprise or institution shall establish to the Bank's satisfaction, through all relevant documents, including its Charter and other information the Bank may request, that it: (i) is a legal entity separate from the government (ii) does not currently receive substantial subsidies or budget support; (iii) operates like any commercial enterprise, and, inter alia, is not obliged to pass on its surplus to the government, can acquire rights and liabilities, borrow funds and be liable for repayment of its debts, and can be declared bankrupt; and (iv) is not bidding for a contract to be awarded by the department or agency of the government which under their applicable laws or regulations is the reporting or supervisory authority of the enterprise or has the ability to exercise influence or control over the enterprise or institution.
- 4.6 A Bidder shall not be under suspension from bidding by the Employer as the result of the operation of a Bid-Securing Declaration.
- 4.7 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country, provided

that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.

4.8 A Bidder shall provide such evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

5. Eligible Materials, Equipment and Services

5.1 The materials, equipment and services to be supplied under the Contract and financed by the Bank may have their origin in any country subject to the restrictions specified in Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

B. Contents of Bidding Document

6. Sections of Bidding Document

6.1 The Bidding Document consist of Parts 1, 2, and 3, which include all the Sections specified below, and which should be read in conjunction with any Addenda issued in accordance with ITB 8.

PART 1 Bidding Procedures

Section I - Instructions to Bidders (ITB)

Section II - Bid Data Sheet (BDS)

Section III - Evaluation and Qualification Criteria

Section IV - Bidding Forms

Section V - Eligible Countries

PART 2 Works Requirements

Section VII - Works Requirements

PART 3 Conditions of Contract and Contract Forms

Section VIII - General Conditions of Contract (GCC)

Section IX - Particular Conditions of Contract (PCC)

Section X - Contract Forms

6.2 The Invitation for Bids issued by the Employer is not part of the Bidding Document.

6.3 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the Bidding Documents, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the Bidding Documents in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.

- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents and to furnish with its bid all information and documentation as is required by the Bidding Documents.
- 7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting**
- 7.1 A Bidder requiring any clarification of the Bidding Document shall contact the Employer in writing at the Employer's address **specified in the BDS** or raise its inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of bids within a period **specified in the BDS**. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. **If so specified in the BDS**, the Employer shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the Bidding Documents, the Employer shall amend the Bidding Documents following the procedure under ITB 8 and ITB 22.2.
- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility 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.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4 **If so specified in the BDS**, the Bidder's designated representative is invited to attend a pre-bid meeting. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested, to submit any questions in writing, to reach the Employer not later than one week before the meeting.
- 7.6 Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Documents in accordance with ITB 6.3. Any modification to the Bidding Documents that may become

necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting. Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

- 8. Amendment of Bidding Document**
- 8.1 At any time prior to the deadline for submission of bids, the Employer may amend the Bidding Documents by issuing addenda.
- 8.2 Any addendum issued shall be part of the Bidding Documents and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with ITB 7.1.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 22.2.

C. Preparation of Bids

- 9. Cost of Bidding**
- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- 10. Language of Bid**
- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language **specified in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language **specified in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents Comprising the Bid**
- 11.1 The Bid shall comprise the following:
- (a) Letter of Bid in accordance with ITB 12;
 - (b) completed Schedules, in accordance with ITB 12 and 14: **as specified in the BDS**;
 - (c) Bid Security or Bid Securing Declaration, in accordance with ITB 19.1;
 - (d) alternative bids, if permissible, in accordance with ITB 13;
 - (e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;

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- (f) documentary evidence in accordance with ITB 17 establishing the Bidder's qualifications to perform the contract if its Bid is accepted;
 - (g) Technical Proposal in accordance with ITB 16; and
 - (h) any other document **required in the BDS**.
- 11.2 In addition to the requirements under ITB 11.1, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.
- 11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.
- 12. Letter of Bid and Schedules**
- 12.1 The Letter of Bid and Schedules shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.2. All blank spaces shall be filled in with the information requested.
- 13. Alternative Bids**
- 13.1 Unless otherwise **specified in the BDS**, alternative bids shall not be considered.
- 13.2 When alternative times for completion are explicitly invited, a statement to that effect will be **included in the BDS**, as will the method of evaluating different times for completion.
- 13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.
- 13.4 When **specified in the BDS**, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be **identified in the BDS** and described in Section VII. Works Requirements. The method for their evaluation will be stipulated in Section III. Evaluation and Qualification Criteria.

14. Bid Prices and Discounts

- 14.1 The prices and discounts (including any price reduction) quoted by the Bidder in the Letter of Bid and in the Schedules shall conform to the requirements specified below.
- 14.2 The Bidder shall submit a bid for the whole of the works described in ITB 1.1 by filling in prices for all items of the Works, as identified in Section IV. Bidding Forms. In case of admeasurement contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.
- 14.3 The price to be quoted in the Letter of Bid, in accordance with ITB 12.1, shall be the total price of the bid, excluding any discounts offered.
- 14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.
- 14.5 **Unless otherwise provided in the BDS** and the Conditions of Contract, the prices quoted by the Bidder shall be fixed. If the prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data in Section IV- Bidding Forms and the Employer may require the Bidder to justify its proposed indices and weightings.
- 14.6 If so specified in ITB 1.1, bids are invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer discounts for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Discounts shall be submitted in accordance with ITB 14.4, provided the bids for all lots (contracts) are opened at the same time.
- 14.7 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 and prices¹ and the total bid price submitted by the Bidder.

15. Currencies of Bid and Payment

- 15.1 The currency(ies) of the bid and the currency(ies) of payments shall be as **specified in the BDS**.
- 15.2 Bidders may be required by the Employer to justify, to the Employer's satisfaction, their local and foreign currency

¹ In lump sum contracts, delete "rates and prices and the."

requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data are reasonable², in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

**16. Documents
Comprising the
Technical
Proposal**

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Bidding Forms, in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

**17. Documents
Establishing the
Qualifications of
the Bidder**

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

17.2 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1.

**18. Period of
Validity of Bids**

18.1 Bids shall remain valid for the period **specified in the BDS** after the bid submission deadline date prescribed by the Employer in accordance with ITB 22.1. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.

² For lump sum contracts, delete "unit rates and prices and shown in the Schedule of Adjustment Data are reasonable" and replace with "Lump Sum."

- 18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended for twenty-eight (28) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its bid, except as provided in ITB 18.3.
- 18.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial bid validity, the Contract price shall be determined as follows:
- (a) In the case of fixed price contracts, the Contract price shall be the bid price adjusted by the factor **specified in the BDS**.
 - (b) In the case of adjustable price contracts, no adjustment shall be made.
 - (c) In any case, bid evaluation shall be based on the bid price without taking into consideration the applicable correction from those indicated above.

19. Bid Security

- 19.1 The Bidder shall furnish as part of its bid, either a Bid-Securing Declaration or a bid security **as specified in the BDS**, in original form and, in the case of a bid security, in the amount and currency **specified in the BDS**.
- 19.2 A Bid Securing Declaration shall use the form included in Section IV, Bidding Forms.
- 19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder's option:
- (a) an unconditional guarantee issued by a bank or financial institution (such as an insurance, bonding or surety company);
 - (b) an irrevocable letter of credit;
 - (c) a cashier's or certified check; or
 - (d) another security **specified in the BDS**.

from a reputable source from an eligible country. If the unconditional guarantee is issued by a financial institution located outside the Employer's Country, the issuing financial institution shall have a correspondent financial institution located in the Employer's Country to make it enforceable. In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Employer

prior to bid submission. The bid security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 If a bid security or Bid Securing Declaration is specified pursuant to ITB 19.1, any bid not accompanied by a substantially responsive bid security or Bid-Securing Declaration shall be rejected by the Employer as non-responsive.

19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's signing the Contract and furnishing the performance security pursuant to ITB 42.

19.6 The bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.

19.7 The bid security may be forfeited or the Bid Securing Declaration executed:

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or any extension thereto provided by the Bidder; or

(b) if the successful Bidder fails to:

(i) sign the Contract in accordance with ITB 41; or

(ii) furnish a performance security in accordance with ITB 42.

19.8 The bid security or the Bid Securing Declaration of a JV shall be in the name of the JV that submits the bid. If the JV has not been constituted into a legally-enforceable JV, at the time of bidding, the Bid Security or the Bid Securing Declaration shall be in the names of all future members as named in the letter of intent mentioned in ITB 4.1 and ITB 11.2.

19.9 If a bid security is **not required in the BDS**, and

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, or

(b) if the successful Bidder fails to: sign the Contract in accordance with ITB 41; or furnish a performance security in accordance with ITB 42;

the Borrower may, **if provided for in the BDS**, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time **as stated in the BDS**.

20. Format and Signing of Bid

- 20.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it "ORIGINAL". Alternative bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE". In addition, the Bidder shall submit copies of the bid in the number **specified in the BDS**, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.
- 20.2 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as **specified in the BDS** and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid where entries or amendments have been made shall be signed or initialed by the person signing the bid.
- 20.3 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 20.4 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

- 21.1 The Bidder shall enclose the original and all copies of the bid, including alternative bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL", "ALTERNATIVE" and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope.
- 21.2 The inner and outer envelopes shall:
- bear the name and address of the Bidder;
 - be addressed to the Employer as **provided in the BDS** pursuant to ITB 22.1;
 - bear the specific identification of this bidding process specified in accordance with BDS 1.1; and
 - bear a warning not to open before the time and date for bid opening.
- 21.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the bid.

22. Deadline for Submission of Bids

- 22.1 Bids must be received by the Employer at the address and no later than the date and time **specified in the BDS**. When so **specified in the BDS**, bidders shall have the option of submitting their bids

electronically. Bidders submitting bids electronically shall follow the electronic bid submission procedures **specified in the BDS**.

22.2 The Employer may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

23. Late Bids

23.1 The Employer shall not consider any bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of bids shall be declared late, rejected, and returned unopened to the Bidder.

24. Withdrawal, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the bid must accompany the respective written notice. All notices must be:

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

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3 No bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

25. Bid Opening

25.1 Except in the cases specified in ITB 23 and 24, the Employer shall publicly open and read out in accordance with ITB 25.3 all bids received by the deadline, at the date, time and place **specified in the BDS**, in the presence of Bidders' designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 22.1, shall be **as specified in the BDS**.

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

opening. Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding bid being substituted, and the substituted bid shall not be opened, but returned to the Bidder. No bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at bid opening. Only envelopes that are opened and read out at bid opening shall be considered further.

- 25.3 All other envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; the presence or absence of a bid security, or Bid Securing Declaration, if required; and any other details as the Employer may consider appropriate. Only discounts and alternative bids read out at bid opening shall be considered for evaluation. The Letter of Bid and the Bill of Quantities are to be initialed by representatives of the Employer attending bid opening in the manner **specified in the BDS**. The Employer shall neither discuss the merits of any bid nor reject any bid (except for late bids, in accordance with ITB 23.1).
- 25.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per lot (contract) if applicable, including any discounts and alternative bids; and the presence or absence of a bid security, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

E. Evaluation and Comparison of Bids

26. Confidentiality

- 26.1 Information relating to the evaluation of bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the bidding process until information on Contract award is communicated to all Bidders in accordance with ITB 40.
- 26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its bid.
- 26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if a Bidder wishes to contact the Employer

on any matter related to the bidding process, it shall do so in writing.

27. Clarification of Bids

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

27.2 If a Bidder does not provide clarifications of its bid by the date and time set in the Employer's request for clarification, its bid may be rejected.

28. Deviations, Reservations, and Omissions

28.1 During the evaluation of bids, the following definitions apply:

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

29. Determination of Responsiveness

29.1 The Employer's determination of a bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.

29.2 A substantially responsive bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or
- (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive bids.

29.3 The Employer shall examine the technical aspects of the bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section VII (Works Requirements) have been met without any material deviation, reservation or omission.

- 29.4 If a bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
- 30. Nonconformities, Errors, and Omissions**
- 30.1 Provided that a bid is substantially responsive, the Employer may waive any nonconformities in the bid.
- 30.2 Provided that a bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
- 30.3 Provided that a bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price may be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the methods specified in Section III (Evaluation and Qualification Criteria).
- 31. Correction of Arithmetical Errors**
- 31.1 Provided that the bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:
- (a) only for admeasurement contracts, if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
 - (b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
 - (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
- 31.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 31.1, shall result in the rejection of the Bid.
- 32. Conversion to Single Currency**
- 32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as **specified in the BDS**.

- 33. Margin of Preference** 33.1 **Unless otherwise specified in the BDS**, a margin of preference for domestic bidders³ shall not apply.
- 34. Subcontractors** 34.1 Unless otherwise stated in the BDS, the Employer does not intend to execute any specific elements of the Works by sub-contractors selected in advance by the Employer.
- 34.2 The Employer may permit subcontracting for certain specialized works as indicated in Section III. When subcontracting is permitted by the Employer, the specialized sub-contractor's experience shall be considered for evaluation. Section III describes the qualification criteria for sub-contractors.
- 34.3 Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as **specified in the BDS**.
- 35. Evaluation of Bids** 35.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
- 35.2 To evaluate a bid, the Employer shall consider the following:
- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities⁴ for admeasurement contracts, but including Daywork⁵ items, where priced competitively;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 14.4;
 - (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
 - (e) price adjustment for nonconformities in accordance with ITB 30.3;
 - (f) the additional evaluation factors are specified in Section III (Evaluation and Qualification Criteria);
- 35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.

³ An individual firm is considered a domestic bidder for purposes of the margin of preference if it is registered in the country of the Employer, has more than 50 percent ownership by nationals of the country of the Employer, and if it does not subcontract more than 10 percent of the contract price, excluding provisional sums, to foreign contractors. JVs are considered as domestic bidders and eligible for domestic preference only if the individual member firms are registered in the country of the Employer or have more than 50 percent ownership by nationals of the country of the Employer, and the JV shall be registered in the country of the Borrower. The JV shall not subcontract more than 10 percent of the contract price, excluding provisional sums, to foreign firms. JVs between foreign and national firms will not be eligible for domestic preference.

⁴ In lump sum contracts, delete "Bill of Quantities" and replace with "Activity Schedule."

⁵ Daywork is work carried out following instructions of the Project Manager and paid for on the basis of time spent by workers, and the use of materials and the Contractor's equipment, at the rates quoted in the Bid. For Daywork to be priced competitively for Bid evaluation purposes, the Employer must list tentative quantities for individual items to be costed against Daywork (e.g., a specific number of tractor driver staff-days, or a specific tonnage of Portland cement), to be multiplied by the bidders' quoted rates and included in the total Bid price.

- 35.4 If this Bidding Document allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Bid, is specified in Section III. Evaluation and Qualification Criteria.
- 35.5 If the bid for an admeasurement contract, which results in the lowest Evaluated Bid Price, is seriously unbalanced or, front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 36. Comparison of Bids** 36.1 The Employer shall compare the evaluated prices of all substantially responsive bids established in accordance with ITB 35.2 to determine the lowest evaluated bid.
- 37. Qualification of the Bidder** 37.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive bid meets the qualifying criteria specified in Section III. Evaluation and Qualification Criteria.
- 37.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1.
- 37.3 An affirmative determination of qualification shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the bid, in which event the Employer shall proceed to the next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.
- 38. Employer's Right to Accept Any Bid, and to Reject Any or All Bids** 38.1 The Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

F. Award of Contract

- 39. Award Criteria** 39.1 Subject to ITB 37.1, the Employer shall award the Contract to the Bidder whose bid has been determined to be the lowest evaluated bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

40. Notification of Award

40.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, via the Letter of Acceptance included in the Contract Forms, that its bid has been accepted. At the same time, the Employer shall also notify all other Bidders of the results of the bidding, and shall publish in UNDB online the results identifying the bid and lot (contract) numbers and the following information:

- (i) name of each Bidder who submitted a Bid;
- (ii) bid prices as read out at Bid Opening;
- (iii) name and evaluated prices of each Bid that was evaluated;
- (iv) name of bidders whose bids were rejected and the reasons for their rejection; and
- (v) name of the winning Bidder, and the Price it offered, as well as the duration and summary scope of the contract awarded.

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

40.3 The Employer shall promptly respond in writing to any unsuccessful Bidder who, after notification of award in accordance with ITB 40.1, requests in writing the grounds on which its bid was not selected.

-
- 41. Signing of Contract**
- 41.1 Promptly upon notification, the Employer shall send the successful Bidder the Contract Agreement.
- 41.2 Within twenty-eight (28) days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.
- 42. Performance Security**
- 42.1 Within twenty-eight (28) days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 35.5, using for that purpose the Performance Security Form included in Section X. Contract Forms, or another form acceptable to the Employer. If the performance security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country.
- 42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security. In that event the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.
- 43. Adjudicator**
- 43.1 The Employer proposes the person **named in the BDS** to be appointed as Adjudicator under the Contract, at the hourly fee **specified in the BDS**, plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in his Bid. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority designated in the Particular Conditions of Contract (PCC) pursuant to Clause 23.1 of the General Conditions of Contract (GCC), to appoint the Adjudicator.

Section II - Bid Data Sheet (BDS)

A. Introduction

ITB 1.1	The number of the Invitation for Bids is : Ref N°: 021/2017/00AS The Employer is: West African Organisation of Health (WAHO)												
ITB 1.1	The name of the bidding process is: National Competitive Bidding The number and identification of lots comprising this bidding process is: One (1)												
ITB 2.1	The name of the Project is: Construction of the Primary Health Center at Bo Waterside town, Galao District, Grand Cape Mount County												
ITB 4.1	Maximum number of members in the JV shall be: N/A												
ITB 5.36	The information required from bidders in ITB Sub-Clause 5.3 is modified as follows: a) Valid Business Registration Certificate b) Valid Tax Clearance c) Membership of Liberia Construction Companies d) Ministry of Public Works Certificate e) Evidence of PPCC data base registration f) Evidence of conducting similar assignment g) Work plan for the entire works to be carried on												
ITB 5.5	The contractor shall have a minimum average annual turnover in construction work during the last three (3) years of USDS\$450,000 or equivalent. The multiple is : \$150,000 The period is: 3 years												
ITB 5.5 (a)	Personnel: the Bidder should submit resumes (Curriculum vitae) to demonstrate meeting at minimum the qualification for its key personnel as listed below. Every bidder/company shall have at least one project engineer and an architect in its employ as staff or consultant for the period of the project execution. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">#</th> <th style="width: 35%;">Position</th> <th style="width: 30%;">Minimum Qualification</th> <th style="width: 30%;">Min. Years of Experience</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Project Engineer/Site Engineer</td> <td>B.Sc. in Civil Engineering</td> <td style="text-align: center;">3 years</td> </tr> <tr> <td></td> <td>Project Architect</td> <td>Associate Degree</td> <td style="text-align: center;">6 years</td> </tr> </tbody> </table>	#	Position	Minimum Qualification	Min. Years of Experience	1	Project Engineer/Site Engineer	B.Sc. in Civil Engineering	3 years		Project Architect	Associate Degree	6 years
#	Position	Minimum Qualification	Min. Years of Experience										
1	Project Engineer/Site Engineer	B.Sc. in Civil Engineering	3 years										
	Project Architect	Associate Degree	6 years										

⁶ Delete if pre-qualification has been conducted.

ITB 5.5 (b)	At least two (2) similar projects in the last three (3) years. The number is: 2 The period is: 3 years
ITB 5.5 (c)	The essential equipment to be made available for the Contract by the successful Bidder shall be: <ul style="list-style-type: none"> • 2 Truck with the minimum 5 ton capacity • 1 concrete Mixer minimum 14/10* cu ft capacity • 1 complete set of scaffolding to cover 300 sq meter • 2 concrete Vibrator (including a reserve unit) • 1 vehicle (pickup) for movement of materials • Complete set of (i) Carpenter's Tools (ii) Plumber's Tools (iii) Electrical Tools; and (iv) Mason's Tools • Complete set of safety gears for all site works <p>Note: if the above equipment are not available, contractor shall state in a clear proposal for the timely acquisition (own, lease, hire, etc.) of the essential equivalent</p>
ITB 5.5 (e)7	The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be \$75,000.00USD
ITB 5.6	Subcontractors' experience and resources shall be taken into account.

B. Bidding Documents

ITB 7.1	For <u>clarification purposes</u> only, the Employer's address is: West African Organization of Health (WAHO) via Ministry of Health of Liberia Congo Town, Tubman Boulevard Room #: 142/Ground Floor Contact #: 0886-515-565 Email addressed: proumohsw@gmail.com and cc to: offres@wahooas.org
ITB 7.1	Web page: www.wahooas.org
ITB 7.4	The Pre-bid meeting will be held on Monday, August 28, 2017, at 11:00 AM , MOH Central Office, Tubman Boulevard Congo Town located on the second floor, Conference Room# 227 after a mandatory site visit beginning August 14

⁷ Delete if pre-qualification has been conducted.

	to 18, 2017. The cost of visiting the site and pre-bid meeting shall be at the Bidder's own expense.
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C. Preparation of Bids

ITB 10.1	The language of the bid is: English All correspondence exchange shall be in English language. Language for translation of supporting documents and printed literature is English
ITB 11.1 (b)	The following schedules shall be submitted with the bid: <i>[insert schedules that must be submitted with the Bid, including the priced Bill of Quantities for admeasurement contracts or Activity Schedule for lump sum contracts]</i>
ITB 11.1 (h)	The Bidder shall submit with its bid the following additional documents: <i>[insert type of any additional documents not already listed in ITB 11.1 that must be submitted with the Bid]</i> . N/A
ITB 13.1	Alternative bids " shall be " permitted. N/A
ITB 13.2	Alternative times for completion " shall not be " permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Works: <i>[insert parts of the Works]</i> N/A If alternative technical solutions are permitted, the evaluation method will be as specified in Section III (Evaluation and Qualification Criteria).
ITB 14.5	The prices quoted by the Bidder " shall not be " subject to adjustment during the performance of the Contract.
ITB 15.1	The prices shall be quoted by the bidder in: USD
ITB 18.1	The bid validity period shall be: 120 days.
ITB 18.3 (a)	The bid price shall be adjusted by the following factor(s): _____ N/A
ITB 19.1	Bid securing declaration
ITB 19.3 (d)	Other types of acceptable securities: N/A
ITB 20.1	In addition to the original of the bid, the number of copies is: 2 .
ITB 20.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: letter of authorization

D. Submission and Opening of Bids

ITB 22.1	Bidders <i>“shall not”</i> have the option of submitting their bids electronically.
ITB 22.1	<p>For bid submission purposes only, the Employer’s address is:</p> <p>West African Health Organization Via Ministry of Health Congo Town, Tubman Boulevard Room # 142, Ground Floor Monrovia, Liberia</p> <p>The deadline for bid submission is: Date: September 14, 2017 Time: 2: 00PM</p> <p>Bidders <i>“shall not”</i> have the option of submitting their bids electronically</p>
ITB 25.1	<p>The bid opening shall take place at:</p> <p>The Ministry of Health Congo Town, Tubman Boulevard Room # 227, second floor Monrovia, Liberia</p> <p>Date: September 14, 2017 Time: 2: 05PM</p>

ITB 25.3	The Letter of Bid and Priced Bill of Quantities shall be initialed by 5 representatives of the Employer conducting Bid opening.
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E. Evaluation and Comparison of Bids

ITB 32.1	The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: USD The source of exchange rate shall be: CENTRAL BANK OF LIBERIA The date for the exchange rate shall be: 31 AUGUST 2017
ITB 33.1	A margin of preference " <i>shall not</i> " apply.
ITB 34.1	At this time the Employer _____ to execute certain specific parts of the Works by sub-contractors selected in advance. N/A
ITB 34.3	Contractor's proposed subcontracting: Maximum percentage of subcontracting permitted is: _____% of the total contract amount or _____% of the volume of work _____. N/A

F. Award of Contract

ITB 43.1	The Adjudicator proposed by the Employer is WAHO
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Section III - Evaluation and Qualification Criteria

This section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders if the bidding was not preceded by a prequalification exercise and postqualification is applied. In accordance with ITB 35 and ITB 37, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

Wherever a Bidder is required to state a monetary amount, Bidders should indicate the USD equivalent using the rate of exchange determined as follows:

- -For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective calendar year (in which the amounts for that year is to be converted) was originally established.
- -Value of single contract - Exchange rate prevailing on the date of the contract.

Exchange rates shall be taken from the publicly available source identified in the ITB 32.1. Any error in determining the exchange rates in the Bid may be corrected by the Employer

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1. Margin of Preference

If a margin of preference shall apply under ITB 33.1, the procedure will be as follows as:

A margin of preference of 7.5% (seven and one-half percent) shall be granted to domestic contractors, in accordance with, and subject to, the following provisions:

- (a) Contractors applying for such preference shall provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Borrower and accepted by the Bank, a particular contractor or group of contractors qualifies for a domestic preference. The bidding documents shall clearly indicate the preference and the method that will be followed in the evaluation and comparison of bids to give effect to such preference.
- (b) After bids have been received and reviewed by the Borrower, responsive bids shall be classified into the following groups:
 - (i) Group A: bids offered by domestic contractors eligible for the preference.
 - (ii) Group B: bids offered by other contractors.

All evaluated bids in each group shall, as a first evaluation step, be compared to determine the lowest bid, and the lowest evaluated bids in each group shall be further compared with each other. If, as a result of this comparison, a bid from Group A is the lowest, it shall be selected for the award. If a bid from Group B is the lowest, as a second evaluation step, all bids from Group B shall then be further compared with the lowest evaluated bid from Group A. For the purpose of this further comparison only, an amount equal to 7.5% (seven and one-half percent) of the respective bid price corrected for arithmetical errors, including unconditional discounts and excluding provisional sums and the cost of day works, if any, shall be added to the evaluated price offered in each bid from Group B. If the bid from Group A is the lowest, it shall be selected for award. If not, the lowest evaluated bid from Group B based on the first evaluation step shall be selected

2. Evaluation

In addition to the criteria listed in ITB 35.2 (a) – (e) the following criteria shall apply:

2.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section VII (Works Requirements).

2.2 Multiple Contracts

Pursuant to Sub-Clause 35.4 of the Instructions to Bidders, if Works are grouped in multiple contracts, evaluation will be as follows:

Award Criteria for Multiple Contracts [ITB 35.4]:

Lots

Bidders have the option to Bid for any one or more lots. Bids will be evaluated lot-wise, taking into account discounts offered, if any, for combined lots. The contract(s) will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer for combined lots, subject to the selected Bidder(s) meeting the required qualification criteria for lot or combination of lots as the case may be.

Packages

Bidders have the option to Bid for any one or more packages and for any one or more lots within a package. Bids will be evaluated package-wise, taking into account discounts offered, if any, for combined packages and/or lots within a package. The contract(s) will be awarded to the Bidder or Bidders offering the lowest evaluated cost to the Employer for combined packages, subject to the selected Bidder(s) meeting the required qualification criteria for combination of packages and or lots as the case may be.

Qualification Criteria for Multiple Contracts:

Section III describes criteria for qualification for each lot (contract) for multiple lots (contracts). The criteria for qualification is aggregate minimum requirement for respective lots as specified under items 3.1, 3.2, 4.2(a) and 4.2(b). However, with respect to the specific experience under item 4.2 (a) of Section III, the Employer will select any one or more of the options as identified below:

N is the minimum number of contracts

V is the minimum value of a single contract

(a) For one Contract:

Option 1:

(i) N contracts, each of minimum value V;

Or

Option 2:

(i) N contracts, each of minimum value V; or

(ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal or more than $N \times V$.

(b) For multiple Contracts

Option 1:

(i) Minimum requirements for combined contract(s) shall be the aggregate requirements for each contract for which the bidder has submitted bids as follows, and N1, N2, N3, etc. shall be different contracts:

Lot 1: N1 contracts, each of minimum value V1;

Lot 2: N2 contracts, each of minimum value V2;

Lot 3: N3 contracts, each of minimum value V3;

----etc.

or

Option 2:

(i) Minimum requirements for combined contract(s) shall be the aggregate requirements for each contract for which the bidder has submitted bids as follows, and N1,N2,N3, etc. shall be different contracts:

Lot 1: N1 contracts, each of minimum value V1;

Lot 2: N2 contracts, each of minimum value V2;

Lot 3: N3 contracts, each of minimum value V3;

----etc, **or**

(ii) Lot 1: N1 contracts, each of minimum value V1; or number of contracts less than or equal to N1, each of minimum value V1, but with total value of all contracts equal or more than $N1 \times V1$.

Lot 2: N2 contracts, each of minimum value V2; or number of contracts less than or equal to N2, each of minimum value V2, but with total value of all contracts equal or more than $N2 \times V2$.

Lot 3: N3 contracts, each of minimum value V3; or number of contracts less than or equal to N3, each of minimum value V3, but with total value of all contracts equal or more than $N3 \times V3$.

----etc.

Or

Option 3:

(i) Minimum requirements for combined contract(s) shall be the aggregate requirements for each contract for which the applicant has applied for as follows, and N1, N2, N3, etc. shall be different contracts:

Lot 1: N1 contracts, each of minimum value V1;

Lot 2: N2 contracts, each of minimum value V2;

Lot 3: N3 contracts, each of minimum value V3;

----etc, **or**

(ii) Lot 1: N1 contracts, each of minimum value V1; or number of contracts less than or equal to N1, each of minimum value V1, but with total value of all contracts equal or more than $N1 \times V1$.

Lot 2: N2 contracts, each of minimum value V2; or number of contracts less than or equal to N2, each of minimum value V2, but with total value of all contracts equal or more than $N2 \times V2$.

Lot 3: N3 contracts, each of minimum value V3; or number of contracts less than or equal to N3, each of minimum value V3, but with total value of all contracts equal or more than $N3 \times V3$.

----etc, or

(iii) Subject to compliance as per (ii) above with respect to minimum value of single contract for each lot, total number of contracts is equal or less than $N1 + N2 + N3$ --but the total value of all such contracts is equal or more than $N1 \times V1 + N2 \times V2 + N3 \times V3$ +---

2.3 Alternative Completion Times

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows:

2.4 Technical Alternatives

Technical alternatives, if permitted under ITB 13.4, will be evaluated as follows:

2.5 Specialized Subcontractors

Only the specific experience of sub-contractors for specialized works permitted by the Employer will be considered. The general experience and financial resources of the specialized sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

The specialized sub-contractors proposed shall be fully qualified for their work proposed, and meet the following criteria:

3. Qualification

Eligibility and Qualification Criteria		Compliance Requirements					Documentation
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
1. Eligibility							
1.1	Nationality	Nationality in accordance with ITB 4.3	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.2	Conflict of Interest	No conflicts of interest in accordance with ITB 4.2	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
1.3	Bank Eligibility	Not having been declared ineligible by the Bank, as described in ITB 4.4, 4.5, 4.6 and 4.7	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Letter of Bid
1.4	Government Owned Entity of the Borrower country	Meets conditions of ITB 4.5	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
1.5	United Nations resolution or Borrower's country law	Not having been excluded as a result of prohibition in the Borrower's country laws or official regulations against commercial relations with the Bidder's country, or by an act of compliance with UN Security Council resolution, both in accordance with ITB 4.7 and Section V.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Forms ELI – 1.1 and 1.2, with attachments
2. Historical Contract Non-Performance							

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
2.1	History of Non-Performing Contracts	Non-performance of a contract ⁸ did not occur as a result of contractor default since 1 st January <i>[Insert year]</i> .	Must meet requirement ¹²	Must meet requirements	Must meet requirement ⁹	N/A	Form CON-2
2.2	Suspension Based on Execution of Bid Securing Declaration by the Employer or withdrawal of the Bid within Bid validity	Not under suspension based on execution of a Bid Securing Declaration pursuant to ITB 4.6 or withdrawal of the Bid pursuant ITB 19.9.	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Bid Submission Form
2.3	Pending Litigation	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	N/A	Must meet requirement	N/A	Form CON – 2

⁸ Non performance, as decided by the Employer, shall include all contracts where (a) non performance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Non performance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Non performance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

⁹ This requirement also applies to contracts executed by the Bidder as JV member.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
2.4	Litigation History	No consistent history of court/arbitral award decisions against the Bidder ¹⁰ since 1 st January [insert year]	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Form CON – 2

¹⁰ The Bidder shall provide accurate information on the letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of court/arbitral awards against the Bidder or any member of a joint venture may result in disqualifying the Bidder.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
		not required by the laws of the Bidder's country, other financial statements acceptable to the Employer, for the last _____ years shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability.	requirement	N/A			
3.2	Average Annual Construction Turnover	Minimum average annual construction turnover of US\$ _____, calculated as total certified payments received for contracts in progress and/or completed within the last _____ years, divided by _____ years	Must meet requirement	Must meet requirement	Must meet _____%, _____ of the requirement	Must meet _____%, _____ of the requirement	Form FIN – 3.2

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
4. Experience							
4.1 (a)	General Construction Experience	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last _____ years, starting 1 st January _____.	Must meet requirement	N/A	Must meet requirement	N/A	Form EXP – 4.1
4.2 (a)	Specific Construction & Contract Management Experience	(i) A minimum number of similar ¹¹ contracts specified below that have been satisfactorily and substantially ¹² completed as a prime contractor, joint venture member ¹³ , management contractor or sub-contractor ¹³ between	Must meet requirement	Must meet requirement ¹⁴	N/A	N/A	Form EXP 4.2(a)

¹¹ The similarity shall be based on the physical size, complexity, methods/technology and/or other characteristics described in Section VII, Work's Requirements. Summation of number of small value contracts (less than the value specified under requirement) to meet the overall requirement will not be accepted.

