



**GUYANA POWER AND LIGHT INC**  
**PROCUREMENT OF WORKS**

**IFB #GPL-PD-072-2022**

**Rehabilitation of Main Entrance Bridge at  
Canefield Power Station**

**December 2022**

**Closing Date: Tuesday January 10, 2023 @ 14:00 hrs.**  
**Bid Opening: Tuesday January 10, 2023 @ 14:30 hrs.**

# **Invitation for Bids (IFB)**

## **Co-operative Republic of Guyana**

**IFB# GPL-PD-072-2022**

The Guyana Power and Light Incorporated (GPL) invite sealed bids from eligible bidders for the **Rehabilitation of Main Entrance Bridge at Canefield Power Station.**

A bid Security of 2 % of the tendered sum *must* be submitted along with the bid.

Bids shall be valid for 160 days after the date of bid opening.

**Bids must only be submitted via email to our electronic tender box: [gpltenderbox@gplinc.com](mailto:gpltenderbox@gplinc.com)**

- Bids must be submitted with a valid **National Insurance (NIS) & Guyana Revenue Authority (GRA) Compliance Certificate- (Only Applicable to Local Suppliers)**

**The complete bid document can be viewed on the GPL's website : [www.gplinc.com](http://www.gplinc.com)**

Deadline for submission of bids is 14:00 hrs. (2:00 p.m.) on, **January 10,2023.**

Bid opening is scheduled for 14:30 hrs (2:30 pm) on **January 10,2023** at GPL's Board Room 91 Duke Street, Kingston, Georgetown, Guyana via Zoom Call in the presence of Bidders/ Representatives who may choose to participate.

**IMPORTANT:** Bidders downloading the bid document **must** forward a registration

E-mail to [kgeorge@gplinc.com](mailto:kgeorge@gplinc.com) [psooklall@gplinc.com](mailto:psooklall@gplinc.com) and [proc\\_mng\\_sect@gplinc.com](mailto:proc_mng_sect@gplinc.com) stating the following: Name of Bidder, Address, Contact No. and Email address.

All queries must be submitted only to [tenderqueries@gplinc.com](mailto:tenderqueries@gplinc.com) referencing name and bid document number.

The above information will be used to inform bidders of any amendments to the bidding document and also to forward all responses to queries.

GPL reserves the right to reject any or all bids.

## CONTENTS

Instructions to bidders (ITB)	.....4
Bid data sheet (BDS)	.....14
General conditions of contract (GCC)	.....16
Special conditions of contract (SCC)	.....30
Drawings	.....32
Bill of quantities and basic price lists	.....33
Technical specifications/ Safety, Health & Environmental Work Plan	.....42
Qualification information	.....92
Sample forms	.....94
1. Form of Bid	
2. Form of Contract, Work Order and Settlement	
3. Form of Bid Security	
4. Form of Performance Security	
5. Form of Bank Guarantee for Advance Payment	
6. Letter of Acceptance	
7. Power of attorney for signing the bid	
Evaluation Criteria	.....104

# INSTRUCTIONS TO BIDDERS (ITB)

## A. Introduction

### 1. Scope of works and Source of Funds

The Procuring entity is (identified in the Bid Data Sheet and hereinafter referred to as “the Employer”) for the execution of the Works described in the *Bid Data Sheet* and will use therefore funds indicated in the *Bid Data Sheet*.

### 2. Eligible Bidders

- 2.1 This Invitation for Bids is open to all contractors from any country, exclusive of those prohibited by the legislation of Guyana or by another international agreement the participant of which is Guyana.
- 2.2 A bidder may be an individual or legal entity, or a combination of any abovementioned forms with a formal intent to enter into an agreement or to operate under an existing agreement in the form of a Partnership.
- 2.3 Government and municipal enterprises may only participate if they are legally and financially autonomous, and if they are legally eligible to carry on business.
- 2.4 Bidders should not have any conflict of interests, should not be associated (nor have been associated in the past), directly or indirectly, with any firm or any of its affiliates that has been engaged by the Employer to provide consulting services at preparation stage of the bidding documents, technical specifications, project and other documents to be used for procurement of works in accordance with this Invitation for Bids or being proposed as Engineer under this Contract.
- 2.5 A Bidder or any affiliate that has been engaged by the Employer to perform consulting services at preparation stage of the bidding and other documents shall not be entitled to participate in bidding, and if conflict of interests is found, bidder' bid shall be rejected.
- 2.6 Bidders should provide information on legal status, place of registration and principal type of business; a license to execute the works specifying identification number and validity period, and a written power of attorney of the signatory of the bid to assume obligations on behalf of the Bidder;
- 2.7 The bidder should not have more than one improperly performed procurement contract within the past two years preceding the commencement of the present procurement proceeding.
- 2.8 The bidder should not be insolvent, bankrupt, their property should not be controlled by judicial authority, their cases should not be commanded by court or by the person appointed

by court, their commercial activities should not be suspended, and they should not be a subject of such judicial proceedings;

- 2.9 The bidder should fulfill the tax and social insurance fund liabilities in Guyana;
- 2.10 Bidders, and their management personnel within three years preceding the commencement of procurement proceedings should not be associated with giving false information or a misrepresentation as to their qualification information for the purposes of entering into a procurement contract;
- 2.11 Bidders should provide information on the total annual volume of construction works executed for each of the last two years;
- 2.12 Bidders should provide information on major items of construction equipment proposed to carry out the Contract;
- 2.13 Bidders should provide information on the qualifications and experience of key management and technical personnel proposed for the Contract;

### **3. Qualifications of Bidders**

- 3.1 Information on bidders' qualifications is to be included in Annex No. 9 "Qualification Information" to be incorporated in the bid.
- 3.2 A bid submitted by a partnership or syndicate consisting of two or more firm-partners should comply with the following requirements:
  - (a) The bid shall include all the above-listed information for each partnership or syndicate partner;
  - (b) the bid shall be made up and signed so as to be legally binding on all partners;
  - (c) one of the partners shall be nominated as being in charge, and his authorities should be confirmed by authorization to be signed by the authorized signatories of all partners;
  - (d) the bid should incorporate a formal agreement of partnership (or a letter of intent to establish one) which specifies, inter alia, that all partners shall be liable jointly and severally for execution of the Contract, and that the partner in charge shall be entitled to incur liabilities and receive instructions for and on behalf of any and all partners, and all operations on the execution of the Contract, including payment shall be done exclusively by the partner in charge.
- 3.3 To qualify for award of the Contract, bidders should meet the following minimum qualifying criteria, and provide the following information and documents with their bids:
  - (a) Volume of construction work executed for the last 2 years should be not less than G\$ 55,000,000;
  - (b) To own or to have the possibility to lease, hire, etc the essential construction equipment listed in the Qualification Information form;

- (c) Managers and line employees with experience in executing works of a similar nature and size for not less than 5 (five) years;

**4. One Bid per Bidder**

Each Bidder shall submit only one Bid, either individually or as a partner in a partnership or syndicate. All bids involving the Bidder who submits or participates in more than one Bid (exclusive of subcontractors, or permitted or required alternatives) shall be rejected from participation in bidding.