¹² Substantial completion shall be based on 80% or more works completed under the contract.

¹³ For contracts under which the Bidder participated as a joint venture member or sub-contractor, only the Bidder's share, by value, shall be considered to meet this requirement.

¹⁴ In the case of JV, the value of contracts completed by its members shall not be aggregated to determine whether the requirement of the minimum value of a single contract has been met. Instead, each contract performed by each member shall satisfy the minimum value of a single contract as required for single entity. In determining whether the JV meets the requirement of total number of contracts, only the number of contracts completed by all members each of value equal or more than the minimum value required shall be aggregated.

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
		1st January [<i>insert year</i>] and application submission deadline: (i) N contracts, each of minimum value V; Or (ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal or more than N x V; <i>[insert values of N & V, delete (ii) above if not applicable].</i> <i>[In case the Works are to be bid as individual contracts under a slice and package (multiple contract) procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options specified in ITB 35.4.]</i>					
		<i>[Add the following if specialized sub-contractor is permitted and</i>	<i>"Must meet requirement for one contract (Requirement can be met through a</i>	<i>Must meet requirement</i>	<i>N/A</i>	<i>"Must meet requirement (Requirement can be met through a Specialized Sub-contractor)"</i>	

Eligibility and Qualification Criteria			Compliance Requirements			Documentation	
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
		<i>describe nature and characteristics of specialized works:] “(ii) For the following specialized works, the Employer permits specialized sub-contractors as per ITB 34.3”</i>	<i>Specialized Sub-contractor)”</i>				
4.2 (b)		For the above and any other contracts completed and under implementation as prime contractor, joint venture member, management contractor or sub-contractor ¹⁵ on or after the first day of the calendar year during the period stipulated in 4.2 (a) above, a minimum construction experience in the following key activities successfully completed ¹⁶ : <i>[list</i>	Must meet requirements	Must meet requirements	N/A	Must meet the following requirements for the key activities listed below ¹⁸ <i>[list key activities and the corresponding minimum requirements]</i>	Form EXP – 4.2 (b)

¹⁵ For contracts under which the Bidder participated as a joint venture member or sub-contractor, only the Bidder’s share shall be counted to meet this requirement.

¹⁶ Volume, number or rate of production of any key activity can be demonstrated in one or more contracts combined if executed during same time period. The rate of production shall be the annual production rate for the key construction activity (or activities).

¹⁸ Requirement can be met through a Specialized Sub-contractor

Eligibility and Qualification Criteria		Compliance Requirements			Documentation		
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
		<i>activities indicating volume, number or rate of production as applicable</i> ¹⁷					

¹⁷ The minimum experience requirement for multiple contracts will be the sum of the minimum requirements for respective individual contracts.

5 Personnel

The Bidder must demonstrate that it will have the personnel for the key positions that meet the following requirements:

[Specify requirements for each lot as applicable]

No.	Position	Total Work Similar Experience (years)	In Similar Works Experience (years)
1			
2			
3			
4			
5			

The Bidder shall provide details of the proposed personnel and their experience records in the relevant Forms included in Section IV, Bidding Forms.

6. Equipment

The Bidder must demonstrate that it will have access to the key Contractor’s equipment listed hereafter:

[Specify requirements for each lot as applicable]

No.	Equipment Type and Characteristics	Minimum Number required
1		
2		
3		
4		
5		

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV.

Section IV - Bidding Forms

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Letter of Bid

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and address.

Note: All italicized text is for use in preparing these form and shall be deleted from the final products.

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

ICB No.: *[insert number of bidding process]*

Invitation for Bid No.: *[insert identification]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Employer]*

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB 8)_____;
- (b) We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) We have not been suspended nor declared ineligible by the Employer based on execution of a Bid Securing Declaration in the Employer's country in accordance with ITB 4.6
- (d) We offer to execute in conformity with the Bidding Documents the following Works: *[insert a brief description of the Works]*;
- (e) The total price of our Bid, excluding any discounts offered in item (f) below is:

In case of only one lot, total price of the Bid *[insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies]*;

In case of multiple lots, total price of each lot *[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*;

In case of multiple lots, total price of all lots (sum of all lots) *[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]*;

- (f) The discounts offered and the methodology for their application are:
- (i) The discounts offered are: *[Specify in detail each discount offered.]*
- (ii) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts]*;
- (g) Our bid shall be valid for a period of *[specify the number of calendar days]* days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

- (h) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
- (i) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.2(e), other than alternative bids submitted in accordance with ITB 13;
- (j) We, including any of our subcontractors or suppliers for any part of the contract, have not been declared ineligible by the Bank, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council;
- (k) We are not a government owned entity/ We are a government owned entity but meet the requirements of ITB 4.5;
- (l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: ***[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]***

Name of Recipient	Address	Reason	Amount
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

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

- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (o) We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in any type of fraud and corruption

Name of the Bidder* ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

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

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

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid Schedules.

BILL OF QUANTITIES

**BILL OF QUANTITY FOR STANDARD DESIGN FOR PRIMARY HEALTH CENTERS
MINISTRY OF HEALTH & SOCIAL WELFARE**

PROJECT: CONSTRUCTION OF PRIMARY HEALTH CLINIC

LOCATION : BOMI COUNTY

OUT-PATIENT DEPARTMENT BUILDING

ITEM #	MATERIAL DESCRIPTION/SCOPE OF WORKS	UNIT	QUANTITY	RATE (USD)	EXTENSION (USD)
1,0	MOBILIZATION				
1.1.0	Project billboard to contain the following information: Project title, Location, Owner, Architect/Designer, and Contractor Name.De-stumped and remove debris within entire work area and be placed in approved area.	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
2,0	SUB-STRUCTURE: MAIN BUILDING & UTILITY				
2,1	FOUNDATION: EXCAVATION, BACKFILL AND SANDFILL				
2.1.0	Excavate to a minimum depth not less than 2'-0" into foundation trenches 1'-6" wide incl. foundation footing - 3ft x 3ft x 12 "	CY	77,3		\$ -
2.1.1	Backfilling: use excavated material free of deleterious material for backfilling trenches to fill foundation to grade level	CY	36,7		\$ -
2.1.2	Sandfilling: fill foundation with beach sand or approved materials.	CY	39,1		\$ -
	SUB TOTAL				\$ -
2,2	FOUNDATION: CONCRETE WORKS				
2.2.0	Provide mass concrete (1:2:3) mix propotion in foundation trenches 1.5ft wide and 0.75ft thick as per the linear footage of the foundation walls	CY	13,5		\$ -
2.2.1	Ditto - concrete in foundation footing - 3ft x 3ft x 1ft. Use 1:2:3 MIX PROPOTION	CY	8,3		\$ -
2.2.2	Ditto - concrete in formwork for 0.5ft x 0.5ft short columns at 5.5ft height - 1:2:3 mix	CY	0,6		\$ -
2.2.3	Allow purchase of wawa, timbers/round poles and wire nails for casting column formworks	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
2,3	FOUNDATION: MASONRY WORKS				
2.3.0	Provide & install 6" masonry blocks for foundation wall using 1" thick mortar for laying - Use 1:3 mix .	SY	143,8		\$ -
	SUB TOTAL				\$ -
2,4	FOUNDATION: REINFORCEMENT				
2.4.0	Use 1/2"Ø steel bars for the construction of foundation footing - 3ft x 3ft	L.F.	1176,0		\$ -
2.4.1	Ditto - 1/2"Ø steel bars for the construction of short columns at 5.5ft height	L.F.	467,4		\$ -
2.4.2	Ditto - 1/4" Ø Stirrups installed @ 10" on center in short columns	L.F.	337,4		\$ -
2.4.3	Provide and install tie wire for foundation footings & columns	ROLL	2,0		\$ -
	SUB TOTAL				\$ -
3,0	SUPER-STRUCTURE: MAIN BUILDING & UTILITY - WALLS CONSTRUCTION				
3.0.0	WALL CONSTRUCTION - CONCRETE WORKS				
3.1.0	Provide mass concrete in 4" thick floor slab with concrete mix ratio of 1:2:4 (Cement: Sand : Crushed Rocks)	CY	33,5		\$ -

3.1.1	Ditto - Concrete for Long Columns - 6" x 6" x 10'-6" long - Use 1:2:3 Mix	CY	1,3		\$ -
3.1.2	Ditto - Concrete for Tie Beam - 6" x 6" - Use 1:2:3	CY	3,7		\$ -
3.1.3	Ditto - Concrete for Lintel Beam - 6" x 8" above windows & doors	CY	1,7		\$ -
3.1.4	Allow purchase of wawa, timbers/round poles and wire nails for casting lintel, column & tiebeam formworks	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
3,2	WALL CONSTRUCTION - MASONRY WORKS - USE 1:3 MIX				
3.2.0	Provide & install 6" masonry blocks for superstructure wall using 1" thick mortar for laying - Use 1:3 mix .	SY	520,6		\$ -
3.2.1	Ditto - 1/2 " thick mortar for plastering of walls: Use 1 : 3 mix	SY	1124,5		\$ -
3.2.2	Ditto - colombo bricks with 1 inch thick for laying - Use 1:3	SY	8,9	N/A	N/A
	SUB TOTAL				\$ -
3,3	SUPER-STRUCTURE: REINFORCEMENT				
3.3.0	Use 1/2"Ø steel bars in long columns with an average height of 9'-6"	L.F.	588,0		\$ -
3.3.1	Ditto - 1/4" Ø Stirrups installed @ 10" on center in long columns	L.F.	478,0		\$ -
3.3.2	Ditto - 1/2" Ø steel bars in tie beams for superstructure	L.F.	1188,0		\$ -
3.3.3	Ditto - 1/4" Ø Stirrups installed @ 10" on center in tie beams	L.F.	983,0		\$ -
3.3.4	Ditto - 1/2" Ø steel bars in lintels	L.F.	532,0		\$ -
3.3.5	Ditto - 1/4" Ø Stirrups installed @ 10" on center in lintels	L.F.	406,0		\$ -
3.3.6	Ditto - 1/4" Ø steel bars as anchors for wall plate	L.F.	563,2		\$ -
3.3.7	Provide and install tie wire to be used as fasteners for steel anchoring	ROLL	2,0		\$ -
	SUB TOTAL				\$ -
3,4	WALL CONSTRUCTION - GALVANIZED COLUMN MEMBER				
3.4.0	Provide & install 4" Galvanized Steel Pipes as column members on veranda as specified in drawings	NO	13,0		\$ -
	SUB TOTAL				\$ -
3,5	ROOFING WORKS - ROOF SUPPORT STRUCTURE				
3.5.0	Provide & install 2" x 6" timber as Wall Plates Use season/complete dry wood/timber.	L.F.	470,0		\$ -
3.5.1	Ditto - 2" x 4" timber as Rafters @ 4 FT O.C.	L.F.	1013,2		\$ -
3.5.2	Ditto - 2" x 2" timber as Purlins @ 2 FT O.C.	L.F.	2309,0		\$ -
3.5.3	Ditto - 2" x 6" timber as King Post	L.F.	138,8		\$ -
3.5.4	Ditto - 2" x 6" timber as Ridge Beam	L.F.	172,0		\$ -
3.5.5	Ditto - 2" x 4" timber as Truss Members	L.F.	1141,5		\$ -
3.5.6	Ditto - 2" x 6" timber as Bottom Chords	L.F.	1055,4		\$ -
3.5.7	Provide a Lump sum for wire nails to assemble support structure	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
3,6	ROOFING WORKS - CEILING & ROOF COVERING				
3.6.0	Provide and install 4' x 8' ceiling boards	SY	435,0		\$ -
3.6.1	Ditto - ridge cap	L.F.	172,0		\$ -
3.6.2	Ditto - roofing felt for prevention of leakages & insulation	SY	458,1		\$ -
3.6.3	Ditto - roofing sheet 28 G Alum alloy	SY	458,1		\$ -
3.6.4	Ditto - eave/fascia board - 1" x 10" at perimeter of roof surface	L.F.	489,0		\$ -
3.6.5	Ditto - carboline double coat	L.S.	1,0		\$ -
3.6.6	Ditto - ceiling joists - 2" x 2" placed 4 ft O.C.	L.F.	2085,3		\$ -
3.6.7	Ditto - ceiling strips running along length & width of ceiling joists	L.F.	2085,3		\$ -

3.6.8	Provide Lumpsum for Roofing Nails	L.S.	1,0		\$ -
3.6.9	Ditto - assorted wire nails	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
3,7	ROOFING WORKS - RAINWATER DRAIN				
3.7.0	Provide & install rainwater gutter (drain) at roof eave as required - 10 ft long	NO	4,0		\$ -
3.7.1	Ditto - downspouts and 4" PVC drain pipes 20' long as required	NO	1,0		\$ -
3.7.2	SUB TOTAL				\$ -
3,8	DOORS				
3.8.0	Provide & install Hardwood Panel Door (3'-6" x 7'-0") in wooden frame with necessary bucks & hardware complete (Cylinder Lock, hinges, etc.)	NO	5,0		\$ -
3.8.1	Ditto - 3'-0" x 7'-0" Hardwood Panel Door in wooden frame with necessary bucks & hardware complete (cylinder lock, hinges, etc.)	NO	5,0		\$ -
3.8.2	Ditto - Hardwood Panel Door (2'-8" x 7'-0") in wooden frame with necessary bucks & hardware complete (Cylinder Lock, hinges, etc.)	NO	4,0		\$ -
3.8.3	Ditto - 3'-6" x 5'-0" wooden frame Plywood Door complete with necessary hardware	NO	4,0		\$ -
	SUB TOTAL				\$ -
3,9	WINDOWS				
3.9.0	Provide & install 4'-0" x 6'-0" wooden double shutter window in 2" x 4" wooden frame with 5/8" security steel bars fitted in @ 5" c/c:	NO	6,0		\$ -
3.9.1	Ditto - 3'-0" x 6'-0" wooden double shutter window in 2" x 4" wooden frame with 5/8" security steel bars fitted in @ 5" c/c:	NO	1,0		\$ -
3.9.2	Ditto - 2'-0" x 2'-0" wooden double shutter & security bars 5" O.C.	NO	7,0		\$ -
	SUB TOTAL				\$ -
4,0	ELECTRICAL WORKS:				
4.0.0	Provide & install 4ft fluorescent lamp double	NO	14,0		\$ -
4.0.1	Ditto - 2ft fluorescent lamp	NO	10,0		\$ -
4.0.2	Ditto - security lamp - Energy Saver Lamps	NO	11,0		\$ -
4.0.3	Ditto - incandescent lamp	NO	6,0		\$ -
4.0.4	Ditto - double pole switch	NO	5,0		\$ -
4.0.5	Ditto - single pole switch	NO	13,0		\$ -
4.0.6	Ditto - receptacles	NO	27,0		\$ -
4.0.7	Ditto - 18 breakers panel box	NO	1,0		\$ -
4.0.8	Ditto - utility cups	NO	45,0		\$ -
4.0.9	Ditto - junction cups	NO	6,0		\$ -
4.0.10	Ditto - #10 Wire AWG	ROLL	1,0		\$ -
4.0.11	Ditto - #12 Wire AWG	ROLL	3,0		\$ -
4.0.12	Provide lump sum for electrical conduit	L.S.	1,0		\$ -
4.0.13	Supply electrical tapes	ROLL	5,0		\$ -
	SUB TOTAL				\$ -
5,0	PLUMBING WORKS: OPD UTILITY BUILDING				
5.0.0	Provide & install commode complete with Heavy Duty/wooden seat	NO	4,0		\$ -
5.0.1	Ditto - Face basin - Large	NO	2,0		\$ -
5.0.2	Ditto - Urinal	NO	2,0		\$ -
5.0.3	Ditto - Floor drain	NO	2,0		\$ -
5.0.4	Ditto - 4" PVC Pipe connecting sewage system to manhole	L.F.	20,0		\$ -
	SUB TOTAL				\$ -
6,0	FINISHES:				

6.0.0	Provide 2" cement-sand screed mortar (Use 1:3 mix on floor)	SY	304,9		\$ -
6.0.1	Ditto - 12" x 12" polyvinyl tiles on floor	SY	128,3		\$ -
6.0.2	Ditto - 6" x 6" ceramic tiles on bathroom walls incl. white cement	SY	16,3		\$ -
6.0.3	Ditto - 12" x 12" ceramic on bathroom floor incl. white cement	SY	17,5		\$ -
	SUB TOTAL				\$ -
7,0	PAINTING WORKS:				
7.0.0	Provide & apply white wash double coats to wall & ceiling surfaces	SY	1492,9		\$ -
7.0.1	Ditto - enamel paint to wall & fascia board incl. thinner for mixing	SY	1169,6		\$ -
7.0.2	Ditto - emulsion paint to ceiling surface	SY	435,3		\$ -
	SUB TOTAL				\$ -
	TOTAL MATERIAL COST FOR OPD & UTILITY:				\$ -

**BILL OF QUANTITY FOR STANDARD DESIGN FOR PRIMARY HEALTH CENTERS
MINISTRY OF HEALTH & SOCIAL WELFARE**

ANC & UTILITY

ITEM #	MATERIAL DESCRIPTION/SCOPE OF WORKS	UNIT	QUANTITY	RATE	EXTENSION
2,0	SUB-STRUCTURE: MAIN BUILDING - OUTPATIENT DEPARTMENT				
2,1	FOUNDATION: EXCAVATION, BACKFILL AND SANDFILL				
2.1.0	Excavate to a minimum depth not less than 2'-0" into foundation trenches 1'-6" wide incl. foundation footing - 3ft x 3ft x 12 "	CY	38,8		\$ -
2.1.1	Backfilling: use excavated material free of deleterious material for backfilling trenches to fill foundation to grade level	CY	18,4		\$ -
2.1.2	Sandfilling: fill foundation with beach sand or approved materials.	CY	64,9		\$ -
	SUB TOTAL				\$ -
2,2	FOUNDATION: CONCRETE WORKS				
2.2.0	Provide mass concrete (1:2:3) mix proportion in foundation trenches 1.5ft wide and 0.75ft thick as per the linear footage of the foundation walls	CY	6,8		\$ -
2.2.1	Ditto - concrete in foundation footing - 3ft x 3ft x 1ft. Use 1:2:3 MIX PROPORTION	CY	4,7		\$ -
2.2.2	Ditto - concrete in formwork for 0.5ft x 0.5ft short columns at 5.5ft height - 1:2:3 mix	CY	0,3		\$ -
2.2.3	Allow purchase of wawa, timbers/round poles and wire nails for casting column formworks	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
2,3	FOUNDATION: MASONRY WORKS				
2.3.0	Provide & install 6" masonry blocks for foundation wall using 1" thick mortar for laying - Use 1:3 mix .	SY	67,3		\$ -
	SUB TOTAL				\$ -
2,4	FOUNDATION: REINFORCEMENT				
2.4.0	Use 1/2"Ø steel bars for the construction of foundation footing - 3ft x 3ft	L.F.	588,0		\$ -
2.4.1	Ditto - 1/2"Ø steel bars for the construction of short columns at 5.5ft height	L.F.	343,4		\$ -
2.4.2	Ditto - 1/4" Ø Stirrups installed @ 10" on center in short columns	L.F.	183,7		\$ -
2.4.3	Provide and install tie wire for foundation footings & columns	ROLL	1,5		\$ -
	SUB TOTAL				\$ -
3,0	SUPER-STRUCTURE: ANC & UTILITY WALL CONSTRUCTION				

3.0.0	WALL CONSTRUCTION - CONCRETE WORKS				
3.1.0	Provide mass concrete in 4" thick floor slab with concrete mix ratio of 1:2:4 (Cement: Sand : Crushed Rocks)	CY	13,8		\$ -
3.1.1	Ditto - Concrete for Long Columns - 6" x 6' x 10'-6" long - Use 1:2:3 Mix	CY	0,8		\$ -
3.1.2	Ditto - Concrete for Tie Beam - 6" x 6" - Use 1:2:3	CY	2,3		\$ -
3.1.3	Ditto - Concrete for Lintel Beam - 6" x 8" above windows & doors	CY	1,0		\$ -
3.1.4	Allow purchase of wawa, timbers/round poles and wire nails for casting lintel, column & tiebeam formworks	L.S.	1,000		\$ -
	SUB TOTAL				\$ -
3,2	WALL CONSTRUCTION - MASONRY WORKS - USE 1:3 MIX				
3.2.0	Provide & install 6" masonry blocks for superstructure wall using 1" thick mortar for laying - Use 1:3 mix .	SY	206,8		\$ -
3.2.1	Ditto - 1/2 " thick mortar for plastering of walls: Use 1 : 3 mix	SY	413,6		\$ -
	SUB TOTAL				\$ -
3,3	SUPER-STRUCTURE: REINFORCEMENT				
3.3.0	Use 1/2"Ø steel bars in long columns with an average height of 9'-6"	L.F.	378,0		\$ -
3.3.1	Ditto - 1/4" Ø Stirrups installed @ 10" on center in long columns	L.F.	337,4		\$ -
3.3.2	Ditto - 1/2" Ø steel bars in tie beams for superstructure	L.F.	734,0		\$ -
3.3.3	Ditto - 1/4" Ø Stirrups installed @ 10" on center in tie beams	L.F.	653,8		\$ -
3.3.4	Ditto - 1/2" Ø steel bars in lintels	L.F.	328,0		\$ -
3.3.5	Ditto - 1/4" Ø Stirrups installed @ 10" on center in lintels	L.F.	212,5		\$ -
3.3.6	Ditto - 1/4" Ø steel bars as anchors for wall plate	L.F.	300,0		\$ -
3.3.7	Provide and install tie wire to be used as fasteners for steel anchoring	ROLL	5,0		\$ -
	SUB TOTAL				\$ -
3,4	WALL CONSTRUCTION - GALVANIZED COLUMN MEMBER				
3.4.0	Provide & install 4" Galvanized Steel Pipes as column members on veranda as specified in drawings	NO	6,0		\$ -
	SUB TOTAL				\$ -
3,5	ROOFING WORKS - ROOF SUPPORT STRUCTURE				
3.5.0	Provide & install 2" x 6" timber as Wall Plates Use season/complete dry wood/timber.	L.F.	185		\$ -
3.5.1	Ditto - 2" x 4" timber as Rafters @ 4 FT O.C.	L.F.	557,5		\$ -
3.5.2	Ditto - 2" x 2" timber as Purlins @ 2 FT O.C.	L.F.	1295,6		\$ -
3.5.3	Ditto - 2" x 6" timber as King Post	L.F.	74,6		\$ -
3.5.4	Ditto - 2" x 6" timber as Ridge Beam	L.F.	91,5		\$ -
3.5.5	Ditto - 2" x 4" timber as Truss Members	L.F.	333,6		\$ -
3.5.6	Ditto - 2" x 6" timber as Bottom Chords	L.F.	485,6		\$ -
3.5.7	Provide a Lump sum for wire nails to assemble support structure	L.S.	1,00		\$ -
	SUB TOTAL				\$ -
3,6	ROOFING WORKS - CEILING & ROOF COVERING				
3.6.0	Provide and install 4' x 8' ceiling boards	SY	218,6		\$ -
3.6.1	Ditto - ridge cap	L.F.	915,0		\$ -
3.6.2	Ditto - Roofing Sheet - 28 G Aluminum Alloy	SY	246,2		\$ -
3.6.3	Ditto - Eave/fascia board 1" x 10"	L.F.	209,0		\$ -
3.6.4	Ditto - Double Coat of Carboline to Roof & Ceiling Members	L.S.	1,00		\$ -
3.6.5	Ditto - Ceiling Joists - 2" x 2"	L.F.	907,5		\$ -

3.6.6	Ditto - Ceiling Strips	L.F.	907,5		\$ -
3.6.7	Ditto - Roofing Felt	SY	246,2		\$ -
3.6.8	Ditto - 3/8" steel as anchor for wall plate	L.F.	349,0		\$ -
3.6.9	Provide Lump sum for Roofing Nails	L.S.	1,00		\$ -
3.6.10	Provide Lump sum for Assorted Wire Nails	L.S.	1,00		\$ -
	SUB TOTAL				\$ -
3,7	ROOFING WORKS - RAINWATER DRAIN				
3.7.0	Provide & install rainwater gutter (drain) at roof eave as required - 10 ft long	NO	4,0		\$ -
3.7.1	Ditto - Downspouts and 4" PVC drain pipes 40 ft long as required	L.F.	87,0		\$ -
	SUB TOTAL				\$ -
3,8	DOORS				
3.8.0	Provide & install Hardwood Panel Door (3'-6" x 7'-0") in wooden frame with necessary bucks & hardware complete (Cylinder Lock, hinges, etc.)	NO	4,0		\$ -
3.8.1	Ditto - 2'-8" x 7'-0" Hardwood Panel Door in wooden frame with necessary bucks & hardware complete (cylinder lock, hinges, etc.)	NO	3,0		\$ -
3.8.2	Ditto - (3'-0" x 7'-0") n wooden frame with necessary bucks & hardware complete (Cylinder Lock, hinges, etc.)	NO	1,0		\$ -
3.8.3	Ditto - 3'-6" x 5'-0" wooden frame Plywood Door complete with necessary hardware	NO	2,0		\$ -
	SUB TOTAL				\$ -
3,9	WINDOWS				
3.9.0	Provide & install 4'-0" x 6'-0" wooden double shutter window in 2" x 4" wooden frame with 5/8" security steel bars fitted in @ 5" c/c:	NO	3,0		\$ -
3.9.1	Ditto - 2'-0" x 4'-0" wooden double shutter window in 2" x 4" wooden frame with 5/8" security steel bars fitted in @ 5" c/c:	NO	3,0		\$ -
	SUB TOTAL				\$ -
4,0	ELECTRICAL WORKS:				
4.4.0	Provide & install 4ft fluorescent lamp double	NO	6,0		\$ -
4.4.1	Ditto - 2ft fluorescent lamp	NO	2,0		\$ -
4.4.2	Ditto - Energy Saver	NO	4,0		\$ -
4.4.3	Ditto - double pole switch	NO	2,0		\$ -
4.4.4	Ditto - single pole switch	NO	7,0		\$ -
4.4.5	Ditto - receptacles	NO	12,0		\$ -
4.4.6	Ditto - utility cups	NO	25,0		\$ -
4.4.7	Ditto - junction cups	NO	6,0		\$ -
4.4.8	ditto - #10 Wire AWG	ROLL	1,0		\$ -
4.4.9	Ditto - #12 Wire AWG	ROLL	2,0		\$ -
4.4.10	Provide lump sum for electrical conduit	L.S.	1,0		\$ -
4.4.11	Supply electrical tapes	ROLL	6,0		\$ -
	SUB TOTAL				\$ -
5,0	PLUMBING WORKS:				
5.5.0	Provide & install commode complete	NO	2,0		\$ -
5.5.1	Ditto - Face basin	NO	2,0		\$ -
5.5.2	Ditto - Floor drain	NO	2,0		\$ -
5.5.3	Ditto - Shower Pan	NO	2,0		\$ -

5.5.4	Allow a lumpsum for the provision of pvc pipes, elbows, angles, fittings, glue, for installation of all mechanical fixtures etc.	L.S.			\$ -
	SUB TOTAL				\$ -
6,0	FINISHES:				
6.6.0	Provide 2" cement-sand screed mortar (Use 1:3 mix on floor)	SY	125,6		\$ -
6.6.1	Ditto - 12" x 12" polyvinyl tiles on floor incl. glue for laying	SY	60,0		\$ -
6.6.2	Ditto - 6" x 6" ceramic tiles on bathroom walls incl. white cement	SY	54,0		\$ -
6.6.3	Ditto - 12" x 12" ceramic on bathroom floor incl. white cement	SY	26,5		\$ -
	SUB TOTAL				\$ -
7,0	PAINTING WORKS:				
7.0.0	Provide & apply white wash double coats to wall & ceiling surfaces	SY	425,3		\$ -
7.0.1	Ditto - enamel paint to wall & fascia board incl. thinner for mixing	SY	226,1		\$ -
7.0.2	Ditto - emulsion paint to ceiling surface	SY	218,6		\$ -
	SUB TOTAL				\$ -
	TOTAL MATERIAL COST FOR ANC & UTILITY:				\$ -

	SPECIAL CONSTRUCTIONS				
8,0	WATER TOWER: TWO - 750 GALS CONCRETE SUPPORT 20 FT. HIGH				
8.0.0	Excavate foundation to a minimum depth of 2'-6" for foundation footing	CY	12,8		\$ -
8.0.1	Backfill foundation with selected excavated materials as required	CY	7,4		\$ -
8.0.2	Provide & install concrete in Columns, Footings, Beams, & Slab (as reqd.)	CY	8,8		\$ -
8.0.3	Ditto - Reinforcement: Columns, Footings, Beams & Slab (5/8" steel)	LF	2040,0		\$ -
8.0.4	Ditto - Reinforcement: Columns & Beams (3/8" steel) as stirrups	LF	1207,6		\$ -
8.0.5	Ditto - 750 Gals poly-utherine Tank complete with accessories	NO	2,0		\$ -
8.0.6	Provide Lumpsum for water pipes and fittings as required	L.S.	1,0		\$ -
8.0.7	Provide and install tie wire	ROLL	3,0		\$ -
8.0.8	Provide & Install 1 " thick mortar for plastering of Columns, Slabs & Beams	SY	94,8		\$ -
8.0.9	Provide Lumpsum for Formworks	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
9,0	SEPTIC TANK & MANHOLE CONSTRUCTION : 2 UNITS				
9.0.1	Excavate to a minimum depth of 9' for septic tank & 1.83' for manhole	CY	92,2		\$ -
9.0.2	Backfill foundation with selected excavated materials as required	CY	6,0		\$ -
9.0.3	Provide & install concrete for septic tank base & slab as required	CY	5,6		\$ -
9.0.4	Ditto - Reinforcment: Slab (1/2") steel	LF	979,0		\$ -
9.0.5	Ditto - 6" masonry blocks for septic tank & manhole	SY	107,2		\$ -
9.0.6	Provide & Install 1 " thick mortar for plastering: 1 : 3 mix	SY	122,2		\$ -
9.0.7	Provide Lumpsum for Pipe & Fittings from facility to Manhole	L.S.	1,0		\$ -
	SUB TOTAL				\$ -
10,0	WELL CONSTRUCTION: 2 UNITS - MINIMUM 40 FT DEEP				
10.0.1	Provide a Lumpsum for the construction of culvert lining well - min. 40' deep	NO	2,0		\$ -
10.0.2	Ditto - Lumpsum Mechanical Hand Pump	NO	2,0		\$ -
10.0.3	Ditto - Lumpsum for submersible pump(1.5HP)	NO	2,0		\$ -
	SUB TOTAL				\$ -

	TOTAL MATERIAL COST FOR SPECIAL CONSTRUCTION:				\$ -
	TOTAL MATERIAL COST FOR OPD, ANC, & SPECIAL CONST.				\$ -
	LABOR 20%				\$ -
	TRANSPORTATION 15%				\$ -
	PROFIT 5%				\$ -
	FINAL BID PROJECT:				\$ -

Form of Bid Security (Bank Guarantee)

[Guarantor letterhead or SWIFT identifier code]

Beneficiary:

[Insert name and address of the Employer]

Invitation for Bids No.: *[Insert reference number for the Invitation for Bids]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its bid (hereinafter called "the Bid") for the execution of *[insert description of contract]* under Invitation for Bids No. *[insert number]* ("the IFB").

Furthermore, we understand that, according to the Beneficiary's conditions, bids must be supported by a bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in letters]* (*insert amount in numbers*) upon receipt by us of the Beneficiary's complying supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has withdrawn its Bid during the period of bid validity specified by the Applicant in the Letter of Bid, or any extension thereto provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the period of bid validity, (i) fails to execute the Contract Agreement or (ii) fails to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the performance security issued to the Beneficiary upon the instruction of the Applicant; and (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the bidding process; or (ii) twenty-eight days after the Validity Period, which date shall be established by presentation to us of copies of the Letter of Bid and any extension(s) thereto, accompanied by the bidding document; or (c) three years after the date of issue of this guarantee.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

[signature(s)]

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

Form of Bid Security (Bid Bond)

[The Surety shall fill in this Bid Bond Form in accordance with the instructions indicated.]

BOND NO. _____

BY THIS BOND *[name of Bidder]* as Principal (hereinafter called “the Principal”), and *[name, legal title, and address of surety]*, authorized to transact business in *[name of country of Employer]*, as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[name of Employer]* as Obligee (hereinafter called “the Employer”) in the sum of *[amount of Bond]*¹⁹ *[amount in words]*, for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted a written Bid to the Employer dated the ___ day of _____, 20___, for the supply of *[name of Contract]* (hereinafter called the “Bid”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

- (a) withdraws its Bid during the period of bid validity specified in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Employer during the period of Bid validity; (i) fails or refuses to execute the Contract Form; or (ii) fails or refuses to furnish the Performance Security, if required, in accordance with the Instructions to Bidders.