**5. Cost of Bidding**

The Bidder shall bear all costs associated with the preparation and submission of the bid. The Employer shall not be responsible or liable for those costs.

**6. Site Visit**

The Bidder, at the Bidder's own responsibility and risk, may visit and examine the Site of expected Works and its surroundings. All information obtained by the Contractor individually while visiting the site, may be used by him to prepare the bid and enter into the Contract. The costs of visiting the Site shall be at the bidder's own expense. The bid submission means that the Bidder has examined the Site of future Works and has accepted all the existing conditions.

**B. List of documents included in the bidding documents**

**7. Content of Bidding Documents**

7.1. The set of bidding documents includes the following:

- (a) Instructions to Bidders (ITB);
- (b) Bid Data Sheet (BDS);
- (c) General Conditions of Contract (GCC);
- (d) Special Conditions of Contract (SCC);
- (e) Form of Bid;
- (f) Qualification Information;
- (g) Drawings;
- (h) Bill of Quantities;
- (i) Technical Specifications;
- (j) Form of Contract;
- (k) Form of Bid Security;
- (l) Form of Performance Security;
- (m) Form of Bank Guarantee for Advance Payment;
- (n) Form of Power of Attorney for signing the bid.

7.2 The Bidder shall examine all instructions, forms, conditions and technical specifications incorporated in the bidding documents. Failure to provide all information required in the bidding documents, or submission of a non-responsive bid may result in rejection of his bid.

**8. Clarification of Bidding Documents**

8.1 The Bidder requiring any clarification of the bidding documents may address the Employer at the address *indicated in the Bid Data Sheet* in writing by fax or electronic messaging. The

Purchaser will respond in writing to any request for clarification of the bidding documents to be received not later than 7 (seven) days prior to the deadline for submission of bids. Copies of response, including an explanation of matter's substance, but without identifying its source, will be forwarded by the Employer in writing to bidders who received the bidding documents within 3 (three) working days.

- 8.2 The Pre-bid conference will be conducted according to decision of the Purchaser and, if so, at the time, date and address indicated in the *Bid Data Sheet*. Before the conference Bidders may address the Employer with questions for the conference, and at the conference may ask any question and receive answer to the questions submitted regarding the bidding documents. All information obtained at pre-bid conference, requests of potential bidders related to clarification of the bidding documents, and responses to them shall be recorded by the Employer, and by the results of conference, a record is made and promptly communicated to all Bidders who received the bidding documents in order to enable bidders to take them into account when preparing their bids.

## **9. Amendment of Bidding Documents**

- 9.1 In special circumstances, at any time before expiry of the deadline for submission of bids, the Employer, for any reason, whether at its own initiative or in response to request for clarification forwarded by the Bidder, may modify the bidding documents by issuing addenda to it. Any addenda issued shall be a part of the bidding documents, and should be sent to all bidders who received the bidding documents from the Employer, which may be done by using fax or electronic message. Bidders should confirm the receipt of each addendum in writing or by fax or electronic message, and these addenda shall be binding.
- 9.2 In order to give Bidders enough time to take into account the amendments introduced while preparing their bids, the Purchaser, at his discretion, may extend the deadline for submission of bids.
- 9.3 The Employer at any time before expiry of the deadline for submission of bids may vary the qualities by a 20 percent increase or decrease

## **B. Preparation of Bid**

### **10. Language of Bid**

The Bid prepared by the Bidder and all correspondence and documents related to this Bid that is exchanged by the Bidder and the Purchaser, should be written in the language *specified in the Bid Data Sheet*.

### **11. Documents Included in the Bid**

The Bid prepared by the Bidder should include the following documents:

- (a) filled in Form of Bid;
- (b) qualification information and documents confirming that Bidder has a sufficient qualification required for the execution of the Contract in case if his bid accepted;
- (c) priced Bill of Quantities and priced list of consumable materials;
- (d) Bid Security provided in accordance with ITB Clause 15;
- (e) General Conditions of Contract and Special Conditions of Contract (signed by Bidder page-by-page);

- (f) Technical Specifications used for the execution of the Works;
- (g) Alternative offers (at the Purchaser's request);
- (h) other documents to be filled in by bidders in accordance with the requirements indicated in *the Bid Data Sheet*;
- (i) Power of attorney for signing the Bid.

## **12. Bid Price**

- 12.1 The Contract is applicable to the whole amount of Works listed in priced Bill of Quantities and list of priced consumable material price presented by the Bidder in its bid.
- 12.2 The Bidder shall indicate the rates and prices for all kinds of works included in the Bill of Quantities, drawings and specifications. The kinds of works for which no rate and price is entered by the Bidder will not be paid for when executed, and it is considered that they are included in the rates and prices for other kinds of works.
- 12.3 When determining the bid price, the Bidder shall take into account the total value of labor, materials, plant, instruments, water, heat, electric power, transportation, machinery and equipment, and other services which are required during and for completion of the construction works.
- 12.4 All duties, taxes, and other levies payable by the Contractor under the current legislation of Guyana should be included in the bid price.

## **13. Bid Currency**

The Bidder shall submit all documents on mutual settlements, and shall indicate the bid price in Guyana Dollars.

## **14. Period of Validity of Bids**

- 14.1 Bids shall be valid during the number of days indicated in the Bid Data Sheet after the date of bid opening. The bid with shorter validity period should be rejected by the Employer as non-responsive to the bidding documents.
- 14.2 In exceptional circumstances, the Employer may request bidders to extend the period of validity of their bids for a certain period. Such requests and responses to them shall be made in writing, and may be sent by fax, telex or electronic mail. A Bidder may refuse the request on extension of the period of validity of his bid, without forfeiting the return of security. A Bidder agreeing to the request will not be required nor permitted to modify the bid, but will be required to extend the validity of bid security for a period of not less than 2 (two) weeks after the expiry of the extended period of bid validity.

## **15. Bid Security**

- 15.1 The Bidder should provide, as part of his bid, the bid security (not more than two percent of bid price) in the amount and form specified in *the Bid Data Sheet* with a validity period of not less than 2 weeks after the expiry of a period of bid validity.
- 15.2 The Bid security should be expressed in the bid currency, or in another freely convertible currency, and shall be a bank guarantee issued by the bank located in Guyana or by local correspondent bank in case when the security is issued by the foreign bank, or in any other



form permitted by the Bid Data Sheet, such as debenture bond, cash, shares accepted for public transactions, certificates of deposit to bearer or promissory notes.

- 15.3 All bids not having a security shall be rejected by the Employer as non-responsive to the bidding documents.
- 15.4 The bid security shall be returned to unsuccessful Bidders as soon as possible but not later than fifteen (15) days upon the expiry of bid validity period, or after furnishing the performance security by successful bidder.
- 15.5 The successful Bidder shall receive the bid security after the signing of Contract pursuant to ITB Clause 34, and after furnishing the performance security (in the case when required).
- 15.6 The Bid security may be forfeited:
  - (a) if the Bidder:
    - (1) withdraws his bid after the opening during the period of bid validity specified in his bid;
    - (2) does not agree with the correction of arithmetical errors in his bid.
  - (b) in case of the Contract award to Bidder, if this Bidder fails:
    - (1) to sign the Contract on the terms and conditions specified in his bid, in accordance with ITB Clause 31, or
    - (2) to furnish the Performance Security, in accordance with ITB Clause 32.

**16. Alternative offers at the request of the Purchaser**

- 16.1 The Purchaser may request in the Bidding Documents for bid submission taking into account alternative conditions. In this case all requirements of the bidding documents are applied to alternative offers to that extent as well as to basic offers. The alternative offers shall not be considered, unless allowed or required in the bidding documents.
- 16.2 If so allowed by *the Bid Data Sheet*, the bidders wishing to submit the bids, taking into account the alternative conditions must also submit the bids that comply with the requirements of the bidding documents, including the basic technical features as indicated in the drawings and specifications. In addition to submitting the basic Bid, the Bidders shall provide all information necessary for a complete evaluation of the alternative conditions by the Purchaser, including design calculations, technical specifications, breakdown of prices, proposed construction methods and other relevant details.
- 16.3 Only the alternatives of Bidder who submitted the lowest evaluated Bid in accordance with the basic requirements of the bidding documents shall be considered by the Purchaser.

16.4 The Bidder, in his Bid, shall indicate the basic price of works to be executed, in accordance with the requirements of the bidding documents, and individually the price of works to be executed using the alternative offer.

**17. Format and Signing of Bid**

17.1 Each bidder shall prepare one (1) Electronic Copies (readable and searchable) to [gpltenderbox@gplinc.com](mailto:gpltenderbox@gplinc.com)

17.2 The original and all copies of the bid shall be typed or written in indelible ink, and shall be signed by the Bidder or by a person (persons) having all authorities to sign the bid and obligations under the Contract. Permission to sign the bid should be specified in the power of attorney to be provided with the bid. All pages of the bid where new information, change or erasure inserted should be initialed (signed) by the person or persons signing the bid.

17.3 The bid shall contain no interlineations, erasures or overwriting, exclusive of the cases when the Bidder needs to correct errors which should be initialed by the person or persons signing the bid.

**D. Submission of Bids.**

**18. Deadline for Submission of Bids**

18.1 Bids must be received by the Employer at the address and on the dates specified in *the Bid Data Sheet*.

18.2 The Employer may, at his discretion, postpone the deadline for submission of bids for later period by modifying the bidding documents, and in this case the validity period of all rights and obligations of the Employer and the Bidders shall be extended subject to the changed deadline date.

**19. Late Bids**

All bids received by the Purchaser after the deadline for submission of bids specified by the Employer shall be rejected and returned to Bidder unopened.

**20. Modification and Withdrawal of Bids**

20.1 The Bidder may modify or withdraw his bid after the bid submission, provided that the Employer will receive a written notice of modification or withdrawal of the bid before the expiry of determined deadline for submission of bids, duly signed by an authorized representative, and accompanied by a copy of the authorization.

20.2 The Bidder's modification or withdrawal notice should be prepared, sealed, marked, and sent in accordance with the provisions of ITB Clause 18. In this case the outer and inner envelopes shall be additionally marked "**MODIFICATION**" or "**WITHDRAWAL**", as appropriate. A withdrawal notice may also be sent as a telegram by telex or fax with a subsequent written confirmation though post-office not later than the deadline for submission of bids.

20.3 No changes should be added in the bids after the expiry of the period determined for bid

submission.

20.4 No bid may be withdrawn or modified in the interval between the deadline for submission of bids and the expiration of the period of bid validity indicated by the Bidder on the Bid Form. Withdrawal of the bid during this interval may result in the Bidder's forfeiture of his bid security, in accordance with ITB Clause 15.6.

## **E. Opening and Evaluation of Bids**

### **21. Evaluation of Bids**

21.1 During the evaluation of bids, the Procuring Entity may, at his discretion, request the Bidder to provide clarification of his bid. The request for clarification and the response thereto shall be made in writing, and in that case no change in price or substance of the bid shall be sought, offered, or permitted.

21.2 The Procuring Entity shall determine the responsiveness of each bid to requirements of the bidding documents. For the purposes of this Clause a substantially responsive bid is one which satisfies all the indicated provisions without a material deviation or reservation.

21.3 The Procuring Entity may waive any minor nonconformity or small mistake or inaccuracy in the bid, which is not a material deviation from the requirements of the bidding documents, and such non-conformity or inaccuracy will not affect the bid evaluation. To the extent feasible and appropriate, for the purposes of comparing bids, acceptable deviations shall be quantified in monetary terms and reflected in adjustments to the bid price (for the purposes only of comparison of bids).

21.4 Arithmetical errors shall be rectified in the following manner: 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. If there is a discrepancy between words and figures, the sum in words shall be preferable. If the Bidder disagrees with such correction of errors, his/her bid shall be rejected.

21.5 The Procuring Entity shall evaluate and compare only the bids that are determined to be responsive to the bidding documents.

21.6 The methodology to adjust the price to reflect the price of the missing or non-conforming item or component is the average price of the item of all responsive bids.

### **22. Confidentiality and Contacting the Procuring Entity**

22.1 No Bidder shall contact the Procuring Entity on any matter related to his/her bid from the date of bid opening until the date of contract award, except for requests related to clarification of the bid. Information concerning the evaluation of bids is confidential.

22.2 Any effort by the Bidder to influence the Procuring Entity's decision on bid evaluation and comparison, or contract award may result in the rejection of that Bidder's bid.

## **F. Award of Contract**

### **23. Award Criteria**

Exclusive of the cases provided for in Clause 24, the Employer will award the Contract to the Bidder whose bid is determined to be substantially responsive to the bidding documents, and who scores the highest Evaluated points, provided that this Bidder has been determined to be (a) eligible in accordance with Clause 2 and (b) met with qualification requirements in accordance with Clause 3.

### **24. Employer's Right to accept any Bid and Reject any or All Bids**

24.1 The Employer reserves the right to accept or reject any or all bids, and to annul the bidding process at any time prior to the award of Contract, without thereby incurring any liabilities to bidders.

24.2 In case when the bidding process annulled, the Employer should, during 3 working days, send to all Bidders a notification indicating the reasons which served as a ground for the annulment, without giving evidences of that ground.