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

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiration of the Bid validity as stated in the Invitation to Bid or extended by the Employer at any time prior to this date, notice of which extension(s) to the Surety being hereby waived.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this ___ day of _____ 20___.

Principal: _____ Surety: _____
 Corporate Seal (where appropriate)

(Signature)
(Printed name and title)

(Signature)
(Printed name and title)

 The amount of the Bond shall be denominated in the currency of the Employer’s country or the equivalent amount in a freely convertible currency.

Form of Bid-Securing Declaration

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

Bid No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the entity that invited Bids for the period of time of *[insert number of months or years]* starting on *[insert date]*, if we are in breach of our obligation(s) under the bid conditions, because we:

- (a) have withdrawn our Bid during the period of bid validity specified in the Letter of Bid; or
- (b) having been notified of the acceptance of our Bid by the Employer during the period of bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder* _____ ***[insert complete name of person signing the Bid]***

Name of the person duly authorized to sign the Bid on behalf of the Bidder** ***[insert complete name of person duly authorized to sign the Bid]***

Title of the person signing the Bid ***[insert complete title of the person signing the Bid]***

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

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

*: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

** : Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid
[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the bid.]

Technical Proposal

Technical Proposal Forms

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Others

Forms for Personnel

Form PER – 1: Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements for each of the positions listed in Section III (Evaluation and Qualification Criteria). The data on their experience should be supplied using the Form below for each candidate.

1.	Title of position
	Name
2.	Title of position
	Name
3.	Title of position
	Name
4.	Title of position
	Name
5.	Title of position
	Name
6.	Title of position
	Name
etc.	Title of position
	Name

Forms for Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III (Evaluation and Qualification Criteria). A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder. The Bidder shall provide all the information requested below, to the extent possible. Fields with asterisk (*) shall be used for evaluation.

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

The following information shall be provided only for equipment not owned by the Bidder.

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

Bidder's Qualification

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

Form ELI -1.1: Bidder Information Form

Date: _____
 ICB No. and title: _____
 Page _____ of _____ pages

Bidder's name
In case of Joint Venture (JV), name of each member:
Bidder's actual or intended country of registration: <i>[indicate country of Constitution]</i>
Bidder's actual or intended year of incorporation:
Bidder's legal address [in country of registration]:
Bidder's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.3. <input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. <input type="checkbox"/> In case of Government-owned enterprise or institution, in accordance with ITB 4.5 documents establishing: <ul style="list-style-type: none"> • Legal and financial autonomy • Operation under commercial law • Establishing that the Bidder is not dependent agency of the Employer
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Form ELI -1.2: Information Form for JV Bidders

(to be completed for each member of Joint Venture)

Date: _____

ICB No. and title: _____

Page _____ of _____ pages

Bidder's Joint Venture name:
JV member's name:
JV member's country of registration:
JV member's year of constitution:
JV member's legal address in country of constitution:
JV member's authorized representative information Name: _____ Address: _____ Telephone/Fax numbers: _____ E-mail address: _____
1. Attached are copies of original documents of <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.3. <input type="checkbox"/> In case of a Government-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and absence of dependent status, in accordance with ITB 4.5.
2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Form CON – 2: Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

ICB No. and title: _____

Page _____ of _____ pages

Non-Performed Contracts in accordance with Section III, Evaluation Criteria and Qualifications			
<input type="checkbox"/> Contract non-performance did not occur since 1 st January [<i>insert year</i>] specified in Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.1.			
<input type="checkbox"/> Contract(s) not performed since 1 st January [<i>insert year</i>] specified in Section III, Evaluation Criteria and Qualifications, requirement 2.1			
Year	Non-performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and US\$ equivalent)
		Contract Identification: Name of Employer: Address of Employer: Reason(s) for non performance:	
Pending Litigation, in accordance with Section III, Evaluation Criteria and Qualifications			
<input type="checkbox"/> No pending litigation in accordance with Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.3.			
<input type="checkbox"/> Pending litigation in accordance with Section III, Evaluation Criteria and Qualifications, Sub-Factor 2.3 as indicated below.			

Form CCC: Current Contract Commitments / Works in Progress

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

Name of contract	Employer, contact address/tel/fax	Value of outstanding work (current US\$ equivalent)	Estimated completion date	Average monthly invoicing over last six months (US\$/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Form FIN – 3.1: Financial Situation and Performance

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

ICB No. and title: _____

Page _____ of _____ pages

1. Financial data

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

2. Sources of Finance

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

No.	Source of finance	Amount (US\$ equivalent)
1		
2		
3		

2. Financial documents

The Bidder and its parties shall provide copies of financial statements for _____ years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.2. The financial statements shall:

- (a) reflect the financial situation of the Bidder or in case of JV member , and not an affiliated entity (such as parent company or group member).
 - (b) be independently audited or certified in accordance with local legislation.
 - (c) be complete, including all notes to the financial statements.
 - (d) correspond to accounting periods already completed and audited.
- Attached are copies of financial statements²⁰ for the _____ years required above; and complying with the requirements

²⁰ If the most recent set of financial statements is for a period earlier than 12 months from the date of bid, the reason for this should be justified.

Form FIN - 3.2: Average Annual Construction Turnover

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

ICB No. and title: _____

Page _____ of _____ pages

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

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

Form FIN3.3: Financial Resources

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

Source of financing	Amount (US\$ equivalent)
1.	
2.	
3.	
4.	

Form EXP - 4.1: General Construction Experience

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

ICB No. and title: _____

Page _____ of _____ pages

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

Form EXP - 4.2(a): Specific Construction and Contract Management Experience

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

ICB No. and title: _____

Page _____ of _____ pages

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

Form EXP - 4.2(a) (cont.)
Specific Construction and Contract Management Experience (cont.)

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

Form EXP - 4.2(b): Construction Experience in Key Activities

Bidder's Name: _____

Date: _____

Joint Venture Member's Name _____

Sub-contractor's Name²¹ (as per ITB 34.2 and 34.3): _____

ICB No. and title: _____

Page _____ of _____ pages

Sub-contractor's Name (as per ITB 34.2 and 34.3): _____

All Sub-contractors for key activities must complete the information in this form as per ITB 34.2 and 34.3 and Section III, Qualification Criteria and Requirements, Sub-Factor 4.2.

1. Key Activity No One: _____

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

²¹ If applicable.

	Information
Employer's Name:	
Address: Telephone/fax number E-mail:	

2. Activity No. Two

3.

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

PART 2 – Works Requirements

Section VII - Works Requirements

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SPECIFICATIONS

TECHNICAL FOR THE CONSTRUCTION SPECIFICATIONS



INFRASTRUCTURE UNIT
DEPARTMENT OF ADMINISTRATION
MINISTRY OF HEALTH & SOCIAL WELFARE
CAPITAL BYE-PASS
REPUBLIC OF LIBERIA



STRENGTHENING HEALTH SERVICE IN LIBERIA
TECHNICAL SPECIFICATIONS FOR THE NEW STANDARDS
OF HEALTH FACILITIES TO PROVIDE FULL
BASIC PACKAGE OF HEALTH SERVICE (BPHS)

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INTRODUCTION AND GUIDE

This Technical Specification has been made in order to provide a specification of the more common types of materials and workmanship appearing in health facilities construction designed and supervised by the Infrastructure Unit – Ministry of Health & Social Welfare. The idea is to present information that can be used repeatedly for many different types of buildings, and so, by always giving the same description of a given material or type of workmanship, make it easier for contractors working on health facilities construction projects.

The Technical Specifications, hereinafter called T.S., may apply to the contract for construction in two ways:

1. All information in the Technical Specification which is relevant for the project concerned, if so referred to in the project drawings, is deemed applicable as an addition to the written Notes and Specifications given on the project drawings; or,
2. A Special Specification may be written which consists of references to the applicable information in the Technical Specifications plus additional relevant information specific to the project concerned, including the General Conditions of the Contract/Project.

Whenever Technical Specification refers to Special Specification, this shall be understood to mean either the Special Specification, if one is made for the project, or, more often, it refers to Notes and Specifications written on the project drawings.

Technical Specification refers to and lists the numbered and most commonly used materials and methods of workmanship. Therefore, if a Special Specification is made it will contain references to numbers in Technical Specification which are to be valid for the project.

Descriptions of the materials and methods of construction which are most commonly used in MOH projects are listed in the Technical Specifications with consecutively numbered references and a Special Specification will include the information in the Technical Specification by mention of the reference number.

If a number is mentioned, in a Special Specification, the full entry in the Technical Specification under the number cited, it will be valid as if it had been quoted in extension.

The Technical Specification is numbered consecutively, and a Special Specification will refer to this numbering, but since all sections in the Technical Specification will not apply to a specific project, there will naturally be gaps in the numbering in Special Specification.

As the Technical Specification deals with technical instructions only, there will always be additions dealing with aspects specifically for the project in question.

If instructions in a Special Specification or Notes and Specifications written on project drawings differ from those given in the Technical Specification, it is always the Special Specification or Notes and Specifications written on the drawings which take precedence.

SECTION 1: - SITE CLEARING AND PREPARATION

1.1 SITE CLEARING /MOBILIZATION

(a) General

- (i) Completely prepare site in an approved satisfactory manner.
- (ii) Assume full responsibility for disposal of all unnecessary material or material not to be salvaged away from the site of the works, at the Contractor's expense.
- (iii) Stake out work, after clearing site, with stakes showing location and grades for new work, site limits, storage areas, and undisturbed areas as approved or directed.
- (iv) Where necessary, existing wells and other excavations shall be completely filled with suitable material in one (1) foot layers, well rammed and compacted by tamping or by puddling with water. If existing wells occur in the area of footings or foundations, they shall be filled as directed.
- (v) Examine the site and determine the extent of the work. No claim will be allowed based on ignorance of site conditions.

SECTION 1A:-EXCAVATION, GRADING AND FILLING

EARTHWORK

- 1A.1 The Work under this section of the specifications shall include the required bond and insurance, all labor, equipment, materials and services necessary for clearing, the site, excavating, grading, filling and backfilling, compacting, protection, removal and or disposition of utilities and like related work within the extent of contract work and or disposition of utilities and like related work within the extent or contract work limit lines shown on the site plan and as otherwise noted or called for by the Owner's Representative.

BENCH MARKS AND MONUMENTS

- 1A.2 Construct and carefully maintain on the site all reference and working bench marks, monuments, and other reference points. If disturbed or destroyed, replaced as directed. If found at variance with drawings, notify the OWNER'S REPRESENTATIVE. All property cornerstones are to remain in place showing the boundary line of the property been developed.

PROTECTION OF EXISTING CONDITIONS TO REMAIN

- 1A.3 (a) Any utility or service system such as water lines, sanitary lines, storm sewer and drainage lines; power, telephone, grounding lines, cables, wires, conduits, or the like encountered for damaged during clearing of the site and/or excavation work shall be carefully repaired, or replaced without extra cost to the OWNER. The CONTRACTOR assumes full responsibility for any such damage or inconvenience caused by his failure to properly handle same.
- (b) Capping, plugging, or filling inactive or abandoned service systems in place which do not interfere with construction work or their removal as conditions may warrant, shall be at the expense of the CONTRACTOR.
- (c) In all cases where the contractor encounters such underground services, he will immediately notify the Owner's Representative for decision as to disposition of same.

DISPOSITION OF EXISTING UTILITIES

- 1A.4 (a) Rules and regulations of the authority having jurisdiction shall be followed in executing all work under this article.
- (b) In all cases where the Contractor encounters such utilities where underground or otherwise, the OWNER'S REPRESENTATIVE shall be advised.
- (c) Visible or known active utilities and services shall be adequately protected at all times from damage and relocated or removed only as indicated on the drawings or specified. Where active utilities and services are encountered but not shown on the drawings, the OWNER'S REPRESENTATIVE shall be advised. Any extra work or expense in relocation, rerouting, or removal of unidentified active services so requested by the OWNER or directed by the OWNER'S REPRESENTATIVE shall cause the Contract Price to be adjusted for such additional work in compliance with "the change in the Work" provisions of the General Conditions of Contract.
- (d) Where inactive and abandoned utilities and services are encountered, but not shown on the drawings, any extra work or expenses in capping, plugging, filling with concrete, or removal necessary shall be added cost to the Contract Price and handled in the manner as (c) above.
- (e) In the absence of specific requirements, completely removed such utility and service lines from within the project site and terminate as further required by local authorities.

FILL MATERIAL

- 1A.5 (a) Earth material for foundation back fill work in general shall be reasonably free from large stones (over 4" maximum dimension), broken pieces of concrete or asphalt pavements, broken glass, scraps and pieces of metal, paper material, limbs, roots, woods, or other organic or rotten material. Use suitable and acceptable excavated material and beach sand for required fills and back fill work, in building foundation. If practicable, provide any additional fill materials from on, or off site as necessary to meet acceptable conditions and produce the required grades.
- (b) For laterite soils fill material, use granular material. Reduce high moisture content to acceptable level.
- (c) Where excavated fill material is unsuitable or acceptable laterite borrow pits cannot be located, use soil-aggregate material to the following specifications. Soil-aggregate mixture shall consist predominantly of stone, gravel or sand and containing salty clay material, and conforming to AASHTO soil classification system of A-1-a to A-2-2 materials with general rating of excellent to good sub-grade/base material.

TOPSOIL

- 1A.6 (a) If one-site topsoil is not sufficient to meet the needs and conditions of the job and additional topsoil is required to be imported to the site, the source and material shall be approved by the OWNER'S REPRESENTATIVE.
- (b) All topsoil, whether from on or off site, will be reasonably free from subsoil, debris,

stones larger than 2" in diameter, broken pieces of concrete, pavements, glass and the like, scarps and pieces of metal, paper material, limbs, roots woods, or other organic or rotten material.

SURPLUS MATERIAL

1A.9 Remove unsuitable materials and surplus excavated materials from the site.

EXCAVATIONS FOR BUILDING EXTENSION AND FENCE

1A.10 (a) Dimension: Excavate to elevations and dimensions indicated. Allow additional space as required for construction operations and inspection of foundations. All back-fill within 10 feet of building shall be compacted to 95% (ninety-five percent) density.

(b) Finish Grading:

(i) The CONTRACTOR shall do all finish grading to meet the new finish elevations, contours, or both as required, and to the extent and within the limits indicated on the site plan.

(ii) Finish grading operations and topsoil earthwork will be completed, verified, and checked by the CONTRACTOR within the contract time and released to the OWNER prior to the nearest seasonal planting and growing period for landscaping work.

(iii) Where necessary, hand rake to obtain a smooth even surface ready to receive landscaping work.

(iv) Landscaping of the site and grounds will be performed by the CONTRACTOR. It will be the CONTRACTOR'S responsibility to coordinate very carefully the requirements and scope of landscaping work, and to properly advise the OWNER with written data and graphic prints of the schedule and work to be performed under this contract.

SECTION 2 – CONCRETE AND MORTAR

2.1 GENERAL

(a) This section covers concrete for building construction.

(b) Furnish labor, materials and equipment to complete concrete work as indicated and specified.

(c) Arranged for full cooperation between this trade and all other trades for the installation of embedded and anchorage items. Provide suitable templates, instruction and shop drawings as required for setting items not placed in the forms.

(d) Embedded items shall have been inspected and tested, all test on materials and mixed concrete shall have been completed and approved before concrete is placed.

2.2 MATERIALS

2.2.1 Aggregates: (Generally)

(a) Obtain aggregates as much as possible from approved local sources.

(b) Their quality, graduation and characteristics shall conform to the performance requirements specified herein and to the A.S.T.M. or acceptable Ministry of Public Works standards given.

- (c) A.S.T.M. Standard sieves are specified for testing, but other standard sieves may be utilized if proved similar to the A.S.T.M. Standard, and are approved.
- (d) Aggregates – (fine) as A.S.T.M. C33 for concrete and A.S.T.M. C144 for mortar consisting of natural or manufactured sand or a combination thereof suitable for intended use. (Beach sand or its equal equivalent). Sand for face work shall be clean washed sand.

Crushed Rocks:

- (a) Aggregates (Coarse) – As A.S.T.M. C33 for concrete well-graded from fine to coarse within the prescribed limits.

2.2.2 Cement

- (a) Use only brand of each type of cement for exposed concrete in any individual structure. Cement reclaimed from cleaning bags or leaking containers shall not be used.
- (b) Type (1) Portland Cement: A.S.T.M. C150, type (II) as manufactured by CEMENCO, Liberia

2.2.3 Curing Materials:

- (a) Waterproof paper as A.S.T.M. C171, or as locally accepted and approved.

- (b) Liquid membrane forming curing compounds shall conform to A.S.T.M.C309.

2.2.4 Drainage fill

Clean crushed rock or uncrushed gravel or other similar approved free-draining material of size passing a 1.5 inch screen and retained on a no. 4 screen, free from earth, clay or other foreign substance.

2.2.5 Form materials for concrete generally

- (a) Use only wood, metal, structural hardboard or plywood, or other approved material that will not adversely affect the surface of the concrete, and that will produce or facilitate in obtaining the specified surface finish of the concrete.
- (b) For unexposed concrete surfaces, use local, sharp edge, rough lumber, perfectly sound and straight at least 1 inch thick.

2.2.6 Reinforcement:

- (a) Bar reinforcement as A.S.T.M. A15-52T or approved standards for physical properties, conforming to the following requirements:

Use

5/8" ø steel bars	3/8" ø bars
1/8" ø strips	1/2" ø bars

Tie wire where required.

- (b) Mesh reinforcement as A.S.T.M. Standard A – 185 except as otherwise specified. Use indicated sizes in slabs on grade. Use indicated sizes in applied floors, but in no case larger than 6 inch x 6 inch of not lighter than 10 gauge wire. Wrapping to structural steel members to be 4 inch x 4 inch of 11 gauge galvanized wire.
- (c) Certified copies of mill reports shall accompany deliveries of reinforcing steel, except mesh reinforcement and metal lath. All reinforcement shall be free from rust, oil, scale or other coatings that will destroy or reduce bond.

2.2.7 Water

Clean, fresh and free from injurious amounts of mineral and organic substance. Water taken other than from a public utility main, or water fit for drinking, shall be subject to approval.

2.3 STORAGE OF MATERIALS

2.3.1 Aggregate:

Arrange storage pile on cement mortar board laid to slope with good drainage so as to prevent inclusion of foreign matter, mixing of types and preserve gradation. No contamination will be permitted.

2.3.2 Cement:

Immediately upon receipt, store all cement and cementing components in the aforesaid construction in a dry, weather tight, properly ventilated structure with adequate provision to prevent absorption of moisture and adulteration of any kind.

2.3.3 Reinforcement:

Exercise care in storing to prevent deformation or deterioration. Keep reinforcement free from rust and dirt.

2.4 CONCRETE MIXES

2.4.1 Class of concrete:

- (a) 1:2:3 mix: minimum compressive strength at 28 days of 3,000 lbs per square inch.

2.4.2 Mixes of concrete:

- (a) The following mix is given only as a guide. It may be necessary to vary the specified proportions of fine and coarse aggregates slightly from those given, to obtain a smooth, plastic, workable mix, but the amounts of water and cement shall not be varied. The minimum compressive strength specified shall govern in every case.

- (b) Design of Concrete Mix:

- (i) Type I, Non-air entrained cement is to be used. Specific gravity is 3.15
- (ii) Coarse and fine aggregates are properly graded. The coarse aggregates have a bulk dry specific gravity of 2.68.
- (iii) Fine aggregate have a bulk dry specific gravity of 2.64 and a Fineness Modulus of 3.2.
- (iv) The concrete will not be exposed to severe weather or sulfate attack with

a

specification requirement of 3,000 psi as 28 days compressive strength of concrete

- (v) A locally available No. 4 to 1½ inch coarse aggregates will be used that has a slump of 3 – 4 inches.
- (vi) The dry rodded weight of coarse aggregate is 100 lb/cf³
- (vii) Amount of mixing water for 3 – 4 inches slump with 1½ inch aggregate is 36 gals/cy.
- (viii) Entrapped air is 0.02 (2%) times the volume of concrete
- (ix) Use 1 bag cement equal 50kgs.

2.5 MEASUREMENT AND PROPORTIONING OF CONCRETE MIXES.

2.5.1 General: concrete shall be proportioned by volume.

- (a) Cement: A one-cubic foot bag of port-land cement will be considered as 50 kg. in weight as marketed by CEMENCO, Liberia. In determining the approved mix, Portland cement alone is used as the paste-like material.
- (b) Water: One gallon of water will be considered as 3.78 kgs.
- (c) Aggregate: Fine and coarse aggregate, shall be measured by volume. Coarse aggregate shall be used in the greater or lesser amount consistent with required workability, as determined. Coarse aggregate shall be compatible with the type and character of the structure, and as approved.
- (d) Corrective additions to remedy deficiencies in aggregate gradations shall be used only with the written approval of the Owner's Representative. When such additions are permitted, the material shall be measured separately for each batch of concrete.

2.5.2 Control:

(a) Determination of maximum water content allowable

The strength quality of the concrete proposed for use shall be established by tests made in advance of the beginning of operation, using the consistence suitable for the work. Trial design batches and test shall be the responsibility of the CONTRACTOR. Specimens shall be made and cured in accordance with ASTM standard C192 and tested in accordance with ASTM standard C39 or C78, as applicable.

(b) Slump Test:

Slump tests shall be conducted on site for every batch of concrete to be poured. In the field, consistency shall be determined in accordance with A.S.T.M. C143. The slump shall fall within the limits indicated under sub-section 2.5.2 – "Mixes or concrete", provided the required strength is obtained:

2.6 BATCHING AND MIXING EQUIPMENT

- (a) Provide at the site of the work at dependable batch-type concrete plant equipped with concrete mixes having an adequate capacity to carry out the work required. The plan shall be subject to approval. The mixers shall be capable of combining the aggregate, cement and water into a uniform mixture and of discharging this mixture without segregation. Materials delivered to the mixes shall be measured by volume. The measuring device shall be consistent with one unit equivalent to the content of a bag of Portland Cement equal to 50 kgs. Adequate facilities shall be provided for accurate measurement and control of each of the materials entering each bath of concrete. Provide standard test volumes and auxiliary equipment required for checking the operation performance of the measuring device. Periodic tests shall be made as directed upon completion of each check test, make such adjustment, repairs or replacements require. Use manual hand-labor mixes as approved.

2.7 SAMPLING AND TESTING CONCRETE

(a) Strength tests for concrete during the work.

Provide for test purposes two sets of three moulds to produce six (6) test blocks, three (3) of which shall be tested at seven (7) days, and the remaining three (3) at twenty-eight (28) days, for each class of concrete place. Test specimens shall be made and cured under laboratory conditions in accordance with A.S.T.M. Standards C31. Test cubes in accordance with A.S.T.M. standard procedures. The test result shall be the average of the strengths of the three cubes at 7 and 28 day strengths of the concrete is established. The contractor is advised that should the results of test on the 28-day test cylinders be below the specified strengths, he will be required to remove the defective concrete poured and replace with approved and quality, at no expense to the owner.

- (b) Selection of samples
A sample should be obtained from at least 3 parts of the batch. These should be taken directly from the mixer discharged at well distributed points. Before filling the moulds, the individual samples should be re-mixed with a shovel in a wheelbarrow or on a metal pan to ensure uniformity.
- (c) Filling of moulds
Moulds should be filled in 2 inch equal layers and each layer tamped uniformly not less than 35 strokes per layer for 6 inch cubes or 25 strokes per layer for 4 inch cubes with a 1 inch square bar of length 15 inches. When tamping the upper layers, the rod should just break through into the layer underneath. All moulds should be filled uniformly. The third layer should contain an excess which can be struck off smooth and level after tamping. When compacting is to be done by vibration, the cubes can be vibrated as well, provided suitable equipment is available.
- (d) Cubes setting time
Cubes should be cast in a protected area where temperatures will not exceed 25 °C or fall below 22 °C. Under such temperate conditions, tops should be covered to prevent loss of moisture and cubes should not be disturbed or moved for 24 hours. Cubes left on the job for several days and exposed to sun or low temperatures will give sub-standard results. Additional cubes used for determining when forms may be stripped or when concrete may be put into service, should be removed from moulds after 24 hours and then be job-cured adjacent to and under the same conditions as the concrete they represent.
- (e) Curing and handling of cubes
After 24 hours, cubes for acceptance tests should be submerged in water at 22 degrees C – 25 degrees C for at least 7 days, or sent to laboratory for similar standard curing. Careful handling during moving is necessary since cubes which are allowed to rattle around in a box, or the back of a car, or pick-up, can suffer considerable damage. Protect test specimens by immediately covering them with damp burlap (or equivalent material) and maintaining them at 22 degrees C to 25 degrees C to prevent serious reduction in strength from exposure to high temperatures and wind. After 24 hours, carefully move specimens to prescribed curing facilities and store until time of test.

2.8 PREPARATION FOR PLACING OF CONCRETE

- (a) Remove water from excavation before concrete is deposited and divert any flow of water through proper side drain without washing over freshly deposited concrete. Remove hardened concrete debris, and foreign materials from interior of forms and inner surface of mixing and conveying equipment. Secure reinforcement in position, obtain approval before pouring concrete.
- (b) Do not splash forms or reinforcement with concrete in advance of pouring. Place concrete in the forms in uniform layers as nearly as practicable in final position so as to avoid re-handling.

2.9 PLACING OF CONCRETE

- (a) Do not use belt conveyors, chutes or other similar equipment without written approval. Handle concrete from mixer to transport vehicle to place of final deposit in a continuous manner, as rapidly as practicable, without segregation or loss of ingredients until the approved unit of operation is completed concrete that has attained its initial set or has contained its mixing water for more than 45 minutes shall not be placed in the work.
- (b) Do not splash forms or reinforcement with concrete in advance of pouring. Place concrete in the forms in uniform layer as nearly as practicable in final position as to avoid re-handling.

- (c) Placing concrete during wet weather – Do not pour concrete during rainy weather unless under cover areas, and prevent rain-water entering or spoiling the work.
- (d) Poured concrete shall be vibrated in accordance with A.S.T.M. standard procedures. The vibrator shall be mechanically operated, and capable of reaching all parts of the concrete confinement. A spare vibrator shall be kept at the site at all times.

2.10 FORM WORKS

- (a) Construction: Construct forms complete with entering cores, and mold, to conform to shape, form, line and grade required, and maintain sufficiently rigid to prevent deformation under load. Space studs sufficiently close to prevent deflection of form material and consequent in surface of concrete.
- (b) Design: Construct joints right, and arranged vertically or horizontally to conform to the pattern of the design. Accurately align forms placed on successive units for continuous surfaces to ensure a smooth regular completed surface. Arrange temporary openings in walls and column forms where required, to facilitate cleaning and inspection. Lumber once used in forms shall have nails with drawn and surfaces exposed, and carefully cleaned before re-use. Forms shall be readily removable without disturbing the concrete.
- (c) Ties: Provide form ties of suitable design and adequate strength for the purpose.
- (d) Removal of Forms: Remove forms only with approval in a manner to insure complete safety of the structure after the following conditions have been met. Where the structure as a whole is supported, the beam and girder sides, column forms and similar vertical forms may be removed after 24 hours, provided concrete has sufficient strength not to be injured thereby. Do not remove supporting forms or shoring until members have acquired sufficient strength to support safely their weight and any construction and/or storage load to which they may be subjected, but in no case in less than 7 days. Do not remove forms used for curing before expiration of curing period except as provided hereinafter under curing. Take care to avoid spoiling the concrete surface. In general, do not remove supporting forms or shoring until strength of control test specimens has attained a value to at least 1,500 PSI for columns and 2,000 PSI for all other works. Do not overload newly unsupported portions of the structure.

2.11 REINFORCEMENT STEEL AND CONCRETE COVERING

- (a) Placing reinforcing steel and mesh fabricated to shapes and dimensions as indicated and required to carry out intent of drawings and specifications. Before placing reinforcement, thoroughly clean off rust, mill, scale or any coating that would reduce the bond. Following any substantial delaying, inspect and clean reinforcement left for future bending. Reinforcement shall not be bent or straightened in manner injurious to the material. In slabs, beams do not splice at points of maximum stress. Laps of splices shall be of adequate length to transmit stress, stagger splices in adjacent bars. Lap splices in columns, piers and struts sufficiently to transfer the full stress by bond.
- (b) Unless otherwise indicated, specified, or directed, concrete covering over steel reinforcement shall be not less than the following thickness.

Bottom of Foundation	3 ins. (75 mm)
Sides of Foundation	3 ins. (75 mm)
Sides of shuttered beams with plaster	1 ins. (25.4 mm)
Columns	1.5 ins. (40 mm)

- (c) Reinforcing steel details
Unless otherwise indicated, specified or directed, the following shall apply:

- (i) Steel in walls and beam shall be continuous through the length of the various members. Splices shall not occur at critical sections.
- (ii) Hold all stirrups, except ties in place by the 3/8 inch space bars extending the full length occupied by stirrups.
- (iii) Place outside bars of slabs reinforcement both main and temperature, parallel to beams, or walls, no more than one-half bar spacing from the face of the adjacent member.
- (iv) Wire-mesh reinforcement in slabs shall be continuous with joints lapped at least one full mesh and ties, and support at proper elevations by standard accessories. Stagger lapping of sheets to avoid continuous laps.
- (e) Reinforcing steel tying and supporting
 - (i) With the exception of temperature reinforcement which shall be tied to main steel at specified centers, accurately place and securely tie reinforcement at all intersections and slices with 18 gauge black annealed wire, and securely hold in position during the placing of concrete with spacers, chairs, benches or others approved supports. Wire tie ends shall point away from the form.
 - (ii) For slabs on grade (over earth or over drainage fill) and for footing reinforcement, support bars or mesh on approved pre-cast concrete spacer blocks of the proper size, spaced at intervals required by size of reinforcement used, to give reinforcement the minimum specified height and concrete cover. The positioning of tie wires in spacer blocks shall ensure that adequate cover it provided them. Spacer blocks must be of the same strength as the concrete elements.

2.12 CONSTRUCTION JOINTS

- (a) The unit of pouring shall not exceed 80 ft. (or 24.3m) in any horizontal direction, unless otherwise indicated. Place concrete continuously so that the unit will be monolithic in construction.
- (b) At least 48 hours shall elapse between the casting of adjoining units, unless otherwise approved. Construction joints, where required, shall be located near the mid-point.
- (c) Construction joints in wall footings shall be reduced to a minimum and except where indicated, requires approval. Place concrete at such rate that surfaces of concrete not carried to joint levels will not have attained initial set before additional concrete is placed thereon.

2.13 BONDING AND GROUTING

Before depositing new concrete on or against concrete that has set, thoroughly roughen existing surfaces and clean off latent foreign matter and loose particles. Forms shall be re-tightened and existing surfaces slushed with a grout coat of neat cement. Place new concrete before the grout has attained its initial set, the first 3 inches of which shall be the regular mix, except that the proportion of coarse aggregate shall be reduced by 50 percent. Grout for setting metal items shall be composed of equal parts of sand and Portland cement with water sufficient to produce required consistency.

2.14 CONCRETE FLOOR FINISHES

- (a) Finished floor: shall be true plane surfaces, with a tolerance of 1/8 inch in 10 feet unless otherwise indicated. Pitch surfaces to drain as indicated. The dusting of finish surfaces with dry materials will not be permitted. Monolithic finish: Except where otherwise specified, finish floor and roof slabs by tamping the concrete with special tools to force the coarse aggregate away from the surface, then screed and float with straight edges to bring the surfaces to the required finish level. While

the concrete is still fresh but sufficiently hardened to bear a man weight without deep imprint, wood-float to true, even plane with no coarse aggregate visible. Sufficient pressure shall be used on the wood floats to bring moisture to the surface.

2.15 CURING

- (a) Cure all concrete by preventing loss of moisture, rapid temperature change, injury from rain or flow water or mechanical disturbance for a period of 7 days when normal Portland cement has been used, or 3 days when high early strength Portland cement has been used, unless otherwise directed. Start curing as soon as free water has disappeared from the surface of the concrete. Curing of concrete formed under surfaces of beams, girders, floor slabs, and similar surfaces shall be accomplished by moist curing with forms in place, or if forms are removed prior to the end of the curing period, by other means approved. Cure concrete by the following methods as approved.
- (i) Moist curing: cover unformed surfaces with burlap, cotton, or other approved fabric mats. Do not use materials that will discolor concrete. Keep forms continually wet and if removed before the end of the curing as for unformed surfaces.
- (ii) Waterproof paper curing: cover surfaces with waterproof paper lapped 4 inches at edges and ends sealed with mastic or pressure sensitive tapes not less than 1 ½ inch wide. Wet paper to prevent displacement, and immediately repair tears or holes appear during the curing period by patching.

2.16 MORTAR MIX

Mixes hereafter given by volume:

Class A – Cement Mortar

Portland Cement	:	One (1) Part
Sand	:	Three (3) parts

The measuring device shall be formed and made to the equivalent volume of one (1) bag of Portland Cement – 50 kgs.