### **25. Notification of Award**

25.1 Within 3 days after the conducted selection of the successful Bidder, and before the expiry of the period of bid validity, the Employer will notify the successful Bidder by telex, fax or email confirming by registered letter that his bid has been determined to be successful. This letter (hereinafter and in *«the General Conditions of Contract»* called «the Letter of Acceptance») should refer to the sum that the Employer shall pay to the Contractor for execution of the Works in accordance with the Contract (hereinafter and in the Contract called «the Contract Price»).

25.2 The notification of award shall be equivalent to entering into a Contract, subject to the Bidder providing the performance security pursuant to Clause 28 and will sign the Contract pursuant to Clause 27.

### **26. Signing of Contract**

26.1 At the same time with notification of award, the Employer will send to the successful Bidder, the Form of Contract contained in the Bidding documents.

26.2 During seven (14) days of the receipt of a written Notice of acceptance and the Form of Contract, the successful Bidder should sign and date the Contract, and return it to the Employer.

### **27. Performance Security**

27.1 Together with the signed Contract, the successful Bidder will send to the Employer, the Performance Security in the amount indicated in *the Bid Data Sheet*.

27.2 If the successful Bidder fails to provide the performance security, or during 14 (Fourteen) days does not return the Contract signed, then the Employer shall reject the bid and confiscate the bid security, in that case the Employer shall award the Contract to the next evaluated Bidder, whose bid is substantially responsive and is determined by the Employer to be qualified to

perform the Contract satisfactorily, subject to the Employer's right to reject all bids in accordance with Clause 28, and the applicable Law and Regulations.

## **28. Corrupt and Fraudulent Practices**

28.1 The Employer requires that the Bidders observe the highest standards of ethics during the procurement and execution of such Contracts. In pursuance of this policy, the Employer:

(a) for the purposes of provisions of this Clause, uses the following notions:

- I. "corrupt practice" - means the offering, giving, the agreement requesting for remuneration in any form, or services rendering in order to influence the action of a public official in the procurement process or in contract execution; and
- II. "fraudulent practice" - means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract to the detriment of the Employer, including collusive practices among Bidders (prior to or after bid submission), to establish bid prices at artificial non-competitive level, and deprive the Employer of the benefits of free and open competition;
- III. "collusive practice" means a scheme or arrangement between two or more bidders, with or without the knowledge of the Employer, designed to establish bid prices at artificial, noncompetitive levels; and
- IV. "coercive practice" means harming or threatening to harm (directly or indirectly), persons or their property to influence their participation in the procurement process or the execution of a contract;

(b) will reject the bid if it determines that the Bidder recommended for award of the Contract has engaged in corrupt, fraudulent, collusive or coercive practices during the bidding process or execution of a contract;

(c) will declare the Contractor for indefinite, or for a specified period of time to be ineligible to participate in the state-financed biddings in accordance with a Regulation on the establishment of Database of unreliable (unfair) suppliers and its application procedures.

## **33. Penalties**

A penalty for slow or non-performance will be imposed as per the rate prescribed for Liquidated Damages. Slow or non-performance will be assessed against the project's approved work programme and will commence from the first quarter of the project life.

(Note: This means that after 10 % of the contract sum is deducted for penalties, the Procuring Entity has the right to cancel the contract and demand all forms of damages).

## Bid Data Sheet (BDS)

Below given the specific data on procurement of the works shall complement, supplement or amend the provisions of the Instructions to Bidders (ITB). Whenever there is a conflict between the provisions herein and the Instructions to Bidders, the former shall prevail.

Item №	A. General
ITB 1.1	<p>The Employer is: <b>Guyana Power &amp; Light Incorporated</b></p> <p>Identification Number <b>GPL-PD-072-2022</b></p> <p>The works are: <b>Rehabilitation of Main Entrance Bridge at Canefield Power Station.</b></p> <p>The summary of scope of works is the renovation of walls, floors, ceiling and windows, as well as installation of low voltage building electrics.</p> <p>The source of financing is: <b>The Guyana Power &amp; Light Inc.</b></p>
ITB 1.2	<p>The Name of the Project is:</p> <p style="text-align: center;"><b>Rehabilitation of Main Entrance Bridge at Canefield Power Station</b></p> <p>The Intended Completion Date is <b>four (4) weeks after Award of Contract.</b></p> <p>The Defects liability period is <b>six (6) months after completion.</b></p>
ITB 3.3	<p>To qualify for award of the Contract, bidders should meet the following minimum qualifying criteria, and provide the following information and documents with their bids:</p> <ul style="list-style-type: none"> <li>(a) Verified evidence of completion of building works over G\$50 million and civil works contract over G\$50 million each contract executed over the last five (5) years;</li> <li>(b) To own or to have the possibility to lease, hire, etc the essential construction equipment listed in the Qualification Information Form;</li> <li>(c) Managers and line employees with experience in executing works of a similar nature and size for not less than 3 (three) years.</li> </ul>
	<b>B. Bidding Documents</b>
ITB 7.1	<p>For <b><u>clarification purposes</u></b> only, the Employer's address is:</p> <p>Attention : Supply Chain Manager- Procurement            Address : 40 Main Street,                              Cummingsburg,                              Georgetown,                              Guyana            mail : tenderqueries@gplinc.com</p>
ITB 8.2	<p>A Pre bid meeting will be held at the Project Site on Tuesday November 29, 2022 at 11:00 hrs.</p>

<b>ITB 9.3</b>	The Employer at any time before expiry of the deadline for submission of bids may vary the quantities by 10 percent, increase or decrease.
	<b>C – Preparation of Bid</b>
<b>ITB 10.1</b>	The language of Bid is <b>English</b>
<b>ITB 12.2</b>	The Bidder shall indicate the rates and prices for all kinds of works included in the Bill of Quantities, drawings and specifications. The kinds of works for which no rate and price is entered by the Bidder will not be paid for when executed, and it is considered that they are included in the rates and prices for other kinds of works.
<b>ITB 13</b>	The Bid Currency shall be in <b>Guyana Dollars</b>
<b>ITB 14.1</b>	The period of Bid validity is <b>90 days</b> .
<b>ITB 15.1</b>	The amount and form of Bid Security is – <b>2% of the Bid Price in Guyana Dollars</b>
<b>ITB 16.2</b>	Alternative bids will not be accepted for evaluation.
<b>ITB 17.1</b>	Number of Copies of the Bid to be completed and submitted are; <b>one (1) electronic copy</b>
	<b>D – Submission of Bids</b>
<b>ITB 18.3</b>	Certificates of compliances from <b>NIS, GRA and Vat Registration</b>
<b>ITB 19.1</b>	<b>Deadline for Submission of Bids:</b> Sealed Bids must be sent electronically addressed to : <b>The Secretary to the Tender Board , Guyana Power &amp; Light, 91 Duke Street, Kingston, Georgetown on or before 14:00hrs on Thursday January 10,2023.</b>
<b>ITB 21</b>	This clause is <b>not applicable</b> .
	<b>E – Opening and Evaluation of Bids</b>
<b>ITB 22.1</b>	Bid opening is scheduled for <b>14:30hrs on Thursday January 10,2023 in GPL’S Board Room, 91 Duke Street, Kingston via a virtual platform or in the presence of bidders/representatives who may choose to attend in person.</b>
<b>ITB 22.2</b>	This clause is <b>not applicable</b> .
	<b>F – Award of Contract</b>
<b>ITB 31.2</b>	During seven (7) days of the receipt of a written Notice of acceptance and the Form of Contract, the successful Bidder should sign and date the Contract, and return it to the Employer.
<b>ITB 32.1</b>	The amount of Performance Security shall be <b>10% of Bid Price</b> , and in the form of a <b>Bank Guarantee, Manager’s Cheque or Insurance Bond</b> .

# General Conditions of Contract (GCC)

## A. General provisions

### 1. Definitions

1.1 Below given terms in this Contract shall be interpreted as follows:

**"Bill of Quantities"** means the completed priced items of works and priced consumable materials which are the part of the Bid.

**"The Completion Date"** means the date of completion of the Works accepted by the Working Committee pursuant to Certificate of Commissioning, or in case of repair works, the final Certificate of Performed Works of the Contractor approved by the Engineer.

**"Contract"** means the Contract achieved between the Purchaser and the Contractor, and fixed as the form of Contract signed by the parties with all annexes and addenda to the Contract for the execution and completion of the Works.

**"Contractor"** means an individual or legal entity, or a partnership, whose Bid for the execution of the Works is accepted by the Purchaser.

**"Contractor's Bid"** means the completed bidding documents submitted by the Contractor to the Purchaser.

**"Contract Price"** means the amount to be paid to the Contractor under the Contract for the entire and duly performance of his contractual obligations.

**"Days"** mean calendar days; **"months"** mean calendar months.

**"A Defect"** means any part of the Works executed breaching terms of the Contract.

**"The Acceptance Report of Corrected Defects"** means the acceptance report drafted jointly by the Engineer and the Contractor after correction of defects by the Contractor.

**"The Defects Correction Period"** means the period to correct imperfections and defects indicated in the Special Conditions of Contract, and calculated from the Completion Date.

**"Drawings"** include all calculations, schemes, plans and other information provided, or approved by the Authorized Body for the execution of the Contract.

**«Compensation Events»** means the event defined in Clause 41 of the General Conditions of Contract.

**"Employer"** means the party, as defined in the SCC, which employs the Contractor to execute the Works.

**"Machinery and equipment"** mean all the Contractor's machinery, equipment and vehicles to be brought temporarily to the Site for the execution of the Works.



**"The Initial Contract Price"** means the Contract Price indicated by the Employer in the Letter of Acceptance.

**"The Expected Period of Completion"** means when the Contractor should complete the execution of the Works indicated in the SCC.

**"Materials"** means all consumable and raw materials to be used by the Contractor and subcontractor during the execution of the Works.

**"Plant"** means the integral part of the Works which has a mechanical, electrical, chemical or biological function.

**"Engineer"** means a competent person, identified in the SCC, appointed by the Employer to be the Engineer, and notified to the Contractor, to be responsible for supervising the execution and quality of the Works.

**"Site"** means the territory, as defined in the SCC, allotted for the execution of the Works.

**"Technical Specification"** means the technical specifications of the Works included in the Contract, and any modifications of, or addenda to these specifications approved by the Employer.

**"The Start Date"** means the latest date, as given in the SCC, when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

**"A Subcontractor"** means an individual or legal entity, entering into a Contract with the Contractor to execute the part of the Works under the Contract, including the work of the Site.

**"Temporary Structures"** means the structures designed, constructed, installed and dismantled by the Contractor, and which are required for the execution of the Works.

**"Modification"** means a written instruction given by the Engineer to modify quantity of the Works, or items.

**"The Works"** means that the Contractor should construct, install, and hand over to the Purchaser under the Contract the execution of quantity of the Works, or completion of the Works, as defined in the SCC.

## 2. Contract Documents

2.1 Below listed documents shall constitute the Contract, and shall be its integral part, and shall be interpreted in the following order of priority:

- (a) Contract,

- (b) Letter of Acceptance,
- (c) Contractor's Bid,
- (d) Special Conditions of Contract,
- (e) General Conditions of Contract,
- (f) Technical Specifications,
- (g) Drawings,
- (h) priced Bill of Quantities, and priced Consumable Materials ; and,
- (i) any other documents listed in *the Special Conditions of Contract* to be as a constituent part of the Contract.

### **3. Language and Law**

- 3.1 The language of the Contract and the applicable laws governing the Contract are stated in *the Special Conditions of the Contract*.

### **4. Engineer**

- 4.1 Except where otherwise specifically stated, the Engineer will decide contractual relationships between the Employer and the Contractor, representing the Employer.

### **5. Official communication between the Employer and the Contractor**

- 5.1 Official communication between the parties under the implementation of the Contract conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.

### **6. Entering into subcontract**

- 6.1 The Contractor may enter into subcontracts with the approval of the Engineer, but may not assign the Contract without the approval of the Employer in writing. In case of entering into more than one Contract with subcontractors, the Contractor shall co-ordinate the activities of those subcontractors. Presence of subcontractors shall not alter the Contractor's liability for performance of the contract.

### **7. Personnel**

- 7.1 The Contractor shall employ the personnel for key positions in order to perform the functions specified in the «Qualification Information». The Engineer shall approve any proposed replacement of the key personnel only if their relevant qualifications and skills are the same or better than those of the personnel listed in the Qualification Information».
- 7.2 If for any reason the Engineer asks the Contractor to remove the person who is a staff member or employee of the Contractor or subcontractor, the Contractor should ensure that this person leaves the Site within three days, and no longer be engaged in the work under this Contract.

## **8. Employer's and Contractor's Risks**

8.1 The Employer and the Contractor carry the risks which are the Employer's risks or the Contractor's risks under this Contract.

## **9. Employer's Risks**

9.1 From the Start Date and until the Completion Date, or until the defects have been fully corrected, the following risks will be the Employer's risks:

- (a) The risk of personal injury, or, death, or loss of or damage to property (exclusive of the Works, Plant, Materials, Machinery and Equipment) in consequence of:
  - (i) using or occupying the Site by the Purchaser for the execution of the Works, or for other purposes which may be an unavoidable result of the Works or
  - (ii) negligence, improper fulfillment of official duties, or violation of legal rights of the Contractor by the Purchaser, or by any person employed by him, or under the Contract, exclusive of the Contractor.
- (b) The risk of damage to the Works, Plant, Materials, and Machinery and Equipment to the extent that is due to a fault of the Employer, or in the Employer's design defect, or due to war or radioactive contamination directly affecting the country where the works are to be executed.