SECTION 3 – PRECAST CONCRETE

3.1 GENERAL

Furnish all labor, materials, framework and equipment to complete all pre-cast concrete work fixed in place as indicated and specified.

This section covers all pre-cast concrete work, (including cast in place items not indicated as cast integrally and forming part of reinforced or structural concrete work), such as ventilation (Colombo) blocks.

All appropriate clauses of Section 2 – Concrete shall apply together with clauses specially referred to and as may be amended herein.

3.2 MATERIALS

(a) All materials: as Section

(b) Aggregate:

(i) Fine Aggregate	:	as specified
(ii) Coarse Aggregate	:	as specified but use only 1" maximum size.

- (c) Formwork: As specified, construct all form work as shall accurately reproduced shapes and profile require. Formwork shall be so designed as to facilitate stripping for finishing exposed to view surfaces, and for re-use. All form work shall be line, constructed of plywood, or metal, as most suitable for the required finish.
- (d) Reinforcement: As specified and indicated, the contractor shall be responsible for shrinkage or handling reinforcement required for the proper manufacturing and handling of cast items, where such reinforcement is indicated or cast.

3.3 STORAGE OF MATERIALS

- (a) Pre-casting unit: All units shall be carefully stored during curing and after wards until required, in a manner to prevent all damage, including chipped and damaged comers and angles, fractures, and cracks of any kind. All pre-cast units shall be kept clean, and the finish exposed to view surfaces left perfect. No repair work of any nature will be permitted without approval. Damaged unit will be replaced, at no additional charge to the Owner.

3.4 VENTILATION BLOCKS

Cast all ventilation blocks indicated in shapes and dimensions shown. Dimension tolerance: all + 1/16 inch. Materials: Portland cement concrete. Finish: fine texture and sand finish surfaces.

3.5 PERFORATED AND SOLID BLOCKS

- (a) Cast all perforated and solid concrete blocks of each type required for perforated and solid sand-crete masonry wall as indicated and detailed.
- (b) Materials: Portland cement concrete
- (b) Finish: as from press with all mold marks removed. All edges shall be sharp and clean; all surfaces shall be free from chip, cracks or fractures. Slides and bedding surfaces, flat, square and at right angles to faces. Perforation, clean and true through thickness.

3.6 PRECAST MISCELLANEOUS ITEM

Other pre-cast units not specifically mentioned herein shall be cast and manufactured as the general requirement before specified and as approved. Color and finish shall be compatible with the position used and as adjacent pre-cast and/or other work.

3.7 CAST IN SITU ITEMS

- (a) Such items indicated on the drawings as cast in situ, or which are most suitably so constructed, as approved or directed, shall be as specified. Cast items as detailed, including all reinforced drip grooves, to correct profiles in accordance with the workmanship, coloring, and finish specified for similar pre-cast items. When indicated or required, expansion joints shall be provided.
- (b) Expansion Joints for concrete items for external works shall be fitted with fiberboard and shaped to suit the cross section of the item, but with a 1/2" wide space to receive a caulking compound.

SECTION 4 – MASONRY WORK /MORTAR (BLOCK WORK)

4.1 GENERAL

- (a) Furnish all labor and material to complete masonry work as indicated and specified.
- (b) Attend upon other trades in all sections as required to build in all items indicated.

- (c) All appropriate items specified in SECTION 2 – CONCRETE required in relation to MASONRY WORK are here made part of this Section as if written out in full.

4.2 MATERIALS

- (a) Masonry blocks shall conform to the requirements of B.S. 2028 for Type A Blocks unless otherwise specified, except that they shall be of the sizes shown on the drawings. They shall be cast in water tight molds and be uniform in size. The blocks shall be hard, sound, square and clean.
- (i) Exterior wall Blocks: 6 inch hollow core sandcrete masonry wall units made from Portland cement using newly washed aggregates as specified, manufactured as A.S.T.M. C129 except otherwise noted.
- (ii) Interior Partition blocks: 6 inch hollow core sand-crete masonry wall unit made from Portland cement using newly washed aggregates as specified, manufactured as A.S.T.M. C129 except otherwise noted.
- (iii) Dimensions: Standard Nominal size, and 6" x 8" x 16" less 3/8 inch on all dimensions for joints. Tolerance: plus or minus 1/8 inch on actual dimension (width, height and length)
- (iv) Joints: The bed joint shall be at right angles to the face of the block. The vertical face joints (end joint) shall be either tongue and grooved at both ends.
- (v) Surface texture: shall be even but of good rough texture to provide a good key for rendering or plastering.
- (vi) All units shall be sound and free from cracks and other defects that would interfere with the proper placing of the blocks, or impair the strength or permanence of the structure.
- (b) Bond all block work in common bond. Masonry backed by concrete shall be sloshed up solidly with mortar unless otherwise indicated.
- (c) A uniform height of wall must be maintained at all times as the work progresses. Raking back shall be done only as is reasonable and necessary to obtain a uniform height round the area being worked on.
- (d) Building in flashing, loose lintels, steel reinforcing rods framing bearing on masonry, miscellaneous and metal specifications which occur in masonry work: sleeves, supports, braces, panels, frames, jambs and items required to build into masonry. Where required, provide spaces for built-in type accessories.
- (d) Level for and bed all bearing places and grille required for structural steel roof framing bearing on masonry.
- (e) Build in anchor for all masonry facing as required. Fill solid with mortar around jambs and heads of metal and wood door bucks and frames.

4.3 WORKMANSHIP, CONCRETE BLOCK WORK AND STONEMANSHIP:

- (a) Block Laying: Lay block in bed of class "B" Mortar (1.3) with vertical joints completely filled.
- (b) Bond: All blocks shall be half bonded over lower course.
- (c) Joints: Nominally 1/2" joints (mortar)

- (d) Closure Blocks: Use cut blocks where required, provided cuttings does not crack, fracture, or weaken part to be used, and that no cell (in hollow blocks) shall be exposed by cutting. Alteration or similar work after work completion of main construction work shall be filled solid.
 - (e) Partitions: Bond all partitions at all intersections and angles and secure with anchors as indicated in the drawing.
- 4.4 DAMP-PROOFING AND FLASHING:
- (a) Building in all damp-proofing as indicated.
 - (b) Provide, erect and remove afterwards, such protective works necessary to protect masonry during construction, and for a reasonable curing period as may be approved, from adverse climatic conditions such as rain and over rapid drying from sun.
 - (c) Masonry walls (blocks) damaged by climatic conditions shall be pulled down and replaced at no additional cost.
 - (d) Protect masonry walls from mechanical injury either by accident or other work.
- 4.5 CLEANING:
- (a) Execute work in manner as clean as possible; remove excess materials, mortar droppings on connection or adjoining work before its final set.
 - (b) Exposed masonry: At completion of work, point holes in joints or exposed masonry surfaces: completely fill with mortar; tool properly. After pointing has set; leave masonry clean, free of mortar daubs with tight mortar joints throughout.

SECTION 5 – WATERPROOFING AND DAMP-PROOFING

5.1 GENERAL REQUIREMENTS

- (a) Before commencing work, carefully examine surface upon which work of this section is in any way dependent for perfect workmanship. Make necessary repairs for proper workmanship, including removal of projections which might puncture the work of this section, and fill large voids and cavities.
- (b) Surface shall be dry, free from visible moisture, dirt or foreign matter. Floor deck shall be thoroughly dry before any work is started on it. All work in this section shall be executed in accordance with the manufacturers' printed direction.
- (c) Take care in applying work in order to avoid spotting, straining, or marring of finished surfaces of any adjacent work. Where such surfaces become damaged, they shall be cleaned thoroughly, repaired and be inspected for approval.

SECTION 6 – ROOFING

6.1 GENERAL

- (a) Furnish all labor and materials to complete all roofing of various types indicated and specified.
- (b) Install roofing in accordance with detailed drainage and as directed by the Owner's Representative. Check shop drawing against Owner Representative/MOHural plans and details.

6.2 MATERIALS

- (a) 28 gauge corrugated zinc alloy sheets or corrugated aluminum alloy (IT4) sheets
Roof pitch: minimum (refer to drawing)

6.3 SAMPLES, MANUFACTURES' INSTRUCTION

Submit all roofing component samples for approval.

6.4. APPLICATION GENERAL

The recommendation of the manufacturers of the roofing materials shall be strictly followed.

6.5 INSTALLATION

Installation of sheets as per manufacturers' specifications shall be with minimum laps of 10cm. in the vertical direction and 7cm in the horizontal direction. Sheets shall be positioned on wood purling and fastened with roofing nails.

SECTION 7: MISCELLANEOUS METAL WORK7.1 MATERIAL AND STANDARDS (GENERALLY)

- (a) Gauges of metal specified are United States standards and are of minimum thickness acceptable. Thicknesses of other materials specified are approximate. Should the manufacture's standard thickness for these items vary lightly from those specified, such other thickness may be submitted for approval.
- (b) General metal shall be free from defects impairing strength, durability or appearance. Sections shapes shall be rolled, deformed drawn or pressed, as required for respective functions. Molded work shall have sharply defined profiles, be clean and straight. Plain work shall be level, straight, and surface true and smooth. Edges and angle corners shall be square, clean and sharp, unless otherwise indicated or specified.
- (c) All metal shall meet the ASTM or approved equal standards for physical properties and/or the following standards for chemical properties unless specified otherwise or approval is obtained for substituting materials.
- (d) Mild Steel: Wire reinforcement shall have the same general chemical composition as specified for structural steel.
- (e) Cold drawn or finish steel: Shall be mild steel rolled or drawn free from scale and accurate to size or gauge, and shall conform to the requirements as to chemical, composition as follows:

Carbon, maximum percent	0.25
Phosphorus, maximum percent	0.04
Sulfur, maximum percent	0.05
Manganese, maximum percent	0.75

7.2 SHOP DRAWINGS

- (a) Submit for checking to the Infrastructure MOH&SW Information Unit prior to fabrication, detailed working drawings in quadruplicate for all fabricated metal work proposed for installation.

Required changes or an approval will be indicated on two copies, returned to the CONTRACTOR. Make any changes required on the drawings and resubmit for final approval.

(b) Finish Protection:

All anodized or non-anodized material shall receive two (2) factory coats of anti-rust paint.

7.3 SAMPLES:

Submit for approval to the Infrastructure Unit of the MOH&SW samples of materials with surface preparation, finishes and protection as specified. Samples shall be representative of the materials to be used on the project and all materials installed shall match the approved samples.

7.4 PROTECTION OF CONTACT SURFACE

(a) Dissimilar Metals:

Where aluminum materials are placed in contact with or fastened to dissimilar metals, with the exception of stainless steel or zinc, the surfaces in contact shall be treated in one of the following manners:

- (i) Heavy brush coat of zinc chromate primer.
- (ii) Heavy brush coat of alkali resistant bituminous paint.
- (iii) Surfaces shall be separated with a non-absorptive tape or gasket.

(b) Masonry of Plaster:

Where aluminum materials are placed in contact with, or built into a masonry or plastered structure, the surfaces in such contact shall be given a heavy brush coat of alkali-resistant bituminous paint as specified above.

(c) Wood:

Where aluminum materials are placed in contact with, green or wet wood, or any other absorptive materials subject to repeated wetting, or wood treated with a non-compatible preservative, the contact surfaces shall be treated in one of the following manner

- (i) Heavy brush coat of aluminum pigmented bituminous paint.
- (ii) Two (2) coats of aluminum metal and masonry paint.

7.5 FABRICATION AND INSTALLATION

(a) Fabrication: Fabricate and erect work in thorough workmanlike manner.

Metals: formed true to details, having clean, straight, sharp defined profiles and unless otherwise particularly noted, with smooth finished surfaces.

(b) Joints: shall be continuously welded; spot welded only where approved by the Owner's Representative. Face joints: shall be dressed, ground flush, polished smooth and to specified finish of joined materials; joints are to be close fitting, and made where least conspicuous. Watertight joints where subject to moist elements, or wet conditions.

(c) Rivet, bolt, screw heads: flat; countersunk where thickness of material will permit oval and/or truss head on thin material only when approved in exposed work of finished character; elsewhere as specified or approved. All exposed permissible screw and bolt fastenings of approved type. Shop drawings shall clearly define all fastening methods.

(d) Exposed bolt, screw ends and the like: cut off, dressed flush with nuts or adjacent metals.

(e) Threaded connections: shall be made up tight so threads are concealed by fittings.

- (f) Shop field connections: except as otherwise indicated or approved, shop assembled connections shall be welded or riveted; bolts or machine screws may be used where approved on shop drawings.
- (g) Weights of connections and accessories: shall be adequate to sustain safety and withstand stresses to which they will be normally subjected, and equivalent to strength of material and sections to be joined.
- (h) Exposed fastening: Of approved type matching materials, color and finish as metal in which they will be normally subjected, and equivalent to strength of materials and sections to be joined.
- (i) Anchorage: for work built in with masonry; of suitable form strength to extent required-for anchorage. Where anchors, their connections or other details are not indicated or specified, their material, size and attachment shall conform to standard approved practice for materials for this type of constructions.
- (j) Drilling, Tapping, Cutting and Fitting: execute as require for installation. Where required, fit at building before finishing. Do work required to accommodate work of others and for attachment of adjacent fittings.
- (k) Connection, supports and the like: furnish and set for approval, supporting members, fastenings, framing, hangers, bracing, anchor, backup bolts and the like, required to fix work rigidly and properly to concrete, masonry or other construction.
- (l) Fastening to Masonry: except where otherwise indicated, specified for particular items of work or where work is required to be built-in, fasten to masonry with approved types of expansion or toggle bolts. Fastening to wood plugs set in masonry is not permitted.
- (m) Expansion Joints: located as required and shall be designed and constructed watertight.
- (n) Defective Work: defective work of any character, whether in materials or workmanship, will be rejected. Remove such rejected work, replace with new, satisfactory work without extra cost.
- (o) Design Standards, Aluminum/Zinc Work:
 - (i) Where general construction, design and types of materials are indicated, but when material sizes or kinds are not definitely shown or specified, they shall be of an accepted good class commercial standard as approved.
 - (ii) Where sections, bars or extrusions indicated are not standard or obtainable, other standard and commercial sections may be used provided they are most suitable for the purpose intended, and are at least the equal of those indicated in structural design and strength. The aesthetic appearance of any Owner Representative/MOHural metal, however, shall be fulfilled. Shop drawings in all cases shall be submitted.
 - (iii) Where catalogue reference and trade names are given, these are not to be considered as restrictive, but only indicative of type, style, standard of workmanship and materials and other approved equal may be accepted, if approved.

7.6 WELDING:

- (a) Welding in shop and field shall be done by experienced, well-qualified welding technicians.
- (b) Equipment shall be of a type which produces proper current so that the welder can produce satisfactory welds. Field welding shall be done by direct current.
- (c) Electrodes shall be suitable for positions and other conditions of intended use, in accordance with standard welding practice.

- (d) The techniques of welding, the appearance and quality of welds, the methods of correcting defective work shall conform to the American Welding Society Code for Arc Welding in Building Construction.
- (e) Surfaces to be welded shall be free from loose scales, rust, corrosion, grease, paint and other foreign material, except that mill scale which withstands vigorous wire brushing may remain. A light film of linseed oil may likewise be disregarded. Joint surfaces shall be free from fins and tears.
- (f) Finished members shall be true to line and free from twists, bends and open joints.
- (g) Installation shall be such that the cover plates are free to slide over the other plate.

7.7 MISCELLANEOUS ITEMS :

Furnish and install all miscellaneous metal fastenings, anchors, trims, angle frames and the like as required to complete work of all other sections as indicated detailed or specified for the completion of the work as manifestly intended.

SECTION 8 –WOODEN-FRAMED JALOUSIE WINDOWS:

8.1 ERECTION

The general contractor or window installation contractor shall prepare openings plumb and square and of a size and configuration compatible with the windows to be installed. Windows shall be set true and plumb and in exact alignment with the surrounding building material. Anchoring and insulation if present, shall be in strict accordance with good building practices. The contractor will take the necessary steps to protect the window from plaster, paint and similar substances and from all damages.

8.2 WINDOWS: shall be constructed using a 2" x 4" treated and planed timber placed in a solid frame of surround, mullion and transom.

- a) Frames – shall be vanished with wood stain. Frames shall be prefitted with Y16 3/8" diameter security bars at a minimum of 6" on center. Bars must be painted with red oxide primer and 2 coats of Black gross paint.
- b) Frames shall be fitted with sheet of coffee tray mesh and a sheet of mosquito mesh.
- c) Wooden shutters shall be fitted each with a pair of 3" butt hinges ends and 2" brass sliding bolts to the walls to hold back the shelters when opened.
- d) Window sill height to be a minimum of 2'-8" to ensure that opening shutters do not interfere with furniture. This height shall be used when concrete masonry blocks or stabilized soil blocks are used

8.3 GLASS

- (a) Shall be clear and of size 7/32" thick x 6 1/2" wide and from 3/4" overlap when closed.

8.4 SCREENS: shall be of extruded flanged sections and shall be installed on the exterior window spacing and extend up 3 inches in any direction

SECTION 9 – CARPENTRY AND MILL WORK9.1 **GENERAL**

- (a) Furnish all labor and materials to complete all carpentry and millwork indicated and specified, and as manifestly intended for the completion of the works.
- (b) Collaborate with other trades in other section, as appropriate for the provision of all carpentry items required by these sections.
- (c) Particular reference should be made to the requirements of the following sections:
 - (i) Section 11 — Termite proofing: All lumber used throughout this contract, all grounds and finishing, and millwork shall be termite proofed.
 - (ii) Section 15— Finishing Hardware: Finishing hardware shall be fixed in accordance with this section and the supporting schedule.
 - (iii) Section 16 — Painting: All carpentry and millwork shall be finished in a manner suitable for the finishes required under the painting sections.

9.2 **MATERIALS**

- (a) Grading: Lumber shall be subject to the Owner's Representative direction, unless otherwise mentioned herein.
- (b) Quality: Best grade, locally available and subject to Owner's Representative approval.
- (c) Seasoning: Lumber shall be well seasoned, kiln-dried to moisture content of not more than 15 percent, free from shakes, large or loose knots which might impair strength and durability. Slight defects not affecting strength will be permitted, except in exposed finished work.
- (d) Imported lumber: Shall bear grade and trade mark of association under whose rules it is produced and shipped; and shall have mark of mill identification.
- (e) Glue: Best quality water-proof, case in or cold resin glue, as approved, except where objectionable stains might result from its use, in which case, use animal glue conforming to acceptable standard.
- (f) Plastic surfacing material: Birch genuine wood veneer type (or similar approved veneer) having plastic surfacing approximately 1/16 "thick. Plastic surfacing: approved equal to "Formica", but of quality better than available locally.
- (g) Wood veneer surfacing: Rolled sheet type with fine grain: minimum width of 12 inches
- (h) Rock-wool blanket: Heat insulation blanket type; thickness about 1 inch.
- (i) All other materials shall as described in the detailed specifications following.

9.3 **SAMPLES (SPECIFY WOOD TYPES: THEN, THERE WILL BE NO NEED FOR SAMPLES)**

(a) Submit samples of all lumber required for the various purposes, in the finish require, as may be obtained locally or imported. The source, type, class, and purposes of each type shall be clearly marked. All lumber shall be approved prior to use.

(b) Plywood, plastic and wood veneer. Submit one sample of each type for approval.

9.4 PROTECTION OF MATERIALS. MILL WORK:

(a) Protect and keep materials under cover both in transit and after delivery.

(b) Millwork: Deliver dry, protect from injury and dampness. Store in a dry place, not to be exposed to sun. Manufactured millwork items, including doors; individually protected by means of approved moisture-proof covering. Provide required additional protection during shipment, storage on premises to prevent marring, damages to finished surfaces. Maintain protection moisture-proof during storage. Do not remove covering or created work until so directed at a time when finishing operations can promptly commence. Protect work after erection with materials and methods required to afford proper protection. At completion, remove such protection. Do not deliver materials to building unduly long before it is required.

(c) Work damaged: Repair at CONTRACTOR'S expense; if work cannot be satisfactorily repaired, then remove, and replace with new approved work.

9.5 MEASUREMENTS:

Obtain and verify necessary measurements and conditions in order that work of this section will fit, conforming to work of other sections. If required or directed, establish dimensions at building so items can be manufactured before adjoining work is completed.

9.6 SHOP DRAWINGS:

Prepare and submit shop drawings required for work described in this section, except items of rough carpentry. Drawings: indicate development of necessary dimensions, materials, details of construction, note materials, adjacent constructions, and other pertinent information. Submit copies of these drawings for approval before any work is done, in accordance with the GENERAL CONDITIONS OF CONTRACT.

9.7 COOPERATION

Consult and cooperate with others whose work is affected by work under this section.

9.8 MILL INSPECTION:

All millwork and finish shall be executed in the shop and by approved manufacturer(s). Obtain privilege and right to inspect work during the process of fabrication and before delivery. If materials, as fabricated items as required, are imported in order to comply with standards of quality herein specified, these foreign manufacturer's and sources of importation shall be as approved.

9.9 TERMITE PROOFING:

(a) Termite-proof all lumber, carpentry and millwork as specified in section II — "TERMITE PROOFING".

- (b) Maintain a rigid inspection of work carried out on site of building that the provisions of section 14 are fully carried out before, during and after fixing, with special attention to cuts made in treated timber in framing, or fitting in place.
- (c) Inspect all work to be covered, and obtain approval, before finishes are applied.

9.10 WORKMANSHIP (GENERAL)

- (a) Rough carpentry: Execute in best, most substantial, workmanlike manner, as approved.
- (b) Millwork: Accurately scrape and sand smooth; mortised, housed, jointed, blocked, nailed, screwed and bolted together in accordance with best trade practices as indicated or approved. Assembled joints: tightly, neatly made; maintain abutting surfaces flush. Millwork shall be highest grade known to trade.
- (c) Glue: Best quality animal waterproof glue except as otherwise approved. Do not use vegetable glue. Glue surface to have close contact throughout and joints made as invisible as possible.
- (d) Setting: Substantially fasten in position in manner to hold correct surfaces, lines, and levels. Finished work: flat, plumb, true. Do not install millwork until concrete, masonry work are thoroughly dry.
- (e) General requirements: Except as otherwise specified, or noted to be provided under other sections, provide all items of rough carpentry and millwork necessary and required to complete the work. Refer to other sections for requirement therein.
- (f) Back painting: Concealed surfaces of finished woodwork: thoroughly back-paint before erection with one coat of aluminum or lead and oil paint, primer as approved.

9.11 WOOD GROUND, FASTENINGS, FRAMING, ETC.

- (a) Install wood grounds, framing supports, edge and nailing strips, blocking and the like of sizes required or indicated. Provide approved type anchors where required to anchor carpentry to masonry or concrete.
- (b) Set grounds and blocking accurately, secure firmly, bolted to concrete where required.
- (c) Ascertain requirements from other trades in relation to grounds and blocking so work can be accurately set as construction progresses.
- (d) Fastening: Use hardened steel nail, self-clinching nails, expansion screws and the like, as approved. Do not use wood plugs. Provide necessary and required clips, and fastenings. Required battens and nailing strips; spiked or otherwise fastened in position.
- (e) Rough hardware: Provide nails, spikes, screws, bolts, anchors, clips hinges, latches, locks, and the like required for erection and maintenance of carpentry work.
- (f) Wood grounds, edge strips, nailing strips, where such items are in contact with masonry or concrete and are not exposed to view, shall be treated with "Creosote" or approved equal material. See also Termite Proofing.

9.12 TEMPORARY GROUNDS AND FORMS:

- (a) Install temporary wood grounds for plastering other work. Set grounds and blocking accurately, secure firmly. Ascertain requirements from other trades in relation to grounds and blocking so work can accurately set as construction progresses.
- (b) Construct and erect in place all temporary form, props and similar work as required by other trade, specified in other sections, and necessary for the completion of the works. Take down after use as required and directed.

9.13 TEMPORARY PROTECTION

- (a) Door Bucks: Finished Masonry Openings: Cover jambs of metal door bucks, finished masonry, plastered openings, returns, and protect non-ferrous metal work where exposed, as directed.
- (b) Exterior Doors: Provide temporary wood doors in door opening in exterior walls subject to exposure to weather or continuous use during building operations. Doors: Substantially built, hung, and equipped with hinges, locks, and other necessary hardware. Remove, reset doors wherever required to accommodate work of others; keep in good repair.
- (c) Protection: from damaged door and window sills, saddles and copings.

9.14 APPLYING FINISH HARDWARE:

- (a) Except as otherwise specified herein, do required cutting, fitting and install items of finishing hardware, specified under this and “Finishing Hardware” sections. Refer to “Finishing Hardware” section for extent of hardware.
- (b) Make required adjustments to imperfect alignment. Examine all hardware at completion; test, oil, grease, ease and adjust items for perfect operation.
- (c) Materials: Handle carefully; keep free from scratches, dents, and other defacements. Cover knobs handles and the like until completion of painting.

9.15 EXTERIOR WOOD DOORS:

For thickness, size and general characteristics of exterior wood door, refer to the door schedules and drawings.

9.16 INTERIOR WOOD DOORS (generally):

- (a) For thickness, sizes and general characteristics of interior doors, refer to the door schedule and the drawings.
- (b) Doors shall be completely fabricated in shop and shipped to site already with field lacquer finish as specified under section 16— “PAINTING AND DECORATING”. Doors: Fitted and hung. During painting operations, remove and permit tops and bottoms to be painted then re-hung.
- (c) Doors shall be furnished in the various types shown on drawing and installed as indicated and noted in the schedule, complete with all finishing hardware.

9.17 CABINETS AND CUPBOARDS:

- (a) Furnish and install kitchenettes, cabinets and cupboards as indicated and detailed complete with all fittings and accessories.

- (b) Counter tops: As detailed in the drawings.

9.18 WOOD BASE:

- (a) Furnish and install local wood or approved equal base, where called for on finish schedule, fastened by approved positive means at base of wall. Adhesive fixing will not be permitted.
- (b) Wood base shall be applied after floor finish has been laid.
- (c) Counter and shelves shall be constructed as per shop drawings. Shelves to be made of hardwood to be approved.

SECTION 10- TERMITE PROOFING

10.1 SCOPE

This section of the specifications covers all protection of permanent structures and the building grounds from termites (or other wood-boring insects) and ants as indicated, specified or directed. This shall mean the grounds and all wood are to be furnished in all sections, including fixed elements.

10.2 GENERAL

- (a) All wood used in the permanent structure shall be made termite-resistant in all approved manner.
- (b) Millwork, doors and other shop, fabricated items shall be termite-proofed by the manufacturer before transporting.
- (c) Spray unpaved areas prior to and after spreading of topsoil, to inhibit the habitation of termites and ants.
- (d) Spray sub-grade and fill materials in layers, under concrete floor slabs and pavements as protection against termites, ants, and other sub-terraneous insects.

10.3 MATERIALS:

- (a) The compounds to be used on wooden elements for termite proofing shall be “carebelinium”, “pentachlorophenol”, “creosote”, “woodtox”, as most appropriate for position use, or approved equal. No substitute shall be used without written approval. Where wood surfaces are to be painted, the termite-proofing compound shall be non-staining so as to leave the wood clean and paintable.
- (b) Selection of the proposed compound shall take into account the wet, humid climate conditions prevailing.
- (c) The compounds to be used on soil for termite and ant proofing on paved, unpaved, and building areas shall be “Sunilcombi 30 EC”, “Nuvan 1000 EC”, “Carbarly”, mixed in the required proportions and solvent, as appropriate for use, or approved equal.

10.4 SAMPLES

- (a) Provide sealed one (1) pint container of each type of compound proposed.

- (b) Provide triplicate copies of technical information and recommendations provided by manufacturers.
- (c) Submit two (2) samples of various types of wood to be used having received termite-proofing treatment and, where specified, prime or sealer coat. Samples will be used to prepare sample of field finishes specified under “painting and finishing” section.

10.5 WORKMANSHIP:

- (a) Apply termite-proofing compounds in accordance with manufacturer’s recommendations and instructions, or as directed, before fixing item.
- (b) Treat all lumber as far as practical and compatible with finish in a closed cylinder by a vacuum pressure system.
- (c) Retention of preservation: In accordance with manufacturer’s instructions, but normally from 6 to 8 lbs. Of preservation per. cu. ft. of lumber treated, 10 to 12 lbs. in contact with ground. Due account shall be taken as to the type of preservative used in relation to the climatic conditions, and position where timber is to be used, the final amount of preservative retention being approved.
- (d) Apply two (2) brush coats to ends, and elsewhere, of all treated lumber cuts for framing and fitting in places.
- (e) Air season treated timber in contact with the ground after treatment for a period not less than 30 days.
- (f) Air season or kiln dry treated timber to be painted or varnished after treatment to a moisture content not in excess of 20% before painting with primer or sealer. No variation in this figure allowed without written approval.
- (g) Spraying of foundations, paved and unpaved areas: The chemicals shall be sprayed manually from mechanized compressed tank, with the nozzle suspended approximately 6 ins, from ground level. In the case of loose soil, soil will be compacted at 6 ins, per coat sprayed. During application, spraying shall be done on paths at intervals of roughly 3 minutes.

SECTION 11- TILE WORK

11.1 GENERAL

Furnish all labor and material to complete all ceramic tile work to walls and floors, and pre-cast broken marble work tops and vanity slabs, as indicated and noted in the finishes schedule, specified and required herein and other sections, to complete all related work.

11.2 MATERIALS

- (a) Cement: Portland – use cement as manufactured by CEMENCO.
- (b) Sand: As ASTM, C-35, dry and free from injurious salt, clay and organic substances, well graded passing 100 mesh sieve. Sand for grout shall pass 30 mesh sieve with not over 5% passing 100 mesh sieve.

- (c) Water: Clean and free from injurious salt, oil, acids, or organic impurities.
- (d) Cement plaster:
Mix by volume:
 - (i) Cement : 1 part
 - (ii) Sand : 3 parts
 - (iii) Preparation and application; as described in “SECTION 13 — PLASTERING” for cement plaster.
- (e) Cement Mortar:
Mix by volume:
 - (i) Cement : 1 part
 - (ii) Sand : 3 parts
 - (iv) Preparation as described in section 2 — “CONCRETE AND MORTAR”.
- (f) Ceramic wall tiles (toilets): Glazed, size 8 in x 8 in as indicated, directed and approved, non-vitreous clay body, cushion edged, satin matt glazed finish, color as selected and approved. Furnish with all shapes required as base caps, cores, bull-nose returns and the like to produce complete neatly finished installation.
- (g) Ceramic floor tiles: Size — 12 in x 12 in, homogeneous fully vitrified non-slip, color as approved.
- (h) Steel reinforcement : As “SECTION 2— CONCRETE”.

11.3 SAMPLES:

Submit for approval samples as follows together with manufacturer’s grade certificates and two (2) copies of any supporting literature.

- (a) Tiles: of each type, size and color (3 sets).
- (b) Special fittings: Submit one (1) of each type of fitting proposed.
- (c) Provide one square yard of each type of tiling erected in place showing quality of work; installation and jointing complete with base and other typical fittings including one exterior angle or corner as applicable. These samples when approved shall serve as a standard for all tile work subsequently erected.
- (d) Submit one square yard of pre-cast broken marble slab, indicating final finishes at edges, corners, surface and joints.

11.4 DELIVERY AND STORAGE

- (a) All tiles shall be delivered in manufacturer’s original packages. Store to prevent damage of any kind from fracture, chipping or staining, or deterioration in any way of glazed finish.
- (b) Any tile of fitting showing any such damage shall be rejected.

11.5 TILE SETTING BEDS:

- (a) Floors (toilets and kitchenette): Sand leveling bed and mortar setting bed, composed of cement (1 part), sand (4 parts).
- (b) Walls, (toilets and kitchenette): First apply scratch coat of cement mortar (to specified mix) to create level surfaces on walls to be tiled. Lay tiles with approved tile setting compound.
- (c) Setting out floor tiles: Lay tile to straight edges and after tamping tile solidly into bed, use wood blocks of such size as to ensure solid bedding free from depression. Fractional changes in dimensions, without varying uniformity of joints widths, will be permitted. Cut tile with suitable cutting tool; where necessary, rub rough edges smooth.
- (d) Grouting ceramic tile: Before grouting, remove excess mortar from joints. Clean tile face and wet thoroughly. Mix grout to consistency of thick cream, spread with squeegee, working grout into tile joints. Grouting mortar: neat gray or white Portland cement, as approved.
- (e) Cleaning of excess grout: Sponge diagonally and polish clean with dry cloth.
- (f) Damp Cure: For three (3) days;

11.6 WALL TILE INSTALLATION

- (a) Preparation for tile: Where required to bring tile to required finished surfaces, apply coat of mortar of portions herein before specified. While still plastic deeply score or scratch, cross scratch. Protect and keep reasonably moist during seasoning period. Use mortar in one hour after mixing. Re-tempering of partially hardened-mortar, not permitted. Apply between 24 to 48 hours before starting tile setting.
- (b) Float (setting) Coat: Bring scratch coat flush with screeds or temporary guide strips placed to give true, even surface, at proper distance from tile from tile finished face.
- (c) Setting Wall tiles: Soak wall tile thoroughly in clean water. Set tile by troweling tile setting compound, (or neat Portland cement coat) on scratch coat or to back of each tile unit. Immediately float tile into place. Make joints straight and level.
- (d) Grouting: Grout joints in wall tile full with plastic mix of neat white cement immediately after suitable area of tile has been set. Tool joints slightly concave; cut off excess mortar and wipe from tile face. Roughen interstices or depressions in mortar joints after grout has been cleaned from surface; fill to line of tile edge before mortar begins to harden. Solidly back tile bases or cover with mortar. Immediately after grout has had their initial set, clean tiled wall surface in approved manner.

11.7 PROTECTION:

Protect adjacent work from damages during installation of tiles and make good any damage so caused. Protect tile work from damage. Post suitable notices or make other provisions to effect that no person shall pound upon or adjacent to new set tile nor walk upon freshly laid tile floors for several days after tile joints have set. Close off rooms and spaces to traffic, in which tile is being installed until work has set. Protect finishing hardware from damage during cleaning of tile. Damaged items: replace with new hardware, at no additional charge.

11.8 UNSATISFACTORY WORK:

- (a) Tile not well set in accordance with these specifications will be rejected. Remove, refit, reset in best manner using new perfect materials. On completion, carefully examine parts of work. Finished surface permanently stained, marred, cracked, damaged, and, materials which do not conform to requirements, to be promptly removed and replaced with perfect materials properly installed at no additional charge.
- (b) Any work damaged or injured by any trimming, cuttings, fitting, drilling, cleaning or any other causes to be removed and replaced with perfect work at no additional charge.

11.9 GROUT FOR JOINTING

- (a) Always use an appropriate tile setting compound (for walls) or a neat cement layer (floors) to bond tile to setting beds.
- (b) Jointing grout for glazed wall tiles: Neat white Portland cement mixed with water to consistency of thick cream.
- (c) Jointing grout for ceramic mosaic tile: Joints 1/16 inch wide, neat gray or white Portland cement mixed with water to consistency of thick cream.

11.10 TILE INSTALLATION-GENERAL

- (a) Workmanship: Use tile setters skilled in the trade and that can execute the work in a finished and workmanship manner. Finished surfaces shall lie in true planes, free from projection and depressions. Finish adjacent edges of tile flush.
- (b) Preparation:
 - (i) Do not set tile on surface where other work is required to be embedded until such other work is installed as approved. Before setting any tile make thorough examination of surfaces, correct defects. Where water- proofing is required back or below tile, see that same has been installed and inspected before setting tile.
 - (ii) See that grounds, door bucks and the like are properly positioned and set, cases and openings properly closed. Make sure piping occurring within tile areas has been run tested, and conduits and other items are in proper position and approved.
 - (iii) Examine position of floor drains, see that they are correct. Pitch floors to drains and check height of floor drains.
 - (iv) Make certain all work by others is in proper condition to proceed with the tile work. If any work done under other sections affecting tile work is improperly installed, arrange for correction prior to the tile setting. Stained, marred, cracked, damaged and materials which do not conform to requirements, to be promptly removed and replaced with perfect materials properly installed, at no additional cost.
 - (v) Any work damaged or injured by any trimming, cuttings, fitting, drilling, cleaning or any other cause to be removed and replaced with perfect work at no additional charge.

11.11 CLEANING

- (a) After joint mortar has sufficiently set and hardened, clean tile in approved manner, completely remove cement and loose dust accumulation and foreign matter. Thoroughly clean various portions of tile protective coating and give whole completion installation thorough cleaning.
- (b) Adjoining finishes when soiled during operation of work under this section shall be properly cleaned without damage to such work. Leave work in clean neat, perfect condition as approved.

SECTION 12 - PLASTERING

12.1 GENERAL

- (i) Furnish all labor and materials to complete plaster work as indicated and specified, including, and as otherwise required, as follows:
 - (a) Masonry walls, and concrete surfaces where indicated.
 - (b) Concealing all vertical and horizontal piping, which are not enclosed or concealed with other materials.
 - (c) As required to cover service chases, conduits and similar recessed work.
 - (d) Metal frames where required for items recessed in plastered surface.

12.2 PLASTERING MATERIALS

- (i) Sand: Shall meet requirements of A.S.T.M. C35. Sand for sand float finishes shall pass No. 20 screen. Sand shall be free from soluble salts, or injurious amounts of organic material. (Beach sand or it equal equivalent)
- (ii) Water: shall be free from acidic, alkaline, oily, greasy, other organic matter and shall be subject to inspection and approval. Normally suitable for domestic use.

PREPARATION FOR PLASTERING:

- (i) Ventilation: provide adequate, properly ventilation where plastering is being performed.
- (ii) Unit Masonry Surfaces: Broom off, make free of dirt, dust loose mortar and the like. Wet down immediately before plaster application.
- (iii) Surface required to receive plaster are indicated in room finis schedule.

12.3 PLASTER MIXERS:

- (i) Cement Plaster:

1. Base Coats:	Cement	1 Part
	Sand	3 Parts
2. Finishing Coat:	Cement	1 Part
	Sand	1 1/2 Parts
- (ii) Cement Stucco:

All Coats:	Cement	1 Part
	Sand	3 Parts

12.4 MIXING

- (i) All gauge boxes, tools, containers and mixing equipment shall be kept clean at all times.
- (ii) Mix all plasters with mechanical mixes except only when very small quantities are required.
- (iii) Mix all materials thoroughly with the addition of sufficient water to produce a plastic workable plaster mix. The plaster when mixed shall be uniform in color and consistency. Take care not to cover mix.
- (iv) Do not re-temper or use partially set, caked, limpy materials. Clean mixer or mixing box of set for hardener materials before materials for new batch are deposited. Mix each batch separately, measure quantities accurately.

12.5 PLASTER THICKNESS AND SAMPLES:

- (i) Cement plaster on masonry and concrete:
Minimum 1/2 thick. Exterior cement plaster (stucco) is described hereinafter.
- (ii) Contractor shall, when and where directed, set up job samples of plastering mixes as directed. When samples have been approved, they shall establish type kind, mix quality and finish of kinds of plastering required.

12.6 GROUND, ACCESSORIES:

- (i) Carefully check that grounds accessories fixed by others are straight, plum, level, square or true to required angles, before applying plaster.

12.7 PLASTERING WORKMANSHIP:

- (i) Fix creeds, beads, trim and other accessories required by this section.
- (ii) Clean and prepare surfaces. Dampen masonry and concrete surfaces by brushing or spraying with water.
- (iii) Cement-plaster: on unit masonry and prepared concrete surfaces in the same plane: three coat work adhere firmly, scratched with nail float when set; brown coat approximately 3/8" thick applied in true plane in both directions, left sufficiently rough from a wood float to receive finish; finishing, applied 1/16" to 1/8" thick, trowel with steel trowel, after allowing to set for few minutes, to smooth, hard, dense polished white finishes flush with tile, metal trim, etc., provide a small "V" Joint in finish coat or plaster at this point. Protect plaster from rapidly drying. After plaster has set hard, provide free circulation of air.

12.8 CEMENT STUCCO:

- (i) Provide Portland cement stucco upon exterior face of masonry and concrete surface as indicated.
- (ii) Thickness: First, Second, and finishing, all approximately 1/4" thick, making a total thickness of 3/4".

- (iii) Mixing: Measure and mix materials accurately: proportion batches exactly alike control moisture for each batch; machine-mix materials to uniform color before adding water, then wet mix to desired consistency. Do not use any material that has set up or hardened to extent that water must be added for workability. Do not use admixture or plasticity agent, or for other reasons, unless approved.
- (iv) First Coat: Applied full length of wall or to natural breaking points such as door and window openings. Before first coat has been harden, deeply cross-scratch to provide mechanical key for second coat. First coat: dashed on with brush applying strong whipping motion.
- (v) If the surfaces are approved as being rough enough to insure adequate bond, scratch coat may be applied with trowel; allow to dry, after setting and curing, and re-dampen.
- (vi) Second Coat: Applied in same manner as described for scratch coat; finish to true, even surface, then roughen with nail float to provide bond for finish coat, before application finish coat ,cure second coat by dampening allow to dry, and re-dampen.
- (vii) Finish Coat: Where practicable, applied from top to bottom in one operation to eliminate joints mark. Finish texture: fine sand texture produced with wood float suitable for painting as described in sections below and as approved sample.
- (viii) Sample: Provide stucco sample, each at last one yard square on masonry and on concrete backing with three gradations of finish i.e. “ Fine” , “Medium” and “course” texture, by variation of gradation of available suitable sands in the finishing coat, and by method of application of the wood float. The texture finish produced must be “even” that is, not scored or scratched by the presence of particles of coarse or very coarse sand. The surface must be dense, weatherproof and durable. The methods used in application, curing, drying and re-dampening must be the same as for the final work.
- (ix) Generally : small concrete areas contained in the same plane as unit masonry shall receive the same treatment as applied to the unit masonry after the application of the bonding agent, specified and approved: Concrete surfaces, to be left smooth shall normally be produced as specified in Section 2-CONCRETE AND MORTAR. Where independent concrete surfaces require cement stucco as indicated or directed, apply as follows: -
 - 1. Clean Surface Thoroughly
 - 2. Apply bonding agent
 - 3. Apply first coat as trowel coat only where required to make up in even surfaces-well score, cure, dry out and re-dampen whole of surface.
- (x) Curing: To develop maximum strength, keep each coat, including finish coat, continuously damp for not less that 2 days. Moistening shall being as soon as coat has hardened sufficiently. Take extreme care with the use of fog spray or other methods that the texture of the finishing coat is in no way affected by the run down of excess water, or for another reason.

12.9 INSPECTION:

- (i) Do not install work described herein until work of others where such work occurs within, above or in back or it, has been properly finished, tested, inspected and approved.

SECTION 13- GLASS AND GLAZING**13.1 GENERAL**

- (i) Provide labor and material and materials to complete all glass and glazing, as indicated and specified.
- (ii) Execute all glazing in accordance with the best practices of the trades.
- (iii) Mirror glass and mirrors are included in miscellaneous specifications.
- (iii) Obtain glass sizes for those not supplied with windows or doors from the work at building or from manufacturer of frames, sash, etc. into which glass is to be set.

13.2 MATERIALS

- (i) Each glass light shall bear manufacturer's label, stating brand name, kind, quality, thickness. Do not remove labels until work has been approved. For any particular phase of work unless otherwise approved or specified, use only one brand of glass. Mixed glass lots of different origin, trade marks or brands will not be permitted. Pack glass for delivery to site in accordance with best commercial practice. Legibly mark each shipping container with material name, . Any glass which contains excessive amount of seed, bubbles, reams, strings, and the like will be rejected. Remove rejected materials from site; provide perfect glass.
- (ii) Putty:
 - 1. For glazing to wood use putty of white lead and linseed oil, of color to match frame or sash finish where left unpainted.
 - 2. For glazing to metal use metal sash electric glazing compound suitable for glazing to aluminum, and tinted to match and as recommended by manufacturers of windows and doors.
 - 3. For rough and uneven surfaces of plastered masonry walls before application of the first coat of painting – make good and smooth for finishing.
- (iii) Plate Glass: Polished glazing quality, regular ground and polished both sides, ¼" thick unless otherwise indicated, or selected. Where edges are exposed, supply ground and polished.
- (iv) Clear window glass: Double Strength "B" quality type, as recommended by manufacturer of windows and doors.

13.3 SAMPLES

- (i) Submit the following samples for approval: Material delivered shall conform in every particular to the samples approved.
- (ii) Each glass type, identified by label indicating kind, quality, where used in project, manufacturer's name.
- (iii) Glazing compound -1/2 lb. container of each type.
- (iv) Glazing compound manufacturer's printed application directions 2 copies.

13.4 WORKMANSHIP:

- (i) Refer to drawings for locations of various types of glass. Install glass strictly in accordance with drawings and manufacturer's specifications.
- (ii) Mark glass properly after installation to show that openings have been glazed.
- (iii) Remove, replace broken, cracked, imperfect and improperly set glass without extra cost; be responsible for replacement of broken glass irrespective of how or by whom caused, until final acceptance of building. Upon completion of work remove dirt, stains, excess compound and the like. Clean, polish glass; turn over in perfectly clean condition.
- (iv) Obscure glass is used in the glazing of all toilet rooms if preferred.

13.5 PRIOR OCCUPANCY

- (l) Should it be decided to occupy building when substantially completed, but before obligations of conditions of contract have been complied with, the contractor may request special examination of work immediately before schedule date of such occupancy, so that should work be found satisfactory, contractors may be relieved of further responsibility for

SECTION 14 - PAINTING AND DECORATIONS

14.1 GENERAL

- (i) Provide all labor and materials to complete all painting and finishing specified in this, and referred to in other sections, in accordance with the Painting and Finishing Schedules as indicated and specified.
- (ii) Furnish all tools, ladders, scaffolding and other equipment necessary to complete works.
- (iii) Manufacturers printed instructions and specifications shall take precedence over these specifications, provided that material is approved, and that it is most suitable for the position in which they are to be installed and is not inferior in material and methods of application to that specified herein.
- (iv) Paints and finished applied in anyone combination of coats for any one surface shall be provided by one manufacturer, and he guaranteed by him to be satisfactory when used in successive coats, except for red lead or other metal primer.
- (v) Advise manufacturers that the paint is to be used in a hot, humid and salt laden atmosphere, and obtain his guarantee of the suitability of materials supplied.

14.2 MATERIALS

1. Obtain approval for all materials, where proprietary brands are specified these shall not be varied without approval. Claims of unsuitability or unavailability shall be supported by manufacturer in writing.
2. Miscellaneous ancillary materials, such as linseed oil shellac, turpentine, etc., shall be pure, of highest quality and bear identifying labels on container, and shall be as approved.

3. All materials shall be resistant to high moisture content, alkalinity, cracks and erosion through weathering.
4. Submit samples of all paints and finishes, whether field applied or shop applied, for approval before commencing the work of this section. Samples shall be submitted in accordance with the GENERAL CONDITIONS. Normally 1 pint of each paint by type and manufacturer should be submitted.
5. Furnish 2 copies of manufacturer's printed instructions, as appropriate for each material in accordance with the GENERAL CONDITIONS OF THE CONTRACT.
6. Reference made in these specifications to proprietary brand names are to materials manufactured for interior and exterior surfaces approved by the Owner's Representative.
 - (i) Miscellaneous Items:
 1. Paint, rust inhibiting; zinc chromate primers as per approved manufacturer's.
 2. Patching plaster non-shrinking, containing no lime uniform in set and quality.
 3. Putty, white lead whiting putty, best commercial quality.
 4. Shellac ; pure, white or orange gum, cut in pure denatured alcohol, using 5 pounds of gum to one U.S. gallon of alcohol . Orange shellac to be used for painting over knots, sap and resin patches.
 5. Thinners, for paint; as recommended or supplied by paint manufacturers.
 6. White Portland cement; ASTM-C-150 stainless as approved.
 7. Wood filler, paste type, as approved, matching stain color, Do not mix filler with stain.
 - (ii) Paints and Finishes:
 1. Paint Materials: Delivered to job in original, unbroken containers, with labels, tags intact.
 2. All Colors: Non-fading pigments compatible with paint composition, as approved. Colors shall be as selected approved or indicated.
 3. Paint: Suitable for spraying when thinned in accordance with manufacturer's direction. Thinning and spraying of paint may be done only with approval unless specified.

14.3 DELIVERY AND STORAGE

1. All materials shall be delivered in the manufacturers' original sealed containers.
2. All materials shall be stored in a clean dry store, in an approved position.
3. The store shall be kept clean and free from waste materials, rags etc. and every precaution shall be taken to avoid risks.

4. Storage conditions shall be such as will prevent any damage or deterioration to materials due to climatic or other reasons. Reference should be made to manufacturer's recommendation.

14.4 PANTING AND FINISHING SECHEDULE:

- (i) The following schedule is not necessarily entirely inclusive; construe as general guide for complete painting and finishing of building, including, recesses, returns, reveals, soffits, haunches and the like forming part of particular surface, room and space.
- (ii) Exterior: Masonry
 1. Apply on all masonry surfaces, except where integral color, and for wainscots.
 2. Priming and finishing: Primer paint, preparation of priming and number of coats as recommended by manufacturer. These surfaces shall be allowed to cure before painting. Paint: colors as selected.
- (iii) Exterior: Galvanized Ferrous Metal
 Priming: Pre-treat with mordant solution before applying 1 coat permo-glaze wood and metal primer.
 Finishes: Emulsion (matt) -2 coats permo-glaze pammastic.
- (iv) Exterior: : Roofing – antirust proofing and color painting (color green)
- (v) Exterior: Wood. Natural Finish
 Priming and finishing: Apply one coat of permoglaze timbercote. Fill cracks and surface defects with wood filler to color of wood. Apply two coats of stain vanish.
- (vi) Exterior : Terrazzo finishing: Unpainted
- (vii) Exterior : Cement Plaster: Painted
 2 coats micatex masonry paint. The manufacturer's recommendation shall be followed. The coating shall protect the surface of masonry from high moisture content, alkalinity, cracks and erosion through weathering . Note: If the surface is still porous or powdery after preparation , a coat of micatex clear or putty-sealer should precede this specification.
- (viii) All Painted Wainscots:
 1. Priming and finishes: Glazed finish suitable for interior use, consisting of (1) filler, neutralizing and bonding coat, (2) decorating spatter coats in 2 additional colors,(3) final protective glazed epoxy coating.
- (ix) Interior: Plaster Finishes:
 2 coats permo glaze pammastic (emulsion — matt).
- (x) Interior: Ceilings — Hardboard
 2 coats permo-glaze pammastic (emulsion-matt)
- (xi) Interior: Wood , Natural finish

1. 3-Hardwood; close grained, selected for color. 3 coats, permoglaze 60 polyurethane varnish (clear egg-shell)
 2. Hardwood; open grained, selected for color.

Fill very deep grain, cracks or joint with a proprietary filler of appropriate color. 3 coats, permo-glaze 60 polyurethane varnish (clear egg-shell)
- (xii) Interior: Wood Painted
1. Priming : Pre-treat with mordant solution before applying 1 coat permoglaze wood and metal primer.
 2. Finishes : Emulsion (matt)-2 coats permo-glaze pamastic.
 3. Interior: Roofing: Unpainted.

14.5 PREPARATION OF SURFACES

- (i) The specifications detailed are necessarily brief and the following general Recommendations should be observed to achieve best possible results.
- (ii) 1. All dirt and foreign matters must be removed. Loose dirt may be removed by air blowing or bristle brushes . Do not, however, spread oil or grease by so cleaning.

2. Remove oil or grease with white spirit. Wash down with liquid detergent Solution.
- (iii) Where surfaces are uneven or disfigure and a smooth finish is required, use permo-glaze spachtel or equal.
- (iv) Bare wood should be dry. Round of sharp edges, rub down with fine glass-paper to a smooth surface and dust off. Shellac knotting shall be applied to all knots . Large or resinous knots shall be applied to plugged planed to a smooth surface. Oily wood shall be wiped down with permo-glaze No.4 thinner and allowed to dry before priming.
- (v) Masonry surfaces: All mould or algae infected surfaces shall be treated with permo-glaze fungicidal wash and/or equal now bare masonry shall be allowed to dry thoroughly for at least 30 days prior to painting. All holes and cracks shall be filled by the use of micatex. Bituminous sealer and scrim and/or equal . No sealer shall be applied on plaster surfaces when the moisture content exceeds 5.5% as determined by the testing device. If surfaces are still porous or powdery after preparation, a coat of micatex clear sealer shall precede painting.

14.6 WORKMANSHIP

- (i) No painting shall be done on exterior work when atmosphere is coated with laterite or other dust, during rainy weather, or on surfaces that are not thoroughly dry.
- (ii) Before painting, varnishing, or enameling, all floors shall be washed and every possible preparation shall be taken to eliminate dust.

- (iii) All coats of paint shall be thoroughly dry before subsequent coats are applied. Each coat shall be rubbed down with fine sand paper where necessary.
- (iv) All adjacent surfaces shall be protected against damage, stain, and paint spatter. Paint shall be removed from all such surfaces.
- (v) All finished hardware shall be removed in preparation for painting and replaced after painting is completed.
- (vi) Normally all paints and finishes shall be applied by brush, unless otherwise specified, provided however, that approved spraying equipment is used and that the material is suitable, and correctly prepared as manufacturer's instructions in certain case spraying of paints maybe permitted, after written approval is obtained
- (vii) Color shall be as indicated on the color schedule to be prepared.
- (viii) Each coat of paint shall be of a slightly different tint in order to assure full coverage and to enable supervision that the specified number of coats has been applied.
- (ix) Exterior: Masonry Surfaces:
 1. Except where noted all exterior surfaces shall be painted with exterior masonry paint, as approved by the Owner's Representative.
 2. This paint shall provide maximum protection against the weather, alkali and mildew.
 3. The various exterior surfaces to be painted shall first be prepared and primed in strict accordance with the manufacturers' instructions.
- (x) Interior Surfaces: Plaster Surfaces & Ceiling
 1. Except where otherwise noted or herein specified interior surfaces shall be painted with interior as manufactured by PARKER PAINT, LIBERIA, or approved.

SECTION 15- ELECTRICAL WORK-INTERIOR

15.1 GENERAL

- (i) Applicable provisions contained in other volumes and in particular volume of the Contract Documents are hereby made a part of this section to the same extent as if herein written IN FULL.
- (ii) The Contractor shall provide all items, articles, materials, operations, or methods, listed, mentioned, or scheduled o the drawings and/or herein specified, including all labor, materials, equipment and incidental items necessary and required for their completion.

15.2 SCOPE OF WORK

- (i) Starting point of the contract shall be from the generator house, terminating at the eave of each housing unit.
- (ii) Work Includes:-

1. Supply and installation of cables in PVC pipes to serve as main feeders for housing units, from distribution panel to generator house.
 2. All light and power wiring systems appropriately.
 3. Supply and installation of all lighting fixtures appropriately.
- (iii) Supply and installation of all other electrical outlets as specified on contract drawing.

15.3 DEFINITIONS

- (i) “Furnish” or “provide:” to furnish erect, install and connect up complete and ready for regular operation particular work referred to, unless specifically indicated or otherwise noted.
- (ii) “Work:” labor, materials equipment, apparatus, controls, accessories and all other items customarily furnished and/or required for proper and complete installation of work.
- (iii) “Wiring:” conduit, fittings, wire. Junction and outlet boxes, switches, cutouts, and socket and all items necessary or required in connection with or relating to such wiring.

15.4 WORKMANSHIP AND NSTALLATION

(i) GENERAL:

1. All work shall be done in accordance with the Electrical Plan, and shall be done under the direct supervision of Owner’s Representative in close cooperation with work of other sections. Workmanship shall be of the finest quality and neatness
2. The right is reserved to change locations as may be directed to accommodate any condition which may arise during progress of the work without compensation to the contractor for such changes.
3. Should it be found that any such work as indicated will cause interference, the same shall be reported before installation.
4. Cutting and patching of completed work required for installation of electrical work or reinstallation of defective electrical work shall be done by the contractor at no additional charge.
5. All concealed conduits where no hung ceiling is provided shall be placed in a structural slab. Under no condition will conduit be placed in fill above structural slab.

(ii) EARTHING:

Provide earthing for entire electric installation as indicated and specified herein.

Following are included as required earthing:

1. Electric Service, its equipment and enclosures and transformer (to be furnished) and installed by the Contractor.
2. Conduits, cable armour and other conductor enclosures.
3. Main switchboard, power and lighting panel boards, control centers, etc.

4. Non-current —carrying metal part of fixed equipment, such as motors, starter and controller cabinets, instrument cases, equipment in hazardous locations. Earthing electrodes for equipment.
5. Where underground water piping is available, and earth connection can be made to it at a point which will be accessible for future inspection, it shall serve as earthing electrodes.
6. Where such water piping is not available provide earth electrodes, ¾" hard drawn copper rods, 10 feet long, driven underground at the service entrance.
7. Size and type of earth conductors, earth clamps, beading jumpers , conduit, fittings, also methods of securing same to obtain electric continuity and effective earthing, when not indicated: as per applicable Sections of above mentioned" Standard Regulations.

(iii) RACEWAYS:

1. Wireways: Exposed runs of conduit shall have supports spaced not more than 6'-0" apart and shall be installed with runs parallel or perpendicular to walls, structural members, or intersections of vertical plane and ceilings, with rigid- angle consisting of cast-metal, fittings or symmetrical bends. Bends and offsets shall be avoided where possible but where necessary shall be made with an approved conduit-bending machine. Conduit which has been crushed or deformed in any way shall not be installed. Expansion fittings or other approved devices shall be used to provide for expansion and contraction where conduit crossed expansion joints. Wooden plugs inserted in masonry or concrete shall not be used as a base to secure conduit supports. Conduits, boxes, panels and all other electrical equipment shall be supported on approved types of galvanized wall brackets, ceiling trapeze, strap hangers, or pipe straps secured by means of toggle bolts on hallow masonry units, expansion bolts in concrete or bricks, machine screws on metal surfaces and wood screws on wood construction . Nails shall not be used as the means of fastening boxes or conduits. Conduits shall be in stalled in such manner as to insure against trouble from the collection of dripped condensation and all runs of the conduit shall be arranged so as to be devoid of traps wherever possible. The Contractor shall exercise necessary precautions to prevent the lodgment of dirt, plaster or trash in conduit, tubing, fittings and boxes during the course of installation. A run of conduit or tubing which has become clogged shall be entirely freed of these accumulations or shall be replaced. Conduit shall be securely fastened to all sheet-metal outlet junctions, and pull boxes when galvanized lockouts and bushing will be used. Care must be taken to see that the full number of threads project through to permit the bushing to be drawn right against the end of conduit, after which the lockout shall be made up sufficiently tight to draw the bushing into firm electrical contact with the box. No conduit shall be installed in contact.
2. Near base of each vertical stack, at each change in direction, and at intervals not greater than 20 ft in each horizontal run.
3. Where shown on drawings and where required to conform to applicable codes or to permit rodding or testing of the system.

(iv) CLEANOUTS:

1. Drawing designation : Co.
2. Manufacturer: Tyler Corporation of equivalent

3. Type:

a. Size : same as line into which connected, except cleanouts in lines larger the 4 inches may be 4 inches unless otherwise noted on drawings.

b. Terminate cleanouts at finished floors and walls with chromium-plated cover plates.

(v) FLOOR DRAINS:

1. Drawings designation : FD

2. Manufacturer and type: Tyler Corporation or equivalent

3. Size: Same as connecting waste pipe

4. Flashing: lead, 4 lb. per square foot, extending 12 inches beyond flashing clamp.

15.5 WORKMANSHIP

(i) All works shall be in accordance with recognized standards and must be undertaken in a professional manner.

(ii) WORKING DRAWINGS:

(a) Generally diagrammatic and location of pipes and fixtures are subject to modification to suit site conditions

(b) Where the water or sewer lines conflict or run close to other utilities on the drawings notify the Owner's Representative.

(c) Galvanized pipes running below floor shall be coated bituminous paint and wrapped with brown paper.

(d) Plumbing fixture setting compound shall be of smooth and homogeneous mixture and shall be water light, non-standing, non-shrinking, and should not support bacterial life with the ground . All such conduit shall be provided with concrete encasement to a minimum thickness of 2" over the conduit. All raceways and conduits shall be continuous from outlet to outlet and from fitting to fitting in wet locations or in location, where large amount of steam is present , all conduit joints shall be moisture-tight and all junction box covers shall be screw mounting and with gasket. All supports, bolts, straps, screws, etc., shall be corrosion free materials.

(e) Conductor Installation: A complete system of conductors shall be installed in raceway systems except as otherwise indicated, only after conduit and outlet boxes are permanently in place. Where necessary, powdered soap-stone or approved pull in compound as lubricant may be used. Wires shall be left sufficiently long to permit making final connections. Conductors shall be continuous from outlet to outlet and no splices shall be made except within outlet or junction boxes. Junction boxes may be utilized where required Wire conductors of insulating material or solder-less pressure connectors properly taped, shall be utilized for all splices in wiring where possible. Soldered joints insulated with tape shall be kept to a minimum Circuits at different voltages shall be carried in separate conduit or tubing . Number of wire permissible in conduit shall in no circumstance be greater than the appropriate number given in tables of the Standard Regulations.

(iii) OUTLET BOXES:

Outlets shall be installed in the locations shown on the drawings. Study the general building plans in relation to the spaces surrounding each outlet in order that work may fit the other work required by these specifications. When necessary, and subject to approval relocate outlets so

that when fixtures or other fittings are installed, they will be symmetrically located according to room layout and will not interfere with other work or equipment. Boxes shall be installed in a rigid and satisfactory manner, either by wood screws no wood, expansion shields on masonry, or machine screws on steel work.

(iv) JUNCTION AND PULL BOXES:

All covers of junction or draw boxes shall be accessible. Junction and draw boxes shall not generally be installed exposed in finished spaces. Where necessary, conduit shall be rerouted or other arrangements for concealment shall be made. Boxes shall be supported independently to building structure with no weight bearing on conduit. Where several feeders pass through a common draw box, they shall be tagged to indicate clearly their electrical characteristics, circuit number, and panel designation.

(v) SWITCHES:

1. Switches shall be fastened firmly to the outlet boxes; it shall not be permitted to depend on cover plate to pull them right.

2. Locations indicated for wall switches are subject to modifications. At or near doors switch shall be installed on side opposite hinges except as noted. Final door hinge location in field prior to switch outlet installation must be verified.

(vi) SLEEVES AND INSERTS:

All required sleeves, forms and inserts before walls, partitions, floor or roofs are built shall be provided. Cast iron, steel or wrought iron pipe sleeves for conduits or cables passing through exterior walls shall be provided. Sleeves through exterior walls below grade shall have center flange buried in construction. Sleeve shall be made water-tight with oakum packing and caulker lead joints on both sides of wall. Sleeves also for conduits or cables passing through floor shall be provided.

(vii) LIGHTING FITTINGS:

All light fittings shall be complete, including lamps and shall be in accordance with the approved samples. All broken fittings, lamps, etc. shall be replaced without additional cost to the client. All light fittings shall be wired with an approved type of asbestos fitting wire. The exact location and height of light fitting shall be determined by the structural and mechanical limitations of the building, and fitting shall be installed in such manner as to avoid such obstructions and to give the proper installation results. Light fittings shall conform to the general details given. Minor changes may be permitted if approved, in order to utilize stock fittings, but only on the basis of better efficiency, appearance, construction, and photometric data. Ceiling light fittings shall be well supported with hangers fastened to construction, , not from hung ceilings. Fluorescent fitting shall be well supported by means of hooks screwed into expansion shields set in concrete, brick or plaster. Lamps, supplied by others, shall be installed by the Contractor.

(viii) HEIGHTS OF OUTLETS:

1. Generally, as follows (the figures indicate the height of center line of containers).

Plug-in Receptacles 15" from floor, or 6" above counter top or splash back.

Switches 4'0"

15.6 TESTS

- (i) Upon completion of work, installation shall be tested for verification polarity, insulation and earthing. Resistance between conductor and earth shall not be less than values recommended the regulations of the previously mentioned standards.

- (ii) A general operating test for all electrically driven equipment shall be conducted by the Contractors at such time-as may be directed. The equipment shall be demonstrated to operate in accordance with the requirements of this specification. The test shall be performed under supervision. Furnished all instruments and personnel required for the test, and the employer will furnish the necessary electric power only if a generator is not included as part of this installation. Conduct such test as are required by the load telephone and electric companies. All defects shall be rectified by the Contractor at his expense. No. electrical work shall be covered until inspected, tested, and approved.

SECTION 16- ELECTRICAL EQUIPMENT AND FIXTURES

16.1 GENERAL

- (i) Furnish all labor and material as specified, and necessary equipment to complete installation of all electric equipment and all fixtures and related work as indicated and specified.
- (ii) All appropriate and applicable provisions of Section 22 —ELECTRICAL WORK shall apply.

16.2 SCOPE OF WORK

- (i) Fixtures

16.3 MATERIALS, SAMPLES, WORKMANSHIP AND TEST

- (i) As required and specified under Section 15 - ELECTRICAL WORK.

16.4 LIGHTING FIXTURES

- (i) Provide and install lighting fixture complete for every light outlet shown on plans and drawings.
- (ii) Drawings of lighting fixtures have been prepared on which each fixture is identified by a symbol.
- (iii) The Lighting, fixtures as shown are listed by Manufacturer's catalogue numbers, for the purpose of indicating the exact type, style and quality required. Fixture equal in type, style and operating characteristics may be accepted if approved.
- (iv) The contractor shall be responsible for all fixture wiring, hanging, connecting up and making ready to operate.

16.5 INSTALLATION OF LIGHTING FIXTURES

- (i) Pendant fixtures in the same room shall be installed at uniform height and shall hand plumb.