9.2 From the Completion Date and until the defects have been fully corrected, the risk of loss of or damage to the Works, Plant and Materials is the Employer's risk, exclusive of the cases when loss or damage caused by:

- (a) the defect which existed on the Completion Date;
- (b) the event which occurred before the Completion Date and which is related to the Employer's risks, or
- (c) the activities of the Contractor on the Site after the Completion Date.

## **10. Contractor's Risks**

10.1 From the Start Date and until the defects have been corrected, the risk of personal injury, death, and loss of or damage to property (including the Works, Plant, Materials, Machinery and Equipment) which are not the Purchaser's risks are the Contractor's risks.

## **11. Contractor to Execute the Works**

11.1 The Contractor shall construct and install the Plant in accordance with the Specifications, Drawings, Bill of Quantities and/or pursuant to the Defects Report.

## **12. The Works to Be Completed by the Expected Period of Completion**

12.1 The Contractor may begin the execution of construction Works from the Start Date, and he should execute the Works in accordance with the Work Execution Schedule submitted by the Contractor and approved by the Engineer, and the Contractor must complete the construction Works by the Expected Period of Completion.

## **13. Construction of Temporary Structures**

13.1 The Contractor shall submit to the Engineer the specifications and drawings indicating the expected construction of Temporary structures to be approved by the Engineer, provided that they comply with the Specifications and drawings.

13.2 The Contractor should, when required, co-ordinate the project of Temporary structures with the third party.

## **14. Accident Prevention**

14.1 The Contractor shall be fully responsible for the safety of all activities on the Site.

## **15. Discoveries**

15.1 Anything of historical or other interest or of significant value discovered on the Site shall be the property of the Employer. The Contractor should notify the Engineer of such discoveries and carry out the Engineer's instructions for dealing with them.

## **16 Investigation and Use of Site**

16.1 During the execution of the Works, the Contractor shall rely on the Site Investigation Reports, and may visit and investigate the Project Site. All information obtained by the Contractor during the Site visit, shall be used for the execution of the Works.

16.2 The Employer shall give the Contractor the right for using the whole Site which is allotted for project construction. If the right for using any part of the Site is not given by the date indicated in *the Special Conditions of Contract*, the Employer will be deemed to have delayed the start of the certain kinds of project works, in this case the Purchaser should extend the construction period for the period of transferring the Site.

## **17. Access to the Site**

17.1 The Contractor shall allow the Engineer and any other person authorized by the Engineer, access to the Site or to any other place where work is being carried out or is expected to be carried out according to the Contract.

## **18. Orders and instructions**

18.1 The Engineer, within his authority, may take a decision; give orders and instructions to be binding upon the Contractor.

18.2 If the Contractor assumes that decision taken by the Engineer exceeds the authority presented by the Engineer under the Contract, or decision was taken wrong, it shall be dealt with under clause 19.

19.0 Dispute or disagreement arising between the Employer and the Contractor shall be settled in accordance with the Laws of Guyana.

19.1 Notwithstanding any references to trial herein, the parties shall continue to perform their obligations under the Contract, unless otherwise agreed.

## **B. Time Control**

### **20. Work Execution Schedule**

20.1 Within the time period specified in *the Special Conditions of Contract*, the Contractor shall submit to the Employer for approval the Work Execution Schedule where general methods of arrangement, procedure and period of execution of works on the Project construction are stated.

20.2 The Contractor shall submit, within the time periods specified in *the Special Conditions of Contract* to the Engineer for approval, the updated version of the Work Execution Schedule, taking into account the actual progress of performed works, and its impact on the time period of remaining works, including available changes in the sequence of execution of the works.

20.3 If the Contractor does not submit the updated Work Execution Schedule during the indicated period, the Engineer may retain the amount specified in *the Special Conditions of Contract* from the next Certificate of Performed Works, and continue to retain that amount until the delayed Work Execution Schedule is provided.

20.4 The Engineer's approval of the Work Execution Schedule shall not alter the Contractor's obligations. The Contractor may revise the Work Execution Schedule, and submit it to the Engineer again at any time. The revised Work Execution Schedule should demonstrate the effect of Modifications and Compensation Events.

### **21. Delays Ordered by the Engineer**

21.1 The Engineer has a right to give order to the Contractor to suspend the start or progress of execution of the works on the Project construction.

## **22. Early Warning**

- 22.1 The Contractor shall inform the Engineer as soon as possible of likely specific events, or circumstances that may negatively affect the quality of the works, increase the Contract Price or delay the execution of the Works on the Project construction. The Engineer may require the Contractor to assess the expected impact of the future event or circumstance on the Contract Price and Completion Date. The Contractor should provide such assessment within a short time.
- 22.2 The Contractor shall assist the Employer in preparing and analyzing proposals regarding for that how to the consequence of such an event or circumstance can be avoided or reduced by anyone involved in the work, and in carrying out any instruction of the Engineer resulting from those proposals.

## **C. Quality Control**

### **23. Identifying Defects**

- 23.1** The Engineer shall check the works of the Contractor and notify the Contractor of the defects found. Such checking shall not involve the change in the Contractor's responsibilities. The Engineer is entitled to require the Contractor to search for a defect, and to uncover and check the results of works that the Engineer considers may have a Defect.
- 23.2** The "**Defects Liability Period**" for the work is **9 months** from the date of taking over possession or such other period as may be specified in the Bid Data Sheet.

### **24. Tests**

- 24.1 If the Engineer instructs the Contractor to carry out tests not provided for in the specifications to check whether the performed work has a defect, and if as a result the test shows that it does, the Contractor shall pay for the test. If there is no defect, the payment for the test shall be done by the Purchaser and it shall be a Compensation Event.

### **25. Correction of Defects**

- 25.1 The Engineer should notify the Contractor in writing of any defect before completion of the Defects Correction Period, which begins at Completion Date, and its duration is determined in *the Special Conditions of Contract*.
- 25.2 Upon receipt of each notice of Defect, the Contractor should correct the indicated Defect within the time period specified in the Engineer's notice.

### **26 Uncorrected Defects**

- 26.1 In case if the Contractor has not corrected the Defect within the time period specified in the Engineer's notice, the Engineer will assess the cost of having the Defect corrected, and the Contractor should pay those costs.

## **D. Cost Control**

### **27. Bill of Quantities**

27.1 The Bill of Quantities includes the priced kinds of works and value of consumable material for the construction, installation, testing and commissioning of the Works to be executed by the Contractor.

27.2 The Bill of Quantities in the bid is used for calculation and payment for the Contract Price. The Contractor shall receive the payment for the executed amount of works at the rate and price, and value of consumable materials indicated in the Bill of Quantities for each kind of work.