SECTION 17-PLUMBING: SUPPLY SYSTEMS, DRAINAGE SYSTEMS AND PLUMBING FIXTURES

17.0 GENERAL

- (i) Applicable requirements of GENERAL CONDITONS OF THE CONTRACT shall govern all work under all plumbing sections.
- (ii) Furnish and install plumbing system indicating:
 1. Waste drainage system.
 2. Roof drainage system
 3. Domestic water supply
 4. Fixtures
- (iii) Furnish and install, arranged and located as shown on drawings, plumbing fixtures complete with necessary fittings, gaskets, fastenings, supports , bolt caps and similar items. Connect to piping services for water, waste, and vent, are required.
- (iv) Determine required numbers of fixtures and accessories from drawings.
- (v) Exposed piping and fittings shall be chromium plate brass with polished finish.

- (vi) Mounting height and connection sizes are shown in plumbing Fixture Schedule on drawing, except as specified herein.
- (vii) Piping, valves, insulation, and miscellaneous devices are specified below.
- (viii) Work under this section shall comply with applicable requirements of ANSI Plumbing Code, and any other governmental agency under whose jurisdiction work is being performed.
- (ix) Where kohler fixtures are specified, equivalent products by American-Standard or Crane will be equally acceptable.
- (x) Where Sloan flush valves are specified, equivalent American Standards will be acceptable.

17.1 PLUMBING FIXTURES AND TRIM

A. water closets:

- 1. Drawing designation;
 - 2. Manufacturer;
 - 3. Tank: insulated to prevent sweating: bowl;
Mounted: with flush valve, trip lever and backflow prevented water control;
 - 4. Flush Valve;
 - 5. Supply fittings: angle with screwdriver stop valve;
 - 6. Seals;
 - 7. Mounting: floor mounted;
- #### B. Kitchen Sinks: (Health Centers only)
- 1. Drawing designation:
 - 2. Supply fittings:
 - 4. Drain fittings

17.2 WATER SUPPLY SYSTEM:

A. Dual Reservoir System:

- 1. Tank capacity: 2-3000 liters tanks (1500 gals in total)
- 2. Controls: pump to reservoir from well water system
- 3. Accessories:
 - A. Manual pressure pump with relief valve, ASME- approved
 - B. Piping transport system with fittings and valve, ASME - approved
 - C. Water pump hose fitted to pipe transport system

B. Well Water System:

- 1. Bore Holes Wells Two (2)
- 2. Dig to water table
- 3. Line wells with concrete casing or culvert
- 4. Seal top with pre-cast concrete cover with 2' by 2' inlet for manual collection
- 5. Manual Pump – Hand or Foot operable

17.3 SOIL AND WASTE SYSTEM

- #### A. Furnish and install cleanout in following locations:
- 1. At point sewer enters building.

SPECIAL SPECIFICATION

(IN CONJUNCTION AND ADDENDUM WITH THE TECHNICAL SPECIFICATION)

SPECIAL SPECIFICATION FOR ALL WORKS

Bidding Document_ Construction of the Primary Health Center at Bo-Waterside

0.1 Conditions of Work

Tender and Contract are based on the following documents of which some are of general validity, others valid for the specific work only. Where documents of general validity are concerned, the current edition must always be followed.

0.1.1 Building Rules, Regulations and Ordinances, etc. are enforced locally with the INFRASTRUCTURE UNIT - MOH, however, the Contractor is responsible for the compliance of local and national constructions guidelines

0.1.2 Special Specification

The Special Specification is made for each single work, hereinafter referred to as S.S..

0.1.3 General Specification

This general specification hereinafter referred to as G.S.

0.1.4 British Standards

All measurements and standards are expressed in British Standard Units

0.1.5 Drawings

Handed to tenders or made available for inspection prior to tendering, - as specified in S.S. Drawings in larger scale have prevalence over drawings in smaller scale. Drawings and specifications are complimentary, and every piece of work and goods indicated in either must be calculated.

0.2 Tendering and Opening of Tenders

The Tenderer is required to check the numbers of pages, and should any be found missing or in duplicate or if the figures or writing are indistinct, he must inform INFRASTRUCTURE UNIT - MOH at once and have the same rectified. Should the Tenderer be in doubt about the precise meaning of any item, word or figure, for any reason whatsoever, or observe any apparent omission of words or figures, he must inform INFRASTRUCTURE UNIT - MOH, in order that the correct meaning may be decided upon, and written information hereabout sent to all tenderers before the date for submission of the Tender.

No liability whatever will be admitted nor claim allowed in respect of errors in Tender due to mistakes in the Contract Specification which should have been rectified as described above.

The Tenderer shall not alter or otherwise qualify the text of the Contract Specifications. Any alteration or qualification made without authority will be ignored, and the text of the Contract Specifications as printed will be adhered to.

In no case will any expenses incurred by Tenderers in preparation of their tender be refunded or become a liability of the Owner.

Tendering must be done on the enclosed form of Tender and mailed in a closed envelope addressed as indicated in Letter of Invitation to Tender.

To comply with conditions all section of form of Tender must be filled in, names and addresses of possible Sub-contractors must be clearly stated, and Form of Tender must be dated and signed by the Contractor or persons authorized by him.

All detail prices of labour and/or materials requested in Form of Tender must be clearly stated.

Transfer Tax, Sales Tax, Customs duty and any other type of duty must be included in the Contract Sum.

The Tenderer is strongly advised to visit the site before tendering and satisfy himself of its conditions. It shall be understood that he has acquainted himself with the nature of the site, its position, level, siting of buildings and nature of soil. No claim on account of want of knowledge will be entertained.

If in the Drawings, Specifications or other material forming the basis of the Tender, the Tenderer finds omissions or shortcomings the correction of which will in his opinion influence the contract Sum he must clearly state so before or on the day of Opening of Tenders.

Only the total Contract Sum will be read out at the Opening of Tenders.

In case of miscalculation on the Form of Tender, the Detail Prices will be considered in preference to the total Contract Sum, when the Tender is evaluated as well as when payments are made.

All Drawings, Specifications and other material provided at the Invitation of Tenders, as well as Detail Drawings provided during construction are the property of the Owner.

One copy of the Form of Tender may be kept by the Tenderer. The Tenders shall remain open for acceptance from the day of Opening of Tenders for the period stated in the Form of Tender.

On evaluation of Tenders, the proposed period of construction, possible reservations and the qualifications of Sub-Contractors will be taken into consideration as well as the actual Contract Sum.

0.3 The Contract

0.3.1 Form of Contract

The Contractor will be required to enter into a Contract which will be based on the entries of works issued by the INFRASTRUCTURE UNIT - MOH (without quantities), a copy of which may be seen at INFRASTRUCTURE UNIT - MOH office. The Contractor shall allow for the payment of stamp charges in connection with the Surety Bond and Contract Agreement.

0.3.2 Clause Insurance

The Contractor shall effect and maintain the following insurance and shall allow for all costs thereof:

- I. Employer's Liability (Workmen's Compensation)
- II. Third Party (Public Liability)
- III. Other compulsory insurance, as may from time to time, or locally, be in operation.

Should the Contractor already hold annual insurance covering the whole of his activities, and the indemnity required under this Contract exceeds the indemnity under the existing policy, then further insurance shall be effected and maintained to cover such excess.

3.3.3 Measurements and Coinage

Where nothing else has been specifically agreed all measurements as regards money, length and weight shall be in accordance with the current local national regulations.

4.0 Contractor's Obligation

The Contractor has to provide everything necessary for the proper execution of the works, according to the true intent and meaning of the Drawings, Specifications, and INFRASTRUCTURE UNIT - MOH instructions taken together.

The Contractor must allow in his quotation for attendance upon all other trades as specified under 0.12.

0.4.1 Materials and Workmanship

The contractor must provide all materials and workmanship necessary for the proper completion of the works, according to the true intention of Drawings, Specifications and INFRASTRUCTURE UNIT - MOH Instructions. The works shall be executed throughout by skilled workmen well versed in their respective trades.

0.4.2 Plants, Tools, Scaffolding, etc.

The Contractor shall provide all necessary hoists, tackle, plant, vehicles, tools and appliances of every kind for the due and satisfactory completion of the works, and shall remove the same on completion. Provide, erect and maintain all temporary scaffolding, sufficiently strong and efficient for the due performance of the works. Plant, tools, and scaffolding shall comply with all regulations in force, whether general or local, throughout the period of the Contract.

0.4.3 Transport

The Contractor shall include in his price the transport of all materials, workers, etc., to and from the site at such hours and by such routes as are permitted by the Authorities.

0.4.4 Water

The Contractor shall provide at his own cost temporary connections and make such local arrangements as may be necessary for the supply of water required for the work including that required for other trades and payment of all fees and charges. He shall also provide a temporary storage tank, piping, etc., as he may consider necessary, and clear away on completion.

0.4.5 Lighting and Electric Power

The Contractor shall provide all artificial lighting and power for use on the works, including all Sub-Contractors and Specialists requirements, all temporary connections, wiring, fittings, etc., and he shall clear away on completion. The Contractor shall pay all fees and obtain all permits in connection herewith.

0.4.6 Protection of Works

The Contractor shall cover-up and protect from injury from any cause, including storms and inclement weather, all new work. He must also supply all temporary doors, protection to windows and any other requisite for all works, whether done by himself or by Specialists or Sub-Contractors, and any damage caused must be made good by the Contractor at his own cost.

0.4.7 Sheds

The Contractor shall provide all necessary sheds, to keep them in sanitary condition and to remove and make good any damage on completion.

0.4.8 Offices and Services for the Clerk of Works:

The Contractor shall provide a space to be used as Office and Services for the Clerk of Works at his own expense and such entity shall be available for use by the Inspectors or Infrastructure Unit – MOH during inspected or other related visits to the site.

0.4.9 Record Drawings

The Contractor shall hand to INFRASTRUCTURE UNIT - MOH on prints to be supplied a dimensioned record of the position of all hidden service runs showing all access points, junctions, bends, tees, valves, traps, outlets, etc.

The Certificate of Final Completion will not be issued until such record is furnished to the satisfaction of INFRASTRUCTURE UNIT - MOH.

0.5 Progress of the Work

0.5.1 Duration of Works

In the Tender must be stated the number of weeks within which the work can be completed. Based on this INFRASTRUCTURE UNIT - MOH may draw up a progress schedule together with the Contractor.

0.5.2 Indents for Materials

The Contractor shall have prepare all orders and indents for materials as soon as possible after the signing of the Contract, to ensure that all necessary materials are available and delivered to the site in due time.

0.6 Quality and Evaluation of the Work

0.6.1 Materials and Workmanship

All materials (except where otherwise stated) and workmanship provided by the Contractor shall be the best, and the Contractor shall be entitled to and entirely responsible for the proper execution of all Works. The Contractor shall furnish INFRASTRUCTURE UNIT - MOH with vouchers to prove that the materials are such as specified.

0.6.2 Proprietary Materials

Where proprietary materials are specified, the Contractor may propose the use of materials of other manufacture, but equal quality, for approval by INFRASTRUCTURE UNIT - MOH.

All materials and goods, where specified to be obtained from a particular manufacturer or supplier, are to be used strictly in accordance with the instructions.

0.6.3 Samples

The Contractor shall furnish at his own cost any samples of materials or workmanship that INFRASTRUCTURE UNIT - MOH may require, and INFRASTRUCTURE UNIT - MOH may reject any work or materials which do not, in its opinion, conform to the approved samples. No inferior materials or workmanship will be accepted. Samples of painting and of plaster finishes shall be carried out as and when INFRASTRUCTURE UNIT - MOH directs for inspection and approval.

- a. All samples and materials of such nature shall be delivered to the INFRASTRUCTURE UNIT - MOH as required with all charges in connection therewith paid by the Contractor.
- b. Duplicate final approved samples shall be furnished for use at the Works site.
- c. Samples shall be furnished so as not to delay fabrication, allowing INFRASTRUCTURE UNIT - MOH reasonable time for consideration of the sample submitted.
- d. Each sample shall be labelled with the Contractor's name, name of the project, date submitted, name of material and manufacturer's name.

0.6.4 Testing of Materials The Contractor shall:

- a. Include in the Contract Sum the relevant amount for the number of concrete cube tests indicated in S.S. and as described in Concrete Work, including testing fee, labour and materials, moulds, transport, and handling, etc. (successful tests only).
- b. Provide for other tests the provisional sum indicated in S.S. Except for special test demanded by the INFRASTRUCTURE UNIT _ MOH the Contractor shall bear the costs of all samples and materials to be tested. In the event of special testing demanded by the INFRASTRUCTURE UNIT _MOH, the Contractor shall keep an accurate record of the costs incurred, and such cost

will be set against the above sum and adjusted as a Variation of the Contract. The Contractor shall arrange for the delivery of the materials to the site in sufficient time for them to be tested before use.

0.6.5 Measuring and Testing Equipment

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

- a. Straight edges levels 3 feet long for testing the accuracy of the finished concrete
- b. Slump test apparatus
- c. 150mm steel cube moulds with base plates and tamping rod to BS 1881
- d. One 25 feet and one 50 feet steel and cloth tapes respectively.
- e. Micrometer

0.6.6 Rejected Workmanship or Materials

Any materials or workmanship not complying with the specific requirements or approved samples, or which have been damaged, contaminated or have deteriorated, must be removed immediately from the site and be replaced at the Contractors expense, as required.

0.6.7 Making Good

The Contractor shall amend all fault and omissions as quickly as possible after they have been realized, not waiting for the expiry of the Maintenance Period unless expressly ordered to by INFRASTRUCTURE UNIT - MOH.

0.7 Setting Out of the Works

The Contractor shall be responsible for the accurate setting out of works in accordance with the various plans and details supplied and will be required to make good at his own expense all errors arising from inaccurate setting out.

0.8 Disagreement Between Documents

All sizes mentioned in drawings and specifications are to be the sizes of the finished work as fixed in the building, with the exception of the allowance for working in carpentry and joinery. All figured dimensions must be checked, before any work is started or shop drawings made; no claim for error in this regard will be entertained. If the Contractor finds any discrepancy in drawings or between drawings and specification, he shall immediately refer it to INFRASTRUCTURE UNIT - MOH, who shall decide which shall be followed in preference to the scaled dimensions, and all dimensions and particulars are to be taken from the actual Work.

0.9 Additions or Omissions

INFRASTRUCTURE UNIT - MOH reserves the right to order any additions to or omissions from the Contract at any time, any such ordering must be GIVEN IN WRITING, and shall in no way invalidate or be at variation with the Contract.

0.10 Inspection

The inspection of the Works shall be carried out by INFRASTRUCTURE UNIT - MOH, the Engineer or their assistants, complying with INFRASTRUCTURE UNIT - MOH instructions as specified in the Contract.

0.10.1 All work embracing more than one process shall be subject to examination and approval by INFRASTRUCTURE UNIT - MOH at any stage before the next is proceeded with.

0.10.2 Covering up of Work

No Work under Contract is to be covered up until it has been inspected by INFRASTRUCTURE UNIT - MOH and the Local Authorities. Any work covered before inspection shall be opened up again as and when required by INFRASTRUCTURE UNIT - MOH at the entire cost of the Contractor.

0.11 Contractors Personnel

0.11.1 The Contractor shall lead the work personally or through a person who can represent him in every respect.

0.11.2 Misconduct of Workmen

The Contractor shall, on the request of INFRASTRUCTURE UNIT - MOH, immediately dismiss from the works any person(s) employed there by him who may be incompetent or unruly in the opinion of INFRASTRUCTURE UNIT - MOH, and such persons(s) shall not be re-employed on the Works without the permission of INFRASTRUCTURE UNIT - MOH.

0.11.3 The above rules are also valid for Sub-Contractors and their personnel.

0.12 Nominated Sub-Contractors and Nominated Suppliers

The Contractor shall be required to ensure that all Nominated Sub-Contractors enter into a Sub-Contract Agreement, and he must deposit with INFRASTRUCTURE UNIT - MOH a signed extract of the relevant details thereof.

Before placing any orders with Nominated Sub-Contractors or Nominated Supplier the Contractor must ascertain that the terms and conditions of the quotations and the dates of delivery of materials and/or execution of work comply with the terms of the Contract.

The Contractor shall be responsible for and attend to Nominated Sub-Contractors in every respect and in particular it shall be the Contractors responsibility to ensure that each SubContractor commences and completes the work in such manner and is ready on the site with his materials, labour and special plant at such time so as to conform with the progress schedule.

The cost of fixing only of materials to be obtained from Nominated Supplier which are covered by Prime Cost or Provisional Sums shall include taking delivery, checking with invoices or indents, reporting and claiming damages for shortages and for damaged goods, defraying demurrage, signing for as having been received in good order, transporting, unloading, storing, covering and protecting until the time of fixing, unpacking, replacing anything lost or damaged, sorting, assembling, hoisting to required levels and fixing as described.

The term "Attendance" shall be deemed to include the provision of the following services by the Contractor, free of charge, to the Nominated Sub-Contractor:

- a. Affording sanitary facilities.
- b. Providing space for the erection of office accommodation and storage accommodation for plant and materials.
- c. Providing use of standing scaffolding, hoisting apparatus, temporary electric light and power and water supplies.
- d. Altering, standing and providing special scaffolding as Sub-Contractors may reasonably expect to be provided and as implied from the nature of the work described and its retention until all relevant sub-contract work is completed.
- e. Providing use of plant in taking delivery, unloading, transporting, distributing and hoisting on site.
- f. Hacking surfaces or raking out joints to receive special finishes as required by Sub-Contractors.

- g. Agreeing with the Nominated Sub-Contractor all details regarding working sizes, holes, chases, recesses, etc. programming for performance of the work and all other matters relating to general cooperation.
- h. Clearing away rubbish and debris from time to time during the performance of each Nominated Sub-Contractors work.

0.13 Materials purchased by Employer

Should any materials or fittings be purchased or provided by the Owner, they shall remain his property entirely. When any such materials have been delivered on the site by the Owner, or when the Contractor has received instructions to take delivery of or collect any such materials or has otherwise received them, the Contractor shall thereafter be entirely responsible for them and shall make good to the Owner any loss or damage to them, until the completion.

0.14 Order on Site

0.14.1 Watching

The Contractor shall provide at his own risk and cost all watching and lighting as necessary to safeguard the works, plant and materials against damage and theft.

0.14.2 Temporary Roads

The Contractor shall provide where indicated on drawings or in S.S. temporary access roads necessary for the execution of the Works, including making good when no longer required if indicated in S.S.

0.14.3 Placing of Sheds, etc.

Placing of sheds, materials, etc. on the site must be approved by INFRASTRUCTURE UNIT - MOH.

0.14.4 Storerooms

No room of the building shall be used for storing without the permission of INFRASTRUCTURE UNIT - MOH. Any room used for storing must be cleared by the Contractor without cost when so demanded by INFRASTRUCTURE UNIT - MOH.

0.14.5 Keep Clean

It is the duty of Contractor and Sub-Contractors respectively to collect all debris and waste resulting from their Work and place it in the waste heap on the site. Cleaning up must be done whenever demanded by INFRASTRUCTURE UNIT - MOH, though not more than once a week.

Upon completion of the works the Contractor shall remove and clear away all surplus excavated materials, plant, rubbish and unused materials at his own expense and shall leave the whole site and the works in a clean and tidy state to the satisfaction of INFRASTRUCTURE UNIT - MOH. All traces of offices, sheds, camps, etc. must be removed and made good. Particular care shall be taken to leave floors and windows clean and that all paint and cement stains are removed from all surfaces

0.14.6 Sanitation of the Site

The Contractor shall provide the necessary latrines for his staff and workmen to the requirements and satisfaction of the Health Authorities, and maintain them in a thoroughly clean and sanitary condition, removing and making good on completion.

It is strongly stressed that urination is only permitted in the above latrines; any lack of cleanliness in or around the building may lead to immediate expulsion from Work, and so may drunkenness or excessive use of flagrant language

0.14.7 Signboard

The signboard and lettering on same for the display of the Contractor and Sub-Contractors name shall be of an approved size and design with the Owner name painted thereon.

0.14.8 First Aid

During the progress of the Work, the Contractor shall provide and maintain in easily accessible positions on the Works adequate first aid outfits and shall comply with Government and Labor office requirements at all times.

0.15 Treasure Trove

All fossils, coins, articles of antiquity or value and other remains or things of geological or archaeological interest discovered on the site of the Works shall, as between the Owner and the Contractor, be deemed to be the absolute property of the Owner, and the Contractor shall take reasonable precaution to safeguard the same and to notify the Owner immediately on discovery, and at the Owner's expense carry out his orders relating to the removal and disposal of the same.

0.16 Surety

The Contractor may be required to provide surety for the due and proper completion of the work in a form approved by the Owner. The surety shall amount to 10% of the Contract Sum.

0.17 Contingencies

Contingencies shall be applied to Works initially unforeseen in the Works. The Contractor shall apply for contingencies only upon providing and proving the said amount was fairly and justly applied to already existing costs of Works that was beyond his control. Application for contingent amount shall be filled out and submitted to the INFRASTRUCTURE UNIT – MOH for analysis and payment.

0.18 Payments

The Contractor is to be paid for his work according to the Contract or on a percentage basis as stated in the General Conditions of the Contract

0.19 Prime Cost

The word "Prime Cost" shall mean the sum paid to the merchant after deducting all trade discount for such goods in the ordinary course of delivery, but not deducting discount for cash, which shall not exceed 2 % and such sum shall be exclusive of special carriage, the cost of fixing and Contractors profit. The Contractor will be required to produce invoices for all items described as "Prime Cost".

EXCAVATIONS AND EARTHWORKS

The Work comprises all materials and workmanship indicated on drawings and in T.S. and may be carried out by the Contractor himself or a sub-Contractor unless otherwise required in S.S.

1.1 Excavation for Foundations

Shall be to the widths and depths indicated on the drawings or to such lesser or greater depths as MSADA may deem necessary. The Contractor shall draw INFRASTRUCTURE UNIT - MOH attention to any bad ground, which may be encountered. All roots shall be removed completely. If the Contractor excavates to any widths or depths greater than those shown on the drawings or as instructed by INFRASTRUCTURE UNIT - MOH, he shall fill such excess with concrete at his own expense to the satisfaction of INFRASTRUCTURE UNIT - MOH. Level and ram bottoms of all excavations to receive concrete, form stepping if necessary, or directed to allow for sloping ground, and well water excavations before pouring concrete.

Any greater difference in the quantity of work actually executed from that indicated shall be measured and valued as a variation of the Contract, except if this is done by the Contractor without INFRASTRUCTURE UNIT - MOH instructions.

1.2 Excavations for Drains. etc.

Excavate for all drains, channels, pipes, inspection chambers, soakage pit and septic tank to the depths and widths and falls required.

1.3 Excavate Ant-heaps

Excavate and entirely remove all white ants nests within the perimeter of the building and with 20 m of the building externally; locate and destroy all Queen ants, impregnate holes and tunnels with approved insecticide and fill with approved material, spread and rammed in layers not exceeding 20 cm thickness.

1.4 Rock

Rock is defined as any material met within the excavations which are of such size or position that it can only be removed by means of wedges, compressed air plant, or other special plant and the Owner Representative/MOH's opinion in this regard shall be final. Excavation in any material such as compacted murrum, soft tuff, stiff clay or similar materials which in the opinion of the Owner Representative/MOH can reasonably be removed by pick, traxcavator or similar means will be deemed to be included in the prices for normal excavation.

1.5 Blasting

Should rock be met with, it must be removed with wedges and levers. Blasting will not be allowed without the written consent of INFRASTRUCTURE UNIT - MOH, in which case the Contractor shall take full responsibility for any damage that may be caused.

1.7 Protection from Water

The Contractor is to allow in his price for the taking of every precaution to protect the works at all stages of construction from damage by sudden rains. Excavations shall be kept clear of water and debris of all kinds. Any water in trenches, etc. is to be pumped or drained away before any filling is carried out.

1.8 Inspection of Trenches

The Contractor shall report to INFRASTRUCTURE UNIT - MOH as and when a secure bottom for the foundations has been obtained, and the same is ready to receive blinding concrete. No concrete must be placed, until the approval of the local Authorities and INFRASTRUCTURE UNIT - MOH has been obtained.

1.9 Earth Filling

No filling shall be done, until the foundations and wall bases have been inspected and approved by INFRASTRUCTURE UNIT - MOH. Levels specified to be made up with surplus soil etc. are to be filled in with selected soil free from vegetable growth to the approval of INFRASTRUCTURE UNIT - MOH, and to be laid in layers not exceeding 30 cm of thickness, each layer to be watered, well rammed, consolidated and levelled. No borrow-pits will be allowed to be opened on the site.

1.10 Polythene Sheeting

Polythene Sheeting shall be 500 gauge obtained from an approved manufacturer. Joints are to be treble folded with 15 cm fold and taped at 30 cm intervals with approved black plastic adhesive tape. The sheeting is not to be stretched, but loose laid so as to permit shrinkage up to 15%.

1.11 Grassed Areas

Area to be grassed shall be cleared of all debris and roots and dug up to a minimum 30 cm depth. Where outcrops of rock or murrum occur such outcrops are to be covered with suitable soil to a minimum depth of 15 cm.

PLAIN CONCRETE AND REINFORCED CONCRETE WORK

The Work comprises all materials and workmanship indicated on Drawings and in S.S. provided that they are not expressly required to be carried out or delivered by others in S.S.

2.1 Code of Practice for Reinforced Concrete Work

All materials, workmanship, performances, and tests in connection with reinforced concrete work are to be in conformity with B.S. 8110-3:1985 “The Structural Use of Concrete in Buildings” and B.S. 8110-1:1997 “The Structural use of Concrete” and in accordance with local by-laws where inconsistent with the foregoing.

MATERIALS

2.2 Materials Generally

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

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

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

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

2.3 Cement

Cement used shall be ordinary Portland cement, and shall comply in every respect with B.S. EN. 197-1:2000. The Contractor must if called upon to do so, have complete samples selected from the cement supplied and tested at his own expense. At his own expense, the Contractor may use rapid hardening Portland cement in order to speed up progress of the works. If rapid hardening Portland cement is used, INFRASTRUCTURE UNIT - MOH must be informed in advance. The cement shall be stored on site in such a manner as to afford adequate protection from weather and moisture from any source.

2.4 Aggregates¹ General

Aggregates shall be obtained from an approved source and shall comply with B.S. E.N. 12620:2002. They must be chemically inert, strong, hard, durable, free from adhering coatings, salts, organic or other impurities and shall be washed or screened as directed.

All aggregate shall be stored on the site in such a manner as to prevent deterioration and contamination. No aggregate consisting of or containing limestone shall be used.

2.5 Fine Aggregate

The fine aggregate or sand (below 0.5 cm [3/16"] in size) shall be clean, sharp, coarse, hard siliceous material and equal at all times to the samples which shall be deposited with INFRASTRUCTURE UNIT - MOH. It shall comply with the requirements of B.S. EN. 12620:2002.

2.6 Coarse Aggregate

The coarse aggregate shall be hard, clean gravel or broken stone from approved quarries and shall be free from earth, decomposed stone, and extraneous matter and shall be sized as follows:

Size 1" or 3.8 cm Nominal Size: The whole of the stone shall pass through a 1" or 3.8 cm ring, 50% shall be retained on a 1" or 2.5 cm ring and the remainder on a ¾" or 1.3 cm ring, It shall be free from particles of smaller size and crushed dust.

Size ¾" or 1.9 cm Nominal Size: The whole of the stone shall pass through a ¾" or 1.9cm ring, at least, and 10% shall be retained on a W' or 2.5cm ring and the remainder on a 3/8" or 0.9 cm ring.

Size 1/2" or 1.3 cm Nominal Size: The whole of the stone shall pass through a 1/2" or 1.3 cm ring, 70% retained on a 3/8" or 0.9 cm ring, and the remainder on a ¾" or 0.6 cm ring.

Size 3/8" or 0.9 cm Grit: The whole of the stone shall pass through a 3/8" or 0.9 cm ring and shall be retained on a ¾" or 0.6 cm ring.

2.7 **Reinforcing Steel**

Mild steel rod reinforcement shall comply with B.S. 4449:2005.

High tensile steel rod reinforcement shall be square section cold twisted steel complying with B.S. 4486:1980 or cold worked steel bars for concrete reinforcement to B.S. 4449:2005 Welded steel fabric reinforcement shall comply with B.S. 4483:2005.

The steel shall be stored on racks above ground so that it is kept clean and reasonably free from rust.

All metal for reinforcement shall be free from loose mill scale, loose rust, oil and grease, or other harmful matter immediately before the placing of the concrete.

2.8 **Water**

All water used on the works shall be clean, free from earthy, vegetable and organic matter and from acid and alkaline substances in suspension or solution. It shall be obtained wherever possible from the water mains of the Municipal Water System.

Formwork shall be designed with sufficient timber formers and blocking pieces to support the waterbar and to ensure that it is not displaced during concreting. In the case of horizontal joints in vertical walling and similar members the formwork shall be so constructed as to permit the starter or upstand of concrete surrounding the lower half of the water bar to be poured in the same operation as the slab or other concrete from which it springs. Formwork to walls or similar members where the waterbar is positioned at the base of the lift shall have sufficient openings not less than 300 mm square at approximately 200 mm above the level of the waterbar to permit checking that the waterbar is correctly positioned and not displaced during concreting. No concreting will be permitted to portions where upstand starters form an integral part until the formwork to the starter has been fixed and approved.

2.9 **Other Materials**

According to S.S.

Mechanical Plant

Power floats must be used for trowelling screeds, monolithic finishes and the surfaces of large areas of concrete.

2.10 Concrete Mixer

The mixing of concrete shall be carried out in an approved mechanical batch mixer of capacity not less than 6 cu. ft. Alternate methods may be used only after approval of specific method is given in writing by INFRASTRUCTURE UNIT - MOH.

2.11 Concrete Vibrators

Surface concrete vibrators must be used for floors and reinforced slabs.
Immersion-type vibrators must be used for columns, walls and beams.
Power floats must be used for trowelling screeds, monolithic finishes and the surfaces large areas of concrete.

2.12 Formwork

Formwork shall be of sufficient strength and rigidity to resist the dead load of concrete and all temporary live loads imposed during construction and shall be true to the shape and dimensions as indicated on the detail drawings.

Formwork shall be sufficiently tight to prevent leakage or loss of grout or mortar. Connections shall be constructed to permit easy removal of the shuttering and to secure against any distortion during consolidation of concrete.

All rubbish, chippings, shavings and sawdust shall be removed from the interior of the forms before the concrete is placed and suitable washout holes shall be provided. The formwork in contact with the concrete shall be thoroughly wetted and treated with approved mould oil. Care shall be taken that such oil is kept out of contact with the reinforcement and shall be used as sparingly as possible. All formwork is to be approved by INFRASTRUCTURE UNIT - MOH before any concrete is filled into it.

2.13 Reinforcement Work

All reinforcement is to be accurately cut and bent as shown on the drawings, and shall conform to B.S. 8666:2000.

The bars shall be accurately placed and fixed as indicated. Adequate length of splices to bars shall be provided. Sufficient wire ties or clips, saddles and sufficient concrete spacers shall be used to maintain the reinforcement in its true position during placing and tamping of concrete. Such concrete spacers shall be made of mortar not leaner than one part cement to two parts sand.

The vertical distance required between successive layers of bars shall be maintained by mild steel spacer bars at intervals to prevent sag of main bars.

Reinforcement must not be bent or straightened in a manner that will injure the materials.

All bars are to be bent cold.

Bars must not be welded.

Starter bars are to be positioned accurately.

All crossings of bars are to be securely wired.

Binding wire shall be non-galvanized, soft iron binding wire No. 16 S.W.G.

The placing of all reinforcement shall be checked by INFRASTRUCTURE UNIT - MOH, and under no circumstances is concrete to be deposited around any steel that has not been passed.

2.19 Wall Ties

Where block walls abut columns or solid concrete walls two 0.6 cm (1/4") steel reinforcement bar ties are to be cast into the concrete at vertical intervals of 45 cm or as stated in S.S. Ties to be 30cm long and project 15 cm into block work.

2.20 Mixing Concrete

No concrete work is to be done without the prior consent of INFRASTRUCTURE UNIT - MOH, and not until the reinforcement has been approved by INFRASTRUCTURE UNIT - MOH and the Local Authorities.

Only gauge boxes built to given dimensions shall be used to measure out the relevant portions. The cement shall be mixed by weight.

Mixing shall be carried out in an approved mechanical batch mixer of capacity not less than 1/6 m³ (6 cu. ft.). The fine and coarse aggregates and the cement are to be mixed for at least four turns of the drum, after which the required amount of water is to be added gradually, while the drum is in motion, and the concrete then mixed for at least one and a half minutes and until of uniform colour and consistency.

The least quantity of water that will produce a workable concrete for good consolidation and surface finish shall be used.

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

As a check on concrete consistency slump tests may be carried out and shall be in accordance with B.S. E.N. 12350-1:2000. The Contractor shall provide the necessary apparatus and carry out such tests as are required. The slump of the concrete made with the specified water content, using dry materials, shall be determined and the water to be added under wet conditions shall be so reduced as to give approximately the same slump.