### **28. Changes in Quantities**

28.1 In exceptional circumstances, the Employer, as may be industrially required, may change quantity of any works, or individual kinds of works.

28.2 At the request of the Employer, the Contractor within 7(seven) days of receipt of request should provide the Employer with a detailed breakdown of prices of change in the quantities indicating the rates for kinds of works and value of consumable material. The Employer shall evaluate those rates and value of consumable material in comparison with the Bill of Quantities provided by the Contractor with his Bid.

28.3 In case if during the comparison, the rate and value of consumable material will correspond with the rate and value of consumable material given in the Bill of Quantities, the Employer shall issue the Contractor a "Work order" for the execution of changed quantities.

28.4 If the rate and value of consumable material shall not correspond with the rate and value given in the Bill of Quantities, or if in the Employer's judgment, shall be unreasonable, the Employer instructs the Engineer to prepare a budget for Changed quantities, or for individual kinds of works, and on the basis of his own forecast, issues the Contractor a budget in the Work order format to execute for changed quantities.

28.5 The Contractor does not have a right for additional payment as a compensation of expenditure which one might avoid by giving an early notice.

### **29. Certificate of Performed Works**

29.1 The Contractor shall monthly submit to the Engineer for payment the certificates of actually performed works prepared pursuant to the Bill of Quantities after deduction of aggregate payments of previously approved quantities.

29.2 The Engineer should check the Contractor's monthly certificates of performed works and approve them for payment to the Contractor.

29.3 The value of performed works should be determined by the Engineer, and should involve the value of all actually performed quantities in accordance with items of works, rates and value of consumable material under the Bill of Quantities.

29.4 The value of performed works should include the value of Work order (additional works) and of Compensation Event.

29.5 The Engineer may exclude, based on subsequent circumstance, any items certified in a previous certificate of performed works for payment, or reduce the proportion of any item previously certified in any certificate of performed works for payment in the light of later information.

### **30. Payments**

30.1 Payments shall be adjusted for deductions for advance payments and retention. The Employer shall pay the Contractor sums according to the certificates of performed works confirmed by the Engineer during 28 days after the date of invoicing pursuant to the certificate of performed works. In case when the payment is delayed, the Employer shall pay interest to the Contractor indicated in *the Special Conditions of Contract* against the delayed payments. Interest is calculated from the date by which the payment should be made and until the date when the last payment has been made.

30.2 In case if the cost of certificate of performed works is increased as a result of decision of Arbitrator or Judge of General Jurisdiction, interests will be charged from the date of affirmation by the Engineer of the certificate of performed works for which the quantities have been increased without any dispute.

30.3 The kinds of Works for which no rate or price, and value of consumable material is entered in will not be paid for by the Employer, and shall be deemed included in other kinds of Works.

### **31. Retention**

31.1 For the purposes of correction of possible defects, the Employer shall retain from each payment a portion of the funds in the sum of 10 % of the contract sum is paid only at the expiration of Defects Liability period

31.2 On the Completion Date half of the whole retention shall be returned to the Contractor and the second half shall be returned after completion of the Defects Correction Period, provided that all Defects indicated in the notice and certified by the Engineer have been corrected.

31.3 After entire completion of Works, the Contractor may substitute retention money with an “on demand” bank guarantee.

### **32. Liquidated Damages.**

32.1 In case of a failure in the Completion Date towards the Expected Period of Completion, the Contractor shall pay the Purchaser liquidated damages specified in the *Special Conditions of Contract* for each date of delay of the actual Completion Date against the Expected Period of Completion. The total amount of liquidated damages shall not exceed the amount specified in the *Special Conditions of Contract*. The Employer may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor’s liabilities. *Thereafter the procuring entity has the right to cancel the contract and demand all forms of damages.*

32.2 In case of extension of the Expected Period of Completion after liquidated damages have been paid, the Engineer shall repay the overpaid amount of liquidated damages by the Contractor at the expense of next certificate of performed works.



### **33. Force majeure**

33.1 The Contractor shall not forfeit his performance security, and shall not be responsible for payment of liquidated damages, or termination of a Contract for disregard of provision, if the delay in execution of the Contract, or default is the result of an event of force majeure.

33.2 For the purposes of this Clause, “force majeure” means an event beyond the control of the Contractor, not connected with error or negligence of the Contractor, and not foreseeable. Such events may include but not restricted to such actions as: wars or revolutions, fires, floods, epidemics, quarantine and embargo affecting the execution of the Works.

33.3 When force majeure arises, the Contractor shall promptly notify the Engineer in writing of Such event and its cause. If no written instructions received from the Engineer, the Contractor shall continue to perform his obligations under the Contract as far as possible, and shall search for alternative ways of execution of the Contract, irrespective of force majeure.

### **35. Performance Security**

35.1 Within fourteen (14) days upon receipt of notice of award, the successful Bidder shall furnish the Employer with the Performance Security, the amount and form of which is specified in the *Special Conditions of Contract*.

35.2 The Performance Security shall be returned by the Employer not later than fifteen (15) days after the date of completion by the Contractor of his obligations under the Contract, including all guarantee obligations, unless otherwise provided in the Special Conditions of Contract.

### **36. Cost of Repairs**

36.1 Loss of or damage to the Works, Plant, or Materials included in Works and having been occurred between the Start Date and the Completion Date, including the Defects Correction Period shall be reimbursed by the Contractor at the Contractor’s cost if that loss or damage arose as a result of the Contractor’s action or inaction.

## **E. Finishing the Contract**

**37. Completion**            37.1 The Contractor, after completion of all works stipulated in the Contract, shall send the Employer a notice of Completion and shall request the Engineer to issue a certificate of Completion of the Works

**38 Taking Over**            38.1 The Employer not later than seven (7) days after the Contractor’s notice, shall appoint the Working Commission to take over the Works. The Taking Over Certificate shall be prepared with participation of the Contractor. The date of approval of Taking Over Certificate by the Employer shall be deemed the Completion Date, and within seven (7) days of the date of taking over certificate, the Site and the Works should be taken over by the Purchaser.

### **39. Final Account**

39.1 After the Certificate of Corrected Defects, the Contractor shall supply the Employer with a final account for the remaining amount that the Contractor considers payable under the Contract. Provided that all defects are corrected, and that the supplied invoice is correct and complete, the Engineer, during one month, shall certify the final certificate of performed works. If during the inspection, there will be the facts of finding a defect, and the supplied invoice is incorrect or inaccurate, the Engineer, within a month, shall submit a schedule for correction of defects. If the Final Account is still incorrect or inaccurate after it has been resubmitted, the Engineer shall determine independently the amount due to and shall decide to pay to the Contractor.