The concrete shall be mixed as close as is practicable to the spot where it is required, and in such a quantity as required for a specific section of the work; such a section being commenced and completed without intermediate delay, in one continuous operation.

2.21 Concrete Mixes

2.21.1 By Volume:

The following table is to be used:

<u>Mix Type</u>	<u>Cement</u>	<u>Sand</u>	<u>Aggregate</u>
Mix A 1	: 4	: 8	{Graded 0.6cm (3/8") to 3.8cm (1 1/2") for mass concrete and 0.8cm (1/8") to 1.3cm (1/2") including stone dust if necessary for blocks and fillings, etc.}
Mix B 1	: 3	: 6	{Graded 0.6cm (3/8") to 3.8cm (1 1/2") for mass concrete}
Mix C 1	: 2	: 4	{Graded 0.6cm (3/8") to 1.9cm (3/4") for reinforced concrete and 0.3cm (1/8") to 1.3cm (1/2") for Precast concrete}.
Mix D 1	: 1 1/2	: 3	{Graded 0.6cm (3/8") to 1.9cm (3/4") for reinforced Concrete and 0.3cm (1/8") to 1.3cm (1/2") for precast concrete}.

2.22 **Placing Concrete**

All concrete must be efficiently handled and used in the Works within twenty (20) minutes of mixing. It shall be discharged from the mixer direct into receptacles or barrows and shall be distributed by approved means which do not cause separation or otherwise impair the quality of the concrete. Approved mechanical means of handling will be encouraged, but the use of chutes for placing concrete is subject to the prior approval of INFRASTRUCTURE UNIT - MOH.

Concrete shall be placed from a height not exceeding 150 cm directly into its permanent position and shall not be worked along the shutters to that position. Unless otherwise approved, concrete shall be placed in a single operation to the full thickness of slabs, beams and similar members, and shall be placed in horizontal layers not exceeding 150 cm deep in walls and similar members.

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

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

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

The Contractor shall provide runways for concreting to the satisfaction of INFRASTRUCTURE UNIT - MOH. Under no circumstances will the runways be allowed to rest on the reinforcement. Care shall be taken that the concrete is not disturbed or subjected to vibrations and shocks during the setting period.

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

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

2.23 **Compaction**

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

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

During and immediately after placing, the concrete shall be thoroughly compacted by means of continuous tamping, spading, slicing and vibration.

3.0 Mortar

Cement lime mortar shall be composed of one part lime to three parts sand, with the addition of 10% cement by volume immediately before use. The ingredients shall be measured in proper gauge boxes and mixed on a boarded platform or by means of an approved mechanical batch mixer. Only such mortar as is required for immediate use shall be mixed at any one time. No mortar that has started to set shall be used in the works or in making up fresh mortar. Cement mortar described as mortar 1:4 and to be used for concrete block foundations shall consist of one part by volume of Portland cement to four parts by volume of sand, measured and mixed all as above. Other mixes such as 1:3, 1:5 etc., shall be similarly construed.

3.1 Concrete Louvre Blocks

To be precast concrete mix 1:1½:3 (10 mm aggregate) finished fair on all exposed surfaces. Louvre blocks shall be according to detail drawings and S.S.

3.2 Bricks

All clay bricks shall be hard, sound, square and clean, well-burnt, even in colour and size, and shall equal to samples submitted to and approved by INFRASTRUCTURE UNIT - MOH. If nothing else is specified, the size shall be 6.3 x 11 x 23 cm (2 ½" x 4 ¼" x 9").

3.3 Blockwork**3.3.1 Building Walls**

Blockwork shall be built in half-bond, properly bonded at angles, intersections and around window and door openings, each course well-flushed up with mortar and every joint properly filled and raked for key. Joints are not to exceed 1.8 cm thickness and the Contractor shall provide gauge rods, properly marked with course heights, to ensure the level raising of all walls.

Blockwork shall be in whole blocks as far as possible, portions of a block being used only where necessary for bond. Wall ties are to be built according to drawings.

3.3.2 Walling to be plastered

All faces of walling to receive plaster and similar finishes shall have joints raked out in 0.5 cm depth and have all projections dressed off.

3.3.3 Walling to be finished with a fair face

Where walling is to be finished in a fair face, the concrete blocks are to be selected for freedom from defects and the joints raked out in 0.5 cm depth as the work proceeds and painted with a neat joint in cement mortar.

3.3.4 Blocks to be Wetted

All concrete blocks shall be well-wetted before being laid and the top of the walling where left shall be well-wetted before building is resumed. Concrete block work shall be kept wet for five days after being laid up.

3.3.5 Filling of Hollow Blockwork

All cavities above ground, where specified and shown, and all cavities below ground level shall be filled in solid with concrete of the mix described, placed and consolidated in sections not exceeding 1 metre in height.

3.3.6 Rough Cutting

The Contractor shall allow in his price for all ordinary rough cutting, bonding, plumbing angles, forming reveals and fitting up to underside of concrete beams and lintels.

3.3.7 Beam Filling

Perform all necessary beam filling between timbers where shown or required.

3.3.8 Baking, Cutting, Chasing and Making Good

Cut and chase all holes as required for properly fixing doors, windows, partition walls, etc. and allow for ducts of pipes as directed and for all other trades.

3.3.9 Mortices

Cut mortices for dowels, plugs, etc. and grout in with neat cement for fixing screws provide rawl plugs.

3.3.10 Cut for Pipes

Cut for and build in all pipes for water and gas where required and after make good.

3.3.11 Mortar

Block work below damp-proof course level shall be built in cement mortar and above damp proof course shall be built in cement-lime mortar.

3.4 **Brickwork**

3.4.1 Building Walls

The walls shall be solid or cavity brick walls as specified. The joints on the face shall not exceed 1.5 cm in thickness. The bricks in each course shall break joint in the vertical, and every joint, whether horizontal or vertical, shall be filled with mortar. Simple upping at the edges of the joints shall not be permitted. All cross walls shall be built out with the main walls.

Bond shall consist of three courses of stretches to one course of headers with closers at each header course and with vertical perpend throughout. In special work English or Double Flemish bond shall be used.

Below damp-proof course level brickwork shall be built in cement mortar and above in lime cement mortar.

Wall ties to be built in accordance to drawings.

3.4.2 Walling to be Plastered

Where walls are to be plastered, joints shall be raked out in 0.5 cm depth as the work proceeds and walling is to be brushed down immediately after completion.

3.4.3 Walling to be Fair Face

The best shaped and most uniformly coloured bricks should be picked out and shall be used for the fair face. The bricks are to be selected for freedom from defects and the joints raked out in 0.5 cm depth as the work proceeds and painted with a neat joint in cement mortar.

- 3.4.4 When cleaning with hydrochloric acid, the wall shall first be watered thoroughly by hose. Then apply diluted hydrochloric acid, in proportion of one part acid to five parts water. Immediately rinse thoroughly.
- 3.4.5 **Rough Cutting**
The Contractor shall allow in his price for all ordinary rough cutting, bonding, plumbing angles, forming reveals and fitting up to underside of concrete beams and lintels.
- 3.4.6 **Cutting, Chasing and Making Good** – as in 3.18.8
- 3.19.6 **Mortices** – as in 3.18.9
- 3.19.7 **Cut for pipes** – as in 3.18.10

4.1 Roof Constructions

4.1.1 Framing and Trusses

Main structural timber in roofs to be not less than 3.8 x 12.3 cm (1 1/2" x 4 1/2") or 10 x 5 cm (4" x 2") properly strutted and braced, securely spiked at each junction with all nails clinched. Where trusses on trussed rafters are used the main intersections shall be bolted with 16 mm (5/8") bolts.

The timber shall be in as long lengths as possible. Any lengthening joints required shall be at least four times the depth of the timber, and in any case not less than 50 cm long. Whenever practicable the joints shall be placed at points of support to obtain the maximum strength.

The spacing and fixing of all timber roof members shall be such as to ensure complete stability of the roof structure and security of and effective weather exclusion by the roof covering. Unless otherwise specified, roof timbers and wall plates shall be securely tied down to walls with No. 8 gauge 2.5 cm (1") galvanized hoop-iron ties, lapped around foot of each truss or jack rafter and built 75 cm deep into wall at minimum 1 m centres. Eaves of pitched roofs are to project at least 40 cm over walls. All exposed woodwork at eaves is to be wrought.

4.1.2 Wall Plates

Wall plates to be 10 x 3.8 cm (4" x 1 1/2") or 10 x 5 cm (4" x 2") or as specified. They shall be bedded in cement mortar (1:4) and secured as above or as shown by details.

4.1.3 Purlins

Shall be as specified. They shall be in as long lengths as possible. Any joints necessary shall be formed over trusses. No joining of purlins other than over a point of support shall be allowed. Purlins shall be spiked to wood cleats at every bearing and principal rafter.

4.1.4 Hip Rafters

Hip rafters shall be 20 x 5 cm (8" x 2") unless otherwise specified or shown. They shall be as long length as possible, but where jointing is necessary scarfed joints shall be used.

4.1.5 Valleys

Valley rafters shall be as described for hip rafters. Two 2.5 cm valley boards 25 cm minimum width shall be fixed to all valleys to take gutters.

4.1.6 Facia Boards

Provide and fix hardwood chamfered Facia boards as specified to all eaves spiked to end of rafters and prepared for painting.

4.1.7 Barge Boards

Provide and fix hardwood chamfered Barge boards as specified to end of purlins scribed to facia and prepared for painting.

4.1.8 Covers for Eaves

Provide and fix 1.3 cm (%) plywood or other cover to eaves according to S.S. and drawings.

4.2 Ceiling Construction

4.2.1 Soft-Board Ceiling

Shall be provided where indicated. Ceiling joists shall be 5 x 5 (2" x 2") in local hardwood unless otherwise specified or shown. They shall be fixed at right angles to trusses and spiked to the tie beams. Fur out where necessary to provide a true and level surface for ceilings. First joist shall be fixed along the centre line of the room and the remainder equally spaced out on either side at 41 cm (1'-4"). Any narrow spaces shall be adjacent to walls. A ceiling joist shall be fixed next to all walls. Ceiling bearers shall be 5 x 5 cm (2" x 2") local hardwood fixed between and at right angles to the ceiling joists. Fur out where necessary to provide a true and level surface for ceilings. The bearers shall be equally spaced out at 41 cm (1'-4") centres.

Ceiling boards shall be paneled out symmetrically from the centres of the room, nailed at 41 cm (1'-4") in each direction to ceiling joists and bearers, with galvanized clout nails of suitable length and width with neat chamfered joints. Form openings for and provide and fix in position trapdoors to afford access to the roof space at points indicated on drawings. Size of openings shall be 60 x 60 cm in the clear. Line opening with a 7.5 x 2.5 (3" x 1") moulded cover strip mitred at angles.

4.2.2 Hardboard Ceilings

As for soft-board ceiling - (4.47.1) but with 1 x 5 cm, battens fixed on underside of ceiling beneath ceiling bearers and joists in 41 x 41 cm grid.

4.2.3 Lathe and Plaster Ceilings

Should be provided according to drawings, details and S.S.

4.2.4 Wooded Boarded Ceilings

Should be provided according to drawings, details and as specified for 4.48 - Boarded Floors

4.2.5 Other Ceilings

According to drawings, details and S.S.

4.2.6 Gang-Boarding

Provide and fix to joists in roof space 2.2 cm (7/8") sawn boarding as walkway from access point to water storage cistern.

4.3 Windows and Window Frames

Where external wooden windows are specified, they shall be wrought and framed, truly square and flat. The surfaces exposed to view shall be true, smooth, free from machine marks and finished for paint or oil. Casements shall be hung with one pair of 7.5 cm (3") wrought iron butts.

Wooden window frames shall be secured with 14 gauge galvanized hoop-iron fixing cramps, 30 cm long, bent, holed and screwed to frame and built into joints of walling at maximum 60 cm between centres.

All frames are to be heavily back-primed with wood preservative before fixing. Where internal wooden windows are specified they shall be made of timber frames with glass panels to details.

4.4 Doors and Door Frames

4.55.1 Doors Generally

Unless otherwise specified, doors scheduled to receive a clear or veneered finish shall be lipped on all edges. Where panels over doors are specified, such panels shall be constructed in the same way and with the same materials as the doors above which they are situated, and the panels shall match the doors in every respect.

For doors specified as plywood faced, the plywood shall comply with the requirements of B.S. 1455, WBP type. Face veneers shall be Grade 1 for painted doors.

All doors shall be provided with lock blocks of a minimum size 300 mm x 75 mm. Glass beading strips shall be approved wash leather self-adhesive tape turned up over both sides of the glass and glazing surfaces and turned to the straight line.

4.5 Backfilling Trenches

If the Contractor allows material to become unsuitable, which when excavated was suitable for re-use, and it is unsuitable when required for backfilling, he shall run it to spoil and make good by replacing with suitable material.

Where required to meet the specification for testing pipelines, trenches shall be partially backfilled to provide anchorage, but joints shall be left exposed.

Backfilling shall, wherever practicable, be undertaken immediately after the specified preceding operations have been completed.

No backfill material shall be placed in trenches containing water.

In trenches in roads, verges and where shown on the drawings above 300 mm over the crown of the pipe backfill, material shall be deposited in layers each not exceeding 225 mm thickness and each compacted to 100%. Power rammers or vibrating plate compactors shall be used to compact the backfilling from one metre above the crown level of the pipe to the surface.

In trenches in fields or open country backfill material above 300 mm over the crown of the pipe may be placed by machine provided the method of operation ensures that the material slides or rolls into position and does not drop from a height.

The backfill material must not include any stones or boulder of dimensions exceeding 10 mm in any position.

Sufficient space shall be left to receive the original thickness of soil, turf or other materials removed from the surface. The surfaces shall be restored by replacing the materials in their proper order and form, and by compacting them to such a level as shall ensure that after settlement is complete the surface level of refilled trenches shall be within 30 mm of that of the adjacent undisturbed ground.

Where directed, trenches shall be backfilled with lean mix concrete made with 1kg cement to 12 kg aggregate. The aggregate will be ash, clinker, gravel, stone, or other hard material, approved by the Owner Representative/MOH, and free from sulphate, dust and other deleterious material.

4.6 Connections to Sewer

All connections to sewers are to be made with angle junctions set at the correct angle to minimize the use of bends. All angles shall not exceed 45 degrees.

The open ends of all house connections and other pipes not required for immediate use shall be sealed up with purpose-made stoppers secured in position. The ends of connections and all junction positions will be clearly marked by posts and painted boards of a type and size to be approved by the Owner Representative/MOH and the boards shall be plainly marked with the letter 'S' and the size and depth below curb level or ground level. A length of 4.5 mm galvanized iron wire shall be fixed to the faucet of the last pipe and the marking post.

Every care shall be taken to prevent the marking boards being disturbed and the Contractor shall take the responsibility for their safety. The information shall also be painted on the curbs in an approved manner when all works are complete, and the Contractor shall record the position of all branches giving distances from the manhole immediately downstream of the branch.

4.7 Manholes and Inspection Chambers

Manholes and chambers shall be constructed in accordance with the drawings and specification and in the positions as detailed on the drawings or directed by the Owner Representative/MOH.

Every inspection chamber shall be of such internal dimensions as the Local Authority shall require with minimum size as follows:

<u>Depth to Invert</u>	<u>Size</u>
Up to 45cm	1'6" x 1'6" 45 x 45 cm
Over 45 cm but not exceeding 90 cm	2'0" x 1'6" 60 x 45 cm
Over 90 cm but not exceeding 150 cm	3'6" x 2'0" 100 x 60 cm
Over 150 cm but not exceeding 200 cm	3'6" x 2'6" 100 x 75 cm

Chambers are to have 15 cm thick reinforced concrete slab base with walls built up in 23 cm thick concrete blocks rendered internally 2 cm thick with cement and sand (1:3) trowelled smooth with requisite channels of the full width of the drains with easy curves and junctions in concrete 1:11/2:3.

Branch channels are to be formed 5 cm higher than main drain and the whole is to be benched up to side of chamber with steep falls to channels and all surfaces polished with a steel trowel.

Pipes in and out of manholes are to be as short as practicable, shall be built in monolithically with the manhole, and the manhole made watertight. Where line, level and pipe diameter permit and where approved by the Owner Representative/MOH, the pipeline may be laid unbroken through the manhole position subject to the pipe joints external to the manhole not exceeding 600 mm from the inner face of the manhole wall.

The depth of the main channel must not be less than the diameter of the largest pipe. Where pipes have been laid unbroken through the manhole position the crown of the pipe shall be broken out to the half diameter over the full length of the manhole and the benching completed as directed by the Owner Representative/MOH. Branch bends shall be curved in the direction of flow and will be trowelled smooth with a steel float finish. Spaces between branch bends shall be completely filled with concrete and the faces above the main and branch channel inverts shall be trowelled smooth with a steel float finish.

Bases and benching shall be formed in 1:2:4 nominal mix concrete trowelled smooth with a steel float finish. Manholes inside buildings and elsewhere as shown in the Contract shall have cast iron pipes with access openings and bolted cover plates with the requisite branches in lieu of open channels and branch bends. The bottom of the manhole shall be brought up in concrete to the underside of the cast iron cover plate of the access pipe and benched up at a slope of 1:12 and trowelled smooth.

Manhole covers and frames shall be fixed in the positions shown, the frames shall be solidly bedded in cement mortar so that generally the covers when in position are fair and even with the adjacent surfaces except where directed by the Owner Representative/MOH when they shall be kept 75 mm above the adjacent surfaces. Where shown or as directed, frames shall be bedded on one or two courses of blockwork in cement mortar.

Step irons are not required where the depth to benching is less than 900 mm and the diameter of the largest pipe is less than 450 mm. Channels more than 900 mm in depth shall have one or more step irons in a recess, or toe holes and handrail or post within easy reach.

A manhole shaft (excluding the 1-2 courses of blockwork under the cast iron cover) shall not be constructed unless the complete length shall exceed 1.0 metre.

Where depth from ground level to top of benching exceeds 4.5 metres a ladder may be used instead of step irons where directed. Manhole ladders shall have brackets (not less than two pairs per ladder) of material equal to the stringers built into the blockwork or concrete at intervals of not more than 2.0 metres. In deep manholes suitable rest chambers shall be provided at about 6 metre intervals, each with a landing platform incorporating a hinged trap door immediately under the ladder. Cover slabs of manholes shall be reinforced as shown on the drawings, minimum cover to steel 40 mm, and the concrete shall be as detailed in the Contract.

All manholes on sewers of 600 mm diameter and over shall be provided with safety chains across the mouth of the sewer on the downstream side and handholds or a 25mm solid bar handrail shall be provided on the edges of all benchings, platforms etc., as directed.

The Contractor shall supply two sets of lifting keys for each pattern of manhole cover incorporated in the works. All manholes and chambers when completed must be watertight and to the satisfaction of the Owner Representative/MOH.

4.8 Septic Tanks

Tanks are to be constructed with a main chamber of a size as specified on drawings or in S.S. Foundations are to be not less than 15cm thick in concrete 1:2:4. External walls are to be 23 cm thick concrete block wall in cement mortar. Tanks are to be constructed with 45 x 60 cm inspection chamber at inlet and 45 x 60 cm

distribution chamber at outlet. Main chamber is to be separated with 8 cm concrete partitions cast in situ. Tee pieces are to be cast into walls at inlet and outlet. All walls and bottom inside and outside are to be rendered in 1.5 cm waterproof rendering, trowelled smooth. Cover for tanks is to be 15 cm concrete slab (1:2:4) reinforced according to S.S. or drawings. Inspection chamber, distribution chamber and main chamber at inlet and outlet are to be supplied with cast iron manhole cover, size 60 x 45 cm (24" x 18") complying with B.S. 497 with frames bedded in cement mortar (1:2) and covers bedded in heavy grease. The tanks in every respect are to comply with the requirements of the Local Health Authority.

4.9 Testing of Septic Tanks

Septic tanks and other chambers shall be tested by filling with water after completion of backfilling. The first 1.0 metre of depth may be filled as quickly as the supply permits. Between this and top water level the rate of filling must not exceed 1.0 metre in 24 hours. After filling to top water level no further water shall be introduced for 2 days. At the end of this period the tanks shall be topped up to top water level and allowed to stand for 24 hours. The test shall be considered satisfactory if the fall in water level in 24 hours does not exceed 15 mm.

In the event of a fall exceeding the above the tank will be emptied and any defects made good.

4.10 Soakage Pits

Soakage pits are to be constructed to the dimensions and general arrangement detailed in the project drawings and S.S. with a minimum dimension of 250 cm diameter and 5.50 m deep from inlet pipe. The soakage pit is to be lined from the top to a minimum depth of 120 cm with stones, rendered in 1 cm cement plaster. Cover to pits is to be 15 cm concrete slab (1:2:4) reinforced according to S.S. or drawings. Cast iron manhole cover is to be supplied, size 60 x 45 cm (24" x 18") complying with B.S. 497 with frame bedded in cement mortar (1:2) and covers bedded in heavy grease. The pits are in every respect to comply with the requirements of the Local Health Authority.

4.11 Ventilated Improved Pit Latrines

VIP latrines are to be constructed as detailed on the drawings and/or according to the S.S.

4.12 Water Seal, Offset, Pit Latrines

Latrines of this type are to be constructed as detailed on the drawings and/or according to the S.S.

4.13 Surface Water

Provision by grading or according to drawings and S.S. shall be made to ensure that all surface water is carried clear of the buildings to the complete satisfaction of the Owner Representative/MOH/Engineer.

4.14 Other Details

According to the S.S. or drawings.

DEMOLITIONS AND ALTERATIONS

The work comprises all materials and workmanship indicated on Drawings and in S.S. provided that they are not expressly required to be carried out or delivered by others.

5.1 Demolition

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

5.2 Protection

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

5.3 Laying the dust

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

5.4 Making good

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

5.5 Credit for Materials

Unless otherwise specified in drawings and/or S.S., materials arising from the demolitions and alterations will become the property of the Contractor. If the Contractor wishes to allow a credit for any such materials the appropriate allowance should be included in the 'credit' column of the Schedule of Rates.

In the event that the Employer wishes to take possession of any such materials the Contractor will only be entitled to receive compensation to the amount of credit indicated.

5.6 Definition of Terms

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

Removal shall include:

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

Disposal shall include:

- handling on site to store or to pick up point for loading;
- loading into skips or lorries;
- transporting away from site to yard, store or tip; and
- payment of all tip charges.

Making out shall include:

- infilling to voids, openings, gaps and the like and matching materials and construction to existing.

Making good shall include:

- work as last described consequent on the carrying out of other work.

Form opening in brickwork or blockwork shall include:

- shoring up and needling as required;
- cutting the opening;
- designing, providing and inserting required beam or lintel and providing any calculations, if required, and obtaining building regulation approval;
- providing and inserting cavity gutters and the like;
- forming new arches and the like in facework to match existing;
- quoining upjambes;
- sealing cavity of hollow walls, at jambs and ciii and providing and inserting damp-proof course;
- making good facework and features to match existing;

- forming new external sub-cills or sub-thresholds to match existing;
- making good the plasterwork or other applied finishes including making out into reveals and providing metal angle beads to arises where required; and removing debris.

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

- carefully cutting out any flooring in opening and levelling and preparing for raising new work;
- cutting toothings for bonding in new work;
- filling the opening with brickwork or blockwork to match existing;
- making out facework including cutting out arches, cills or ornamentation around the opening and continuing any general facework pattern;
- wedging and pinning to existing soffit;
- providing and inserting matching damp-proof course;
- making out any plasterwork including continuing any existing patterns or labours and making good between new and old work so that after decoration or weathering the original opening cannot be discerned; and remove debris.

Remove partition shall include:

- shoring up if required;
- sizing, providing and inserting required timber beam if the partition is load bearing;
- taking off skirtings, picture rails and the like;
- stripping off lath plaster or other finishes and insulation quilts;
- taking out doors, borrowed lights, hatches and the like, frames, linings and architraves and the like within any area of partitioning to be removed;
- dismantling and taking down studding or framed work;
- making good plasterwork or other wall and ceiling finishes including cornices and other enrichments;
- making good or making out floor boarding and any applied finishes;
- making out timber skirtings, picture rails and the like; and
- removing debris.

Repair roof covering shall include:

“Repair” as applied to a tiled or slated roof includes any or all of the following operations as are necessary:

- renew broken or missing tiles/slates to match existing including nailing with composition nails or securing with copper tingles;
- re-wedge and re-point flashings and making out with new, as required;
- re-make tile/slate verges or eaves including any bedding and pointing;
- renew defective or missing ridge or hip tiles; and
- remove debris.

Renew roof covering shall include:

“Renew roof covering” as applied to a tiled or slated roof includes:

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

- strip existing roofing and battens, sort and set aside sound tiles/slates;
- renew battens and re-lay existing tiles/slates together with new tiles/slates, as required and all to match existing, including sacking felt underlay, whether previously provided or not, and including any special tiles/slates to eaves, verges, ridges and valleys;
- re-wedge and re-point flashings; and
- remove debris.

“Renew roof covering” as applied to a sheet metal, felt, filed flat or asphalt roof includes:

- strip existing roofing;
- renovate sub-base as required;
- lift and afterwards re-fix flashings;
- renew roof covering to match existing;
- re-wedge and re-point flashings; and
- remove debris.

ROADWORKS and PAVING

6.0 The work comprises all materials and workmanship indicated on Drawings and in S.S. and may be carried out by the Contractor himself or a Sub-Contractor, unless otherwise required in S.S.

6.1 **Generally**

The specification of works and materials in this section which repeat similar working receding parts shall be deemed to be the full specification of work and materials contained in the preceding parts.

6.2 **Murram for Sub-Base, Base and Surface Finish Material**

Where murram is specified for surface finish, sub-base or base construction, naturally occurring lateritic gravel or decomposed stone and coral rag shall be used. The material may be in either a loose or cemented form, but it must be capable of being broken down to an acceptable size on the road bed during consolidation. The proportion of clay in the material must not be excessive and test results for the grading of the material must be produced by the Contractor prior to any material being delivered to site.

6.3 **Hand-Packed Stone Base Course and Sub-Base Material**

The rock from which the stones and screenings are to be produced shall comply with the following:

1. Aggregate crushing Value - not greater than 40%
2. Los Angeles Abrasion Value - not greater than 60%

3. Sodium Sulphate Soundness Test - loss on 5 cycles to be not more than 12%

When permitted by the Owner Representative/MOH/Engineer, soil binder material may be added to screenings or used in lieu of screenings, provided it complies with the following requirements:

1. the fraction passing BS sieve No. 200 shall be less than half that passing No. 36 sieve; and
2. the plasticity index shall be not greater than 8 and preferably not greater than 5.

6.4 Bitumens and Bitumen Emulsions

Before any bitumen or bitumen emulsion is delivered to the site, the Contractor shall provide the Owner Representative/MOH/Engineer with a certificate from the Manufacturer that the material to be supplied complies with all respects to the relevant specification given or referred to hereinafter.

Any bitumen or bitumen emulsion delivered in leaking containers or deteriorated containers may be rejected.

APPENDIX: 1

INSTALLATION OF POLY-TANK (2000L)

SCOPE OF WORKS

1. Make provision for manpower, tools and materials.
2. Provide 1" x 2"x 14', 1" x 6"x 14', 1" x 8"x 14', 1" x 10"x 14', 1" x 12"x 14' timber along with round poles for formwork.
3. Construct round poles into ground with 1" x 10"x 14' bracing and twine wire, for layout, before excavation work.
4. Excavate earth to a minimum depth of 3'-0" by 4'-0" by 1'-0" thick.
5. Cast away earth near foundation to be reused as backfill after the completion of foundation construction.
6. Install 1" x 12"x 14' formwork with 1" x 2"x 14', timber bracing for footing positions with size 4'-0" *4'-0"*1'-0" thick.
7. Supply and install 5/8"Ø bars for the footing mats along with tie wire, into footing positions jagged into 4" diameter galvanized steel pipes as vertical supports.
8. Use 2" Ø galvanized steel pipes as longitudinal supports 36 ft high.
9. Ditto-3/4" Ø galvanized steel pipes as horizontal/transverse members 3.5ft wide hand ladder members @ 2ft on center.
10. Install hand ladder into existing support 12" X 12" concrete columns; use 5/8" Ø galvanized steel pipes at 8ft intervals for rigidity.
11. Install new poly-tank (2000L) completely with all necessary plumbing works to include water lining, piping systems and pumping systems.
12. Construct concrete base slab 2ft above ground level supported by four 6" x 6" columns- Use 2' – 6" x 2' – 6" footings with (1:2:3) concrete mix. Footing should be cast into 6" thick foundation concrete as specified by the design attached. Covering slab (7ft x 7ft) should be reinforced with mesh wire and cast-in-situ (cast in place) see details.
13. Provide and install 5 – courses of baked-clay firestone bricks around slab above as specified by

the design freehand sketches attached. Fit into mortar (1:4) mix.

14. Provide and apply two coats of emulsion paint to constructed surfaces except for vanishing brick surface prior to a successful completion.
15. Clean work area thoroughly.
16. Turn-over work to owner.

APPENDIX: 2

SCOPE OF WORK FOR THE CONSTRUCTION OF WATER TOWER

1. Make provision for manpower, tools and materials.
2. Provide 1" x 2"x 14', 1" x 6"x 14', 1" x 8"x 14', 1" x 10"x 14', 1" x 12"x 14' timbers along with round poles for formwork.
3. Construct round poles into ground with 1" x 10"x 14' bracing and twine wire, for layout, before excavation work.
4. Excavate earth to a minimum depth of 3'-0" by 4'-0" by 1'-0" thick.
5. Cast away earth near foundation to be reused as backfill after the completion of foundation construction.
6. Install 1" x 12"x 14' formwork with 1" x 2"x 14', timber bracing for footing positions with size 4'-0" *4'-0"*1'-0" thick.
7. Supply and install 5/8"Ø bars for the footing mats along with tie wire, into footing positions.
8. Supply and install 5/8"Ø bars for column(s) with sizes 8" x 8" x 15' into place along with 3/8" Ø steel bars as ties and tie wire.
9. Cast concrete into footing positions, with the footing thickness being 12". Use 1:2:3 mix ratio.
10. Erect (1" x 8"x 14') formwork into column positions braced with 1" x 2"x 14' timber, surrounding the reinforcements for the construction of the reinforced concrete column; this should be done up to a height of 7'-0" where the erection of the steel reinforcements for the construction of the beam will be required.
11. Cast in place concrete into column formwork up to a height of 7'-0". Use 1:2:3 mix.
12. Supply and install 5/8" Ø bars into position for beam; brace 4-5/8" Ø bars with 3/8" Ø bars spaced @ 10" o/c using with tie wire.
13. Install 1" x 8"x 14' formwork with 1" x 2"x 14' timber bracings @ beam position.
14. Cast in place concrete into formwork for beam. Use 1:2:3 mix.
15. Remove formwork from column and beam positions after, 7 days curing period.
Construct formwork for columns up to an additional height of 7'-0".
16. Pour into place concrete for columns; after the erection of the formwork. Use 1:2:3 mix ratio.
17. Erect scaffold for the construction of floor slab.
18. Supply and install 1/2" Ø steel bars into position for floor slab with tie wire.
19. Erect 1" x 6"x 14' form work @ the sides of the floor area
20. Pour into place concrete. Use 1:2:3 mix.
21. Wait for curing period to remove scaffold.
22. Backfill entire area free of deleterious materials, backfill should completely compacted to avoid settlement.
23. Clean work area after construction.
24. Supply and install a 250 gals polyvinyl chloride tank on top of the tower.

-
25. Provide and install 1 1/2" galvanized water pipes for water supply to tank.

APPENDIX: 3

SUPPLY OF WORKS FOR THE CONSTRUCTION OF GENERATOR HOUSE (7'-0" X 7'-0") DIMENSION

1. Make provision for manpower, tools, and materials.
2. Provide and install 1" x 10"x 14', 1" x 6"x 14' timber and round poles with nails for formwork.
3. Layout of construction area.
 - Use round poles as pegs.
 - Use twine wire and nails for bracing
4. Excavate earth to a minimum depth of 1'-6" with 1'-0" trenches.
5. Supply and place in 1" x 6"x 14' timber as formwork in sides of trench.
6. Cast in place 6" thick mass concrete into trenches. Use 1:2:3 concrete mix.
7. Supply and install 6" x 8"x 16' concrete masonry units into foundation trenches complete with mortar (mix 1:3) as binder.
8. Provide excavated earth for backfill free of deleterious materials, up to the floor level; backfill should be completely compacted to avoid settlement.
9. Provide and place in 1" x 10" x 14' timber for formwork along the foundation perimeter for the construction of the mass concrete floor slab.
10. Construct/cast in 4" thick mass concrete into floor area; use 1:2:3 mix.
11. Remove formwork.
12. Supply and install 6" x 6"x 12' stabilized laterite brick walls as wall plates. Using 3/8 1/4" thick mortar.
13. Supply and install 2" x 6"x 4' timber on top of stabilized brick walls as wall plates.
 - Use 3/8" ø stirrups as anchors for wall plates.
14. Provide and install 2" x 2"x 14' timber members with nails for the construction of the roof.
15. Supply and install 28-gauge roofing sheets. Use roofing nails for required tacking of roofing sheets to 2" x 2"x 14' timber members.
16. Provide and install 3'-0" x 7'-0" wide steel door for generator house complete with necessary hardware
17. Clean work area after construction

APPENDIX: 4

GUIDELINES FOR WELL AND LATRINE

CONSTRUCTION IN LIBERIA

REQUIREMENTS FOR WATSAN SECTOR NGOs AND PVOs

The Water and Sanitation (WATSAN) Coordination Committee recognizes the role of the Ministry of Planning and Economic affairs (MPEA) in coordinating the activities of all NGOs and PVOs operating in Liberia. The process outline by the MPEA in the NGOs/PVOs Guidelines should be followed by the NGOs/PVOs activities in the Water and Sanitation Sector.

Guideline 1

All NGOs/PVOs wanting to undertake development, rehabilitation, emergency or relief activities in the Water and Sanitation Sector must first meet the accreditation requirements set by MPEA through the process outlined in NGOs/PVOs Guidelines. Clearances for NGOs/PVOs to operate in the Water and Sanitation Sector in Liberia will be issued by the Ministry of Rural Development (MRD) in collaboration with the WATSAN Coordination Committee. Only NGOs and PVOs allowed to carry out activities in the water and sanitation sector and/or to serve as implementing partners for donors in the water and sanitation sector.

Guideline 2

NGOs/PVOs accredited and issued clearance to undertake developmental, rehabilitation, emergency or relief activities in the Water and Sanitation Sector must attend all regular and called meetings of the WATSAN Coordination Committee. Reports activities in the sector must be presented. Failure by any NGO or PVO to attend WATSAN Coordination Committee meetings and to present activity reports for a period of three months will result in the withdrawal of clearance and accreditation based on recommendation by the WATSAN Coordination Committee to the MRD and the MPEA.

The following are the guidelines regulating the construction of wells in Liberia:

Well Site Selection

Guideline 3

In sitting a well, the existing locations of the following basic sources of ground water contamination usually found in Liberia must be clearly established or surveyed.

DRAWINGS

See attached annex

PART 3 – Conditions of Contract and Contract Forms

Section VIII. General Conditions of Contract

These General Conditions of Contract (GCC), read in conjunction with the Particular Conditions of Contract (PCC) and other documents listed therein, should be a complete document expressing fairly the rights and obligations of both parties.

These General Conditions of Contract have been developed on the basis of considerable international experience in the drafting and management of contracts, bearing in mind a trend in the construction industry towards simpler, more straightforward language.

The GCC can be used for both smaller admeasurement contracts and lump sum contracts.

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General Conditions of Contract

A. General

1. Definitions

- 1.1 Boldface type is used to identify defined terms.
- (a) The Accepted Contract Amount means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.
 - (b) The Activity Schedule is a schedule of the activities comprising the construction, installation, testing, and commissioning of the Works in a lump sum contract. It includes a lump sum price for each activity, which is used for valuations and for assessing the effects of Variations and Compensation Events.
 - (c) The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in GCC 23.
 - (d) Bank means the financing institution **named in the PCC**.
 - (e) Bill of Quantities means the priced and completed Bill of Quantities forming part of the Bid.
 - (f) Compensation Events are those defined in GCC Clause 42 hereunder.
 - (g) The Completion Date is the date of completion of the Works as certified by the Project Manager, in accordance with GCC Sub-Clause 53.1.
 - (h) The Contract is the Contract between the Employer and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in GCC Sub-Clause 2.3 below.
 - (i) The Contractor is the party whose Bid to carry out the Works has been accepted by the Employer.
 - (j) The Contractor's Bid is the completed bidding document submitted by the Contractor to the Employer.
 - (k) The Contract Price is the Accepted Contract Amount stated in the Letter of Acceptance and thereafter as adjusted in accordance with the Contract.
 - (l) Days are calendar days; months are calendar months.
 - (m) 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.

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- (n) A Defect is any part of the Works not completed in accordance with the Contract.
 - (o) The Defects Liability Certificate is the certificate issued by Project Manager upon correction of defects by the Contractor.
 - (p) The Defects Liability Period is the period **named in the PCC** pursuant to Sub-Clause 34.1 and calculated from the Completion Date.
 - (q) Drawings means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract, include calculations and other information provided or approved by the Project Manager for the execution of the Contract.
 - (r) The Employer is the party who employs the Contractor to carry out the Works, **as specified in the PCC**.
 - (s) Equipment is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.
 - (t) "In writing" or "written" means hand-written, type-written, printed or electronically made, and resulting in a permanent record;
 - (u) The Initial Contract Price is the Contract Price listed in the Employer's Letter of Acceptance.
 - (v) 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 PCC**. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.
 - (w) Materials are all supplies, including consumables, used by the Contractor for incorporation in the Works.
 - (x) Plant is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.
 - (y) The Project Manager is the person **named in the PCC** (or any other competent person appointed by the Employer and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.
 - (z) PCC means Particular Conditions of Contract.
 - (aa) The Site is the area **defined as such in the PCC**.

- (bb) 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.
- (cc) Specification means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.
- (dd) The Start Date is **given in the PCC**. 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.
- (ee) 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.
- (ff) Temporary Works are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.
- (gg) A Variation is an instruction given by the Project Manager which varies the Works.
- (hh) The Works are what the Contract requires the Contractor to construct, install, and turn over to the Employer, **as defined in the PCC**.

- 2. Interpretation**
- 2.1 In interpreting these GCC, words indicating one gender include all genders. Words indicating the singular also include the plural and words indicating the plural also include the singular. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Project Manager shall provide instructions clarifying queries about these GCC.
 - 2.2 If sectional completion is **specified in the PCC**, references in the GCC to the Works, the Completion Date, and the Intended Completion Date apply to any Section of the Works (other than references to the Completion Date and Intended Completion Date for the whole of the Works).
 - 2.3 The documents forming the Contract shall be interpreted in the following order of priority:
 - (a) Agreement,
 - (b) Letter of Acceptance,
 - (c) Contractor's Bid,
 - (d) Particular Conditions of Contract,
 - (e) General Conditions of Contract, including Appendix,

- (f) Specifications,
- (g) Drawings,
- (h) Bill of Quantities,²² and
- (i) any other document **listed in the PCC** as forming part of the Contract.
- 3. Language and Law**
- 3.1 The language of the Contract and the law governing the Contract are **stated in the PCC**.
- 3.2 Throughout the execution of the Contract, the Contractor shall comply with the import of goods and services prohibitions in the Employer's country when
- (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country; or
- (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country.
- 4. Project Manager's Decisions**
- 4.1 Except where otherwise specifically stated, the Project Manager shall decide contractual matters between the Employer and the Contractor in the role representing the Employer.
- 5. Delegation**
- 5.1 Otherwise **specified in the PCC**, the Project Manager may delegate any of his duties and responsibilities to other people, except to the Adjudicator, after notifying the Contractor, and may revoke any delegation after notifying the Contractor.
- 6. Communications**
- 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.
- 7. Subcontracting**
- 7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Employer in writing. Subcontracting shall not alter the Contractor's obligations.
- 8. Other Contractors**
- 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Employer between the dates given in the Schedule of Other Contractors, as **referred to in the PCC**. The Contractor shall also provide facilities and services for them as described in the Schedule. The Employer may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.

²² In lump sum contracts, delete "Bill of Quantities" and replace with "Activity Schedule."

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- 9. Personnel and Equipment**
- 9.1 The Contractor shall employ the key personnel and use the equipment identified in its Bid, to carry out the Works or other personnel and equipment approved by the Project Manager. The Project Manager shall approve any proposed replacement of key personnel and equipment only if their relevant qualifications or characteristics are substantially equal to or better than those proposed in the Bid.
- 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.
- 9.3 If the Employer, Project Manager or Contractor determines, that any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Clause 9.2 above.
- 10. Employer's and Contractor's Risks**
- 10.1 The Employer carries the risks which this Contract states are Employer's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.
- 11. Employer's Risks**
- 11.1 From the Start Date until the Defects Liability Certificate has been issued, the following are Employer's risks:
- (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to
 - (i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or
 - (ii) negligence, breach of statutory duty, or interference with any legal right by the Employer or by any person employed by or contracted to him except the Contractor.
 - (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Employer or in the Employer'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 Liability Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Employer'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 Employer’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 Liability Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Employer’s risks are Contractor’s risks.

13. Insurance

13.1 The Contractor shall provide, in the joint names of the Employer and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles **stated in the PCC** 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 Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer 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 an 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.

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| 14. Site Data | 14.1 The Contractor shall be deemed to have examined any Site Data referred to in the PCC , supplemented by any information available to the Contractor. |
| 15. Contractor to Construct the Works | 15.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings. |
| 16. The Works to Be Completed by the Intended Completion Date | 16.1 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. |
| 17. Approval by the Project Manager | 17.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, for his approval.
17.2 The Contractor shall be responsible for design of Temporary Works.
17.3 The Project Manager’s approval shall not alter the Contractor’s responsibility for design of the Temporary Works.
17.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.
17.5 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. |
| 18. Safety | 18.1 The Contractor shall be responsible for the safety of all activities on the Site. |
| 19. Discoveries | 19.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Employer. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager’s instructions for dealing with them. |
| 20. Possession of the Site | 20.1 The Employer shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the PCC , the Employer shall be deemed to have delayed the start of the relevant activities, and this shall be a Compensation Event. |
| 21. Access to the Site | 21.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out. |

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- 22. Instructions, Inspections and Audits**
- 22.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.
- 22.2 The Contractor shall keep, and shall make all reasonable efforts to cause its Subcontractors and subconsultants to keep, accurate and systematic accounts and records in respect of the Works in such form and details as will clearly identify relevant time changes and costs.
- 22.3 The Contractor shall permit and shall cause its Subcontractors and subconsultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and/or the accounts and records relating to the performance of the Contract and the submission of the bid, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Contractor's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 25.1 which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 22.2 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).
- 23. Appointment of the Adjudicator**
- 23.1 The Adjudicator shall be appointed jointly by the Employer and the Contractor, at the time of the Employer's issuance of the Letter of Acceptance. If, in the Letter of Acceptance, the Employer does not agree on the appointment of the Adjudicator, the Employer will request the Appointing Authority **designated in the PCC**, to appoint the Adjudicator within 14 days of receipt of such request.
- 23.2 Should the Adjudicator resign or die, or should the Employer and the Contractor agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Employer and the Contractor. In case of disagreement between the Employer and the Contractor, within 30 days, the Adjudicator shall be designated by the Appointing Authority **designated in the PCC** at the request of either party, within 14 days of receipt of such request.
- 24. Procedure for Disputes**
- 24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to the Adjudicator within 14 days of the notification of the Project Manager's decision.
- 24.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.
- 24.3 The Adjudicator shall be paid by the hour at the **rate specified in the PCC**, together with reimbursable expenses of the types

specified in the PCC, and the cost shall be divided equally between the Employer and the Contractor, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision shall be final and binding.

24.4 The arbitration shall be conducted in accordance with the arbitration procedures published by the institution named and in the place **specified in the PCC**.

25. Corrupt and Fraudulent Practices

25.1 The Bank requires compliance with its policy in regard to corrupt and fraudulent practices as set forth in Appendix to the GCC.

25.2 The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.

B. Time Control

26. Program

26.1 Within the time **stated in the PCC**, after the date of the Letter of Acceptance, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works. In the case of a lump sum contract, the activities in the Program shall be consistent with those in the Activity Schedule.

26.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including 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 PCC**. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount **stated in the PCC** 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. In the case of a lump sum contract, the Contractor shall provide an updated Activity Schedule within 14 days of being instructed to by the Project Manager.

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 Employer wants the Contractor to finish before the Intended Completion Date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Employer accepts these proposals, the Intended Completion Date shall be adjusted accordingly and confirmed by both the Employer and the Contractor.
- 28.2 If the Contractor's priced proposals for an acceleration are accepted by the Employer, they are incorporated in the Contract Price and treated as a Variation.
- 29. Delays Ordered by the Project Manager**
- 29.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.
- 30. Management Meetings**
- 30.1 Either the Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- 30.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.
- 31. Early Warning**
- 31.1 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.

- 31.2 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.

C. Quality Control

- 32. Identifying Defects** 32.1 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.
- 33. Tests** 33.1 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.
- 34. Correction of Defects** 34.1 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 PCC**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 34.2 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.
- 35. Uncorrected Defects** 35.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager shall assess the cost of having the Defect corrected, and the Contractor shall pay this amount.

D. Cost Control

- 36. Contract Price²³** 36.1 The Bill of Quantities shall contain priced items for the Works to be performed by the Contractor. The Bill of Quantities is used to

²³ In lump sum contracts, replace GCC Sub-Clauses 36.1 as follows:

calculate the Contract Price. The Contractor will be paid for the quantity of the work accomplished at the rate in the Bill of Quantities for each item.

37. Changes in the Contract Price²⁴

37.1 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, provided the change exceeds 1 percent of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. 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 Employer.

37.2 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.

38. Variations

38.1 All Variations shall be included in updated Programs²⁵ produced by the Contractor.

38.2 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 (7) days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.

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.

38.6 If the work in the Variation corresponds to an item description in the Bill of Quantities and if, in the opinion of the Project Manager,

36.1 The Contractor shall provide updated Activity Schedules within 14 days of being instructed to by the Project Manager. The Activity Schedule shall contain the priced activities for the Works to be performed by the Contractor. The Activity Schedule is used to monitor and control the performance of activities on which basis the Contractor will be paid. If payment for materials on site shall be made separately, the Contractor shall show delivery of Materials to the Site separately on the Activity Schedule.

²⁴ In lump sum contracts, replace entire GCC Clause 37 with new GCC Sub-Clause 37.1, as follows:

37.1 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 makes such changes to the Activity Schedule.

²⁵ In lump sum contracts, add "and Activity Schedules" after "Programs."

the quantity of work above the limit stated in Sub-Clause 39.1 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 relevant items of work.²⁶

39. Cash Flow Forecasts

39.1 When the Program,²⁷ is updated, the Contractor shall provide the Project Manager with an updated cash flow forecast. The cash flow forecast shall include different currencies, as defined in the Contract, converted as necessary using the Contract exchange rates.

40. Payment Certificates

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

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

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

40.4 The value of work executed shall comprise the value of the quantities of work in the Bill of Quantities that have been completed.²⁸

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

40.6 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.

41. Payments

41.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor the amounts certified by the Project Manager within 28 days of the date of each certificate. If the Employer 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.

²⁶ In lump sum contracts, delete this paragraph.

²⁷ In lump sum contracts, add "or Activity Schedule" after "Program."

²⁸ In lump sum contracts, replace this paragraph with the following: "The value of work executed shall comprise the value of completed activities in the Activity Schedule."

- 41.2 If an amount certified is increased in a later certificate or as a result of an award by the Adjudicator or an Arbitrator, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
- 41.3 Unless otherwise stated, all payments and deductions shall be paid or charged in the proportions of currencies comprising the Contract Price.
- 41.4 Items of the Works for which no rate or price has been entered in shall not be paid for by the Employer and shall be deemed covered by other rates and prices in the Contract.

42. Compensation Events

- 42.1 The following shall be Compensation Events:
- (a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC Sub-Clause 20.1.
 - (b) The Employer 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.
 - (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.
 - (h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
 - (i) The advance payment is delayed.

- (j) The effects on the Contractor of any of the Employer's Risks.
- (k) The Project Manager unreasonably delays issuing a Certificate of Completion.

42.2 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.

42.3 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 shall assume that the Contractor shall react competently and promptly to the event.

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

43. Tax

43.1 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 GCC Clause 44.

44. Currencies

44.1 Where payments are made in currencies other than the currency of the Employer's country **specified in the PCC**, the exchange rates used for calculating the amounts to be paid shall be the exchange rates stated in the Contractor's Bid.

45. Price Adjustment

45.1 Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the PCC**. If so provided, the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type specified below applies to each Contract currency:

$$P_c = A_c + B_c \text{ Imc/Ioc}$$

where:

P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency “c.”

A_c and B_c are coefficients²⁹ **specified in the PCC**, representing the nonadjustable and adjustable portions, respectively, of the Contract Price payable in that specific currency “c;” 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; both in the specific currency “c.”

45.2 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.

46. Retention

46.1 The Employer shall retain from each payment due to the Contractor the proportion **stated in the PCC** until Completion of the whole of the Works.

46.2 Upon the issue of a Certificate of Completion of the Works by the Project Manager, in accordance with GCC 51.1, 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. The Contractor may substitute retention money with an “on demand” Bank guarantee.

47. Liquidated Damages

47.1 The Contractor shall pay liquidated damages to the Employer at the rate per day **stated in the PCC** 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 PCC**. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor’s liabilities.

47.2 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

²⁹ The sum of the two coefficients A_c and B_c should be 1 (one) in the formula for each currency. Normally, both coefficients shall be the same in the formulae for all currencies, since coefficient A_c , for the nonadjustable portion of the payments, is a very approximate figure (usually 0.15) to take account of fixed cost elements or other nonadjustable components. The sum of the adjustments for each currency are added to the Contract Price.

on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in GCC Sub-Clause 41.1.

48. Bonus

48.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day **stated in the PCC** 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.

49. Advance Payment

49.1 The Employer shall make advance payment to the Contractor of the amounts **stated in the PCC** by the date **stated in the PCC**, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Employer 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 shall not be charged on the advance payment.

49.2 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.

49.3 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.

50. Securities

50.1 The Performance Security shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount **specified in the PCC**, by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. 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, and until one year from the date of issue of the Completion Certificate in the case of a Performance Bond.

51. Dayworks

51.1 If applicable, the Dayworks rates in the Contractor's Bid shall be used only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.

51.2 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.

51.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

52. Cost of Repairs

52.1 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

53. Completion

53.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager shall do so upon deciding that the whole of the Works is completed.

54. Taking Over

54.1 The Employer shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.

55. Final Account

55.1 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.

56. Operating and Maintenance Manuals

56.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates **stated in the PCC**.

56.2 If the Contractor does not supply the Drawings and/or manuals by the dates **stated in the PCC** pursuant to GCC Sub-Clause 56.1, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount **stated in the PCC** from payments due to the Contractor.

57. Termination

- 57.1 The Employer or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.
- 57.2 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 Employer 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 Employer 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;
 - (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 PCC**; or
 - (h) if the Contractor, in the judgment of the Employer, has engaged in corrupt, fraudulent, collusive, coercive or obstructive practices, in competing for or in executing the Contract, then the Client may, after giving fourteen (14) days written notice to the Contractor, terminate the Contract and expel him from the Site.
- 57.3 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 GCC Sub-Clause 56.2 above, the Project Manager shall decide whether the breach is fundamental or not.
- 57.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.
- 57.5 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.

-
- 58. Payment upon Termination**
- 58.1 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 **specified in the PCC**. Additional Liquidated Damages shall not apply. If the total amount due to the Employer exceeds any payment due to the Contractor, the difference shall be a debt payable to the Employer.
- 58.2 If the Contract is terminated for the Employer’s convenience or because of a fundamental breach of Contract by the Employer, the Project Manager shall issue a certificate for the value of 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.
- 59. Property**
- 59.1 All Materials on the Site, Plant, Equipment, Temporary Works, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor’s default.
- 60. Release from Performance**
- 60.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Employer or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.
- 61. Suspension of Bank Loan or Credit**
- 61.1 In the event that the Bank suspends the Loan or Credit to the Employer, from which part of the payments to the Contractor are being made:
- (a) The Employer is obligated to notify the Contractor of such suspension within 7 days of having received the Bank’s suspension notice.
 - (b) If the Contractor has not received sums due it within the 28 days for payment provided for in Sub-Clause 40.1, the Contractor may immediately issue a 14-day termination notice.

Section IX. Particular Conditions of Contract

A. General	
GCC 1.1 (d)	The financing institution is: West African Organization of Health (WAHO)
GCC 1.1 (s)	The Employer is Client: WAHO Attention : Dr Xavier CRESPIE Phone: +226 20975775 Facsimile: (+226) 20 97 57 72 E-mail (where permitted): xcrespin@wahooas.org or offres@wahooas.org Web site: www.wahooas.org
GCC 1.1 (v)	The Intended Completion Date for the whole of the Works shall be: Four (04) months after contract signing
GCC 1.1 (y)	The Project Manager is WAHO and Ministry of Health of Liberia
GCC 1.1 (aa)	The Site is located at Bo-waterside and is defined in drawings in annex
GCC 1.1 (dd)	The Start Date shall be : 2 October 2017
GCC 1.1 (hh)	<p>The Works consist of:</p> <ul style="list-style-type: none"> ➤ Mobilization ➤ Site clearance ➤ Completion of all foundation up to floor slab (Reinforcement, concrete, masonry, etc) where applicable ➤ Complete structure blocks works for superstructure ➤ Elevation ➤ Complete all roofing works (with ceiling installation) ➤ Plastering ➤ Complete all rough electrical/plumbing work ➤ Carpentry works (door frames & window installation, etc) ➤ Complete all doors & window works ➤ Ironmongery & related miscellaneous specialties ➤ Complete tiling works ➤ Complete painting works ➤ General finishing ➤ Special construction (septic tank and manholes) ➤ Miscellaneous specialties works ➤ All other unfinished works in accordance to the Technical Specification <p>Note: See attached the drawings and scope of Works. The site visitations is critical to understanding the requirement/challenges</p>

GCC 2.2	Sectional Completions are: <ul style="list-style-type: none"> ➤ Erection of Foundation ➤ Elevation ➤ General Finishing ➤ Final acceptance by P.E
GCC 2.3(i)	The following documents also form part of the Contract: <ul style="list-style-type: none"> • Drawing • Accepted BOQ • Scope of Work • Payment Schedule • Letter of Award & Acceptance
GCC 3.1	The language of the contract is English The law that applies to the Contract is the law of ECOWAS .
GCC 5.1	The Project manager <i>may not</i> delegate any of his duties and responsibilities.
GCC 8.1	Schedule of other contractors: N/A
GCC 9.1	Key Personnel: site Engineer/Project Manager/BSC in Civil engineer with 3-5 years working experience in constructions, Project architect a minimum of Bachelor Degree in Architectural Design, with at least three years of work experience.
GCC 13.1	The minimum insurance amounts and deductible: The Responsive bidders shall ensure that all personnel and equipment assigned to the project site are covered under an Insurance scheme at no cost to the WAHO
GCC 14.1	Site Data are: Bo Waterside town, Galao District, Grand Cape Mount County -Liberia
GCC 20.1	The Site Possession Date(s) shall be: within 7 days upon contract award notification to the responsive bidder.
GCC 23.1 & GCC 23.2	Appointing Authority for the Adjudicator: WAHO
GCC 24.3	Hourly rate and types of reimbursable expenses to be paid to the Adjudicator: to be determined during negotiation
GCC 24.4	Institution whose arbitration procedures shall be used: ECOWAS COURT OF JUSTICE
B. Time Control	
GCC 26.1	The Contractor shall submit for approval a Program for the Works within 7 days from the date of the Letter of Acceptance.
GCC 26.3	The period between Program updates is <i>[insert number]</i> days. N/A

	The amount to be withheld for late submission of an updated Program is N/A
C. Quality Control	
GCC 34.1	The Defects Liability Period is: 12 months
D. Cost Control	
GCC 44.1	The currency of the Employer's country is: USD
GCC 45.1	The Contract <i>is not</i> subject to price adjustment in accordance with GCC Clause 45,
GCC 46.1	The proportion of payments retained is: 10 percent
GCC 47.1	The liquidated damages for the whole of the Works are 1/2000 per day. The maximum amount of liquidated damages for the whole of the Works is 5/100 of the final Contract Price.
GCC 48.1	The Bonus for the whole of the Works is <i>[insert percentage of final Contract Price]</i> per day. The maximum amount of Bonus for the whole of the Works is <i>[insert percentage]</i> of the final Contract Price. N/A
GCC 49.1	The Advance Payments shall be: 30% of the total Cost of the project and shall be paid to the Contractor no later than 2 weeks after signing of contract . This payment is subject to an advance payment guarantee from a reputable Bank. WAHO will do the all payment by transfer.
GCC 50.1	The Performance Security amount is 20 %of the contract value
E. Finishing the Contract	
GCC 56.1	The date by which operating and maintenance manuals are required is N/A The date by which "as built" drawings are required is N/A
GCC 56.2	The amount to be withheld for failing to produce "as built" drawings and/or operating and maintenance manuals by the date required in GCC 58.1 is N/A
GCC 57.2 (g)	The maximum number of days is: <i>[insert number; consistent with Clause 47.1 on liquidated damages]</i> . N/A
GCC 58.1	The percentage to apply to the value of the work not completed, representing the Employer's additional cost for completing the Works, is <i>[insert percentage]</i> .

Section X - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

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Letter of Acceptance

[on letterhead paper of the Employer]

..... *[date]*

To: *[name and address of the Contractor]*

Subject: *[Notification of Award Contract No]*

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

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the of the Performance Security Form included in Section X. Contract Forms, of the Bidding Document.

[Choose one of the following statements:]

We accept that _____ *[insert the name of Adjudicator proposed by the Bidder]* be appointed as the Adjudicator.

[or]

We do not accept that _____ *[insert the name of the Adjudicator proposed by the Bidder]* be appointed as the Adjudicator, and by sending a copy of this Letter of Acceptance to _____ *[insert name of the Appointing Authority]*, the Appointing Authority, we are hereby requesting such Authority to appoint the Adjudicator in accordance with ITB 43.1 and GCC 23.1.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

Contract Agreement

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

WHEREAS the Employer desires that the Works known as [name of the Contract]. should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (i) the Letter of Acceptance
 - (ii) the Letter of Bid
 - (iii) the addenda Nos _____ (if any)
 - (iv) the Particular Conditions
 - (v) the General Conditions of Contract, including appendix;
 - (vi) the Specification
 - (vii) the Drawings
 - (viii) Bill of Quantities;³⁰ and
 - (ix) any other document **listed in the PCC** as forming part of the Contract,
3. In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of [name of the borrowing country]. on the day, month and year specified above.

Signed by: _____
for and on behalf of the Employer

Signed by: _____
for and on behalf the Contractor

in the
presence of: _____
Witness, Name, Signature, Address, Date

in the
presence of: _____
Witness, Name, Signature, Address, Date

Performance Security (Bank Guarantee)

³⁰ In lump sum contracts, delete “Bill of Quantities” and replace with “Activity Schedule.”

Option 1: (Bank Guarantee)

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of Employer]*

Date: *_ [Insert date of issue]*

PERFORMANCE GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *_ [insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *_ [insert name of contract and brief description of Works]* (hereinafter called "the Contract").

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

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (_____) *[insert amount in words]*,¹ such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the Day of, 2...², and any demand for payment under it must be received by us at this office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

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

¹ *The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency(cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.*
² *Insert the date twenty-eight days after the expected completion date as described in GC Clause 53.1. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.”*

Performance Security (Performance Bond)

Option 2: Performance Bond

By this Bond *[insert name of Principal]* as Principal (hereinafter called “the Contractor”) and *[insert name of Surety]* as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[insert name of Employer]* as Obligee (hereinafter called “the Employer”) in the amount of *[insert amount in words and figures]*, for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Contractor has entered into a written Agreement with the Employer dated the __ day of _____, 20 _____, for *[name of contract and brief description of Works]* in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Employer to be, in default under the Contract, the Employer having performed the Employer’s obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

- (1) complete the Contract in accordance with its terms and conditions; or
- (2) obtain a Bid or bids from qualified Bidders for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by the Employer and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or
- (3) pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators, successors, and assigns of the Employer.

In testimony whereof, the Contractor has hereunto set his hand and affixed his seal, and the Surety has caused these presents to be sealed with his corporate seal duly attested by the signature of his legal representative, this _____ day of _____ 20 ____.

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____

SIGNED ON _____ on behalf of _____

By _____ in the capacity of _____

In the presence of _____

Advance Payment Security

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Insert name and Address of Employer]*

Date: *[Insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called “the Applicant”) has entered into Contract No. *[insert reference number of the contract]* dated *[insert date]* with the Beneficiary, for the execution of *[insert name of contract and brief description of Works]* (hereinafter called "the Contract").

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

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures]* (_____) *[insert amount in words]*¹ upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
- (b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary’s bank stating that the advance payment referred to above has been credited to the Applicant on its account number *[insert number]* at *[insert name and address of Applicant’s bank]*..

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional

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

sums, has been certified for payment, or on the *[insert day]* day of *[insert month]*, 2 *[insert year]*,² whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

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

² *Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."*



WEST AFRICAN HEALTH ORGANISATION
ORGANISATION OUEST AFRICAINE DE LA SANTE
ORGANIZAÇÃO OESTE AFRICANA DA SAÚDE

Monrovia, 4 august 2017

INVITATION FOR BIDS
PROCUREMENT OF WORKS

Ref N°: 021/2017/00AS

1. The West African Health Organization (WAHO) has allocated funds under its Budget for 2017 to support the health system in the ECOWAS countries.
2. The WAHO intends to apply a portion of the funds to eligible payments under the contract for which these Bidding Documents are issued.
3. The West African Health Organization in collaboration with the Ministry of Health of Liberia now invites sealed bids from interested eligible and qualified construction firms for the execution of this assignment as described in the assignment below:

Project	Location/ County
<ul style="list-style-type: none">• Construction of the Primary Health Center• Staff quarter (2 bed room duplex)• 1 Bole hale	Bo Waterside town, Galao District, Grand Cape Mount County -Liberia

4. Bidding will be conducted through the National Competitive Bidding (NCB) a procedure specified in the ECOWAS TENDER CODE Act of 2014, and is open to all Eligible Bidders as defined in the Bidding Documents.
5. Bidders shall be required to have the following minimum qualifications and that of detailed qualification requirements that will be specified in the Bidding Documents:
 - i. **Experience as prime contractor in construction of at least two (2) contracts within the last three (3) years of this nature, complexity and equivalent to the proposed works. Include the name and location of the project, its features, cost and contact detailed of the employer/ client with email and phone contacts (Phone numbers, email addresses, and physical addresses, etc.).**
 - ii. **The contractor shall have a minimum average turnover in construction works during the last three (3) years of USD\$150,000.00 (Multiple of three (3) years of \$450,000.00)**
 - iii. **The Bidder shall demonstrate that it has available, liquid assets (USD\$75,000) unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements.**

Additional details will be provided in the Bidding Documents.

6. A complete and detailed set of Bidding Documents in English and Hard Copy can be purchased by interested bidders at the address provided below and upon payment of a non-refundable fee of (USD\$100.00) United States Dollar. The method of payment will be cash and pay to the cashier at the address provided below on the Fourth Floor (OFM) between 9:30 AM to 3:15 PM daily, beginning August 7th, 2017.

7. Interested eligible bidders may obtain further information from the Ministry of Health / Liberia and inspect the Bidding Documents at the address given below from 09:30 AM to 5:00 PM from Monday to Friday beginning August 7, 2017 or by mail to: offres@wahooas.org; web site: www.wahooas.org
8. Preliminary Qualification requirements include: **Valid Tax Clearance, Current Business Registration, Past Performance Records including names & contact details of representatives, evidence of PPCC vendor database registration, Public Works certificate /ALCC and a bid securing declaration.** Additional details will be provided in the Bidding Documents.
9. The **Pre-bid meeting will be held on Monday, August 28, 2017, at 11:00 AM**, MOH Central Office, Tubman Boulevard Congo Town located on the second floor, Conference Room# 227 after a mandatory site visit beginning **August 14 to 18, 2017**. The cost of visiting the site and pre-bid meeting shall be at the Bidder's own expense.
10. All Bids must be placed in a sealed envelope and dropped into the tender box situated on the ground floor of the Ministry of Health Central Office located in Congo Town on or before **Tuesday, September 14, 2017** at 2:00pm.
11. Bids will be opened on the same date and time as indicated above in the presence of bidders' representatives who choose to attend as indicated above. The opening will take place on the second floor, Room # 227, Congo Town, Ministry of Health. **All late bids shall be rejected.**

All bidders shall submit one original and three (3) copies in sealed envelopes clearly marked with the name of the firm and return address as indicated below:

The addresses referred to above are:

- a. Purchasing of Bidding Document
Cashier Room/Office of the Financial Management Fourth Floor, Central Office MOH, Tubman Boulevard Congo Town
- b. Collection of bidding documents:
The Procurement Unit, Ground Floor (Room #-142) – Central Office MOH, Tubman Boulevard Congo Town
- c. For submission of the bids:
Tender Box, Ground Floor, opposite the elevator – Central Office MOH, Tubman Boulevard Congo Town
- d. For Opening of the Bids:
Second floor, Conference Room 227, Central Office MOH, Tubman Boulevard Congo Town

Attention: WEST AFIRCAN HEALTH ORGANIZATION

Ref: 021/2017/00AS

Construction of the Primary Health Center at Bo Waterside

Dr Xavier CRESPIN
Director General