### **40. Termination**

40.1 The Purchaser or the Contractor may terminate the Contract if the other party causes a fundamental breach of the conditions stipulated in the Contract.

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

(a) the Contractor stops the works for 15 days, in this case that stoppage is not provided in the current Work Execution Schedule and is not authorized by the Engineer;

(b) The Purchaser instructs the Contractor to suspend the progress of the works, and such instruction is not canceled during the days specified in the Special Conditions of Contract;

(c) The Employer or the Contractor becomes bankrupt or goes into liquidation, exclusive of reorganization or amalgamation;

(d) The Employer does not pay the Contractor the amount confirmed by the Engineer within the days specified the Special Conditions of Contract of the date of invoice supplied to the Contractor for payment;

(e) the Engineer notifies and warns that non-correction of a specific defect is a fundamental breach of the Contract conditions; and the Contractor does not correct a defect within acceptable period of time established by the Engineer;

(f) The Contractor does not provide the required guarantee;

(g) The Contractor delayed the completion of the Works for a number of days correspondent to a maximum possible amount of liquidated damages as indicated in the *Special Conditions of Contract*.

(h) If the Contractor, in the Employer's judgment, has engaged in corrupt or fraudulent practices in the process of competitive selection or execution of the Contract.

For the purposes of this subparagraph:

(1) "corrupt practice" means the offering, giving, the agreement requesting for remuneration in any form, or services rendering in order to influence the action of a public official in the procurement process or contract execution; and

(2) "fraudulent practice" means a misrepresentation of facts in order to influence the procurement process or execution of a contract to the detriment of the Purchaser; including a collusive practice of bidders (prior to or after bid submission) to establish bid prices artificially at non-competitive level, and deprive the Purchaser from benefits of free and open competition;

(3) "collusive practice" means a scheme or arrangement between two or more contractors (subcontractors), with or without the knowledge of the Purchaser, designed to artificially rise the price in during the execution of a contract;

(4) "coercive practice" means harming or threatening to harm (directly or indirectly), persons or their property to influence their participation in the execution of a contract;

40.3 When either party of the Contract notifies the Engineer of breach for a cause other than those listed under Clause 45.2 above, the Engineer shall determine whether the breach is fundamental or not.

40.4 Notwithstanding the above, the Employer may terminate the Contract for convenience.

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

**41. Payment upon Termination**

41.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Engineer shall issue the confirmed Certificate of the performed works and Materials ordered less advance payments received up to the date of the confirmation of the certificate and less the percentage of unperformed works, as indicated in the Special Conditions of Contract. Additional Liquidated Damages shall not be charged. If the total amount due to the Employer exceeds the amount due to the Contractor, the difference shall be a debt of the Contractor to the Purchaser.

41.2 If the Contract is terminated for the Employer's convenience or because of a fundamental breach of Contract by the Purchaser, the Engineer shall confirm the Certificate of the performed works,

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 confirmation of the certificate.

**42. Property**

42.1 All Materials on the Site, Equipment, Temporary Structures, and Works shall be deemed the property of the Employer if the Contract is terminated because of the Contractor's fault.

**43 Release from Performance**

43.1 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 Engineer shall certify the impossibility of the Contract performance. The Contractor shall make the Site safe and stop work as quickly as possible after receiving such notice, and shall be paid for all work carried out before receiving an instruction, and for any work carried out afterwards to which a commitment was made.

**44. Contractor to Protect Works Done, Materials and Plant**

44.1 The Contractor should provide the protection of performed works and all materials, plant, resources and other items related to the Works from any or all kinds of damage, deterioration, destruction linked to rain, frost, fire, robbery, mysterious disappearance and other reasons. The Contractor during the execution of the works, shall additionally ensure the protection of other works on Project, and of property belonged to the Employer, and related structures from any damage, deterioration or for any other reason, including (but not limited to these) roads, buildings, warehouses and other kinds of movable and immovable property, exclusive of the event of force majeure. All costs incurred by the Contractor in view of the above-stated, shall not be subject to additional payment on the part of the Employer.

44.2 The Purchaser will not be responsible for any damage to the Contractor's works for the abovementioned reasons before they are fully completed and accepted, and the Contractor shall, without additional payment, carry out all corrections, repairs or replacements as applicable to the Works because of necessity to correct any defect, damage and other defects as a result of the above event.

**45. Materials and Equipment of Contractor**

45.1 The Contractor shall be responsible for the arrangement of supply, transportation, discharge and storage of all Materials and Equipment to be supplied, and delivered by the Contractor to the Project Site. The supplies shall be carried out only for the Contractor's name. The Employer shall in no case be responsible for expenses related to the supply, processing, storage and fee for stoppage of vehicle. No supplies shall be addressed to the Employer.

45.2 The Contractor shall provide the Employer with a Schedule of Receipt of materials and equipment on the Project Site. The sites only permitted by the Purchaser may be used for storage, stowage and stockpiling.

## Special Conditions of Contract (SCC)

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict between the provisions herein and the General conditions of Contract, the Special Conditions of Contract shall prevail.

GCC Clause name	<b>A. General</b>
<b>1.1</b>	The Employer is: <b>Guyana Power &amp; Light Incorporated</b> <b>40 Main Street,</b> <b>North Cummingsburg</b> <b>Georgetown</b> The works are: <b>Rehabilitation of Main Entrance Bridge at Canefield Power Station</b>
<b>1.1</b>	The Intended Completion Date is <b>four (4) weeks after award of Contract.</b>
<b>1.1</b>	The Engineer is the Senior Civil Engineer of the <b>GPL Facilities Department.</b>
<b>1.1</b>	The Site is located at <b>Canefield, East Canje, Berbice, Region 6</b>
<b>1.1</b>	The Start Date shall be <b>14 days after the “Notice to Proceed” is issued to the Contractor.</b>
<b>3.1</b>	The Language of Contract is <b>English</b>
<b>3.1</b>	The Applicable Law for this contract is <b>The Laws of Guyana</b>
<b>10.1</b>	The minimum insurance amounts and deductibles shall be:  <ul style="list-style-type: none"> <li>(a) For the Works, Plant and Materials: <b>G\$1,300,000</b></li> <li>(b) For the loss or damage to Equipment: <b>G\$1,300,000</b></li> <li>(c) For loss or damage to property (except the Works, Plant Materials and equipment) in connection with the Contract: <b>G\$1,500,000</b></li> <li>(d) For personal injury or death: <ul style="list-style-type: none"> <li>(i) Of the Contractor’s employees: <b>G\$1,000,000</b></li> <li>(ii) Of other people: <b>G\$1,000,000</b></li> </ul> </li> </ul>
<b>14.1</b>	The safeguard/safety at the site, The Contractor shall;  <ul style="list-style-type: none"> <li>1. Provide safety gear which should be worn by workers whilst works are ongoing.</li> <li>2. Agree to abide with GPL safety plan for works on site as such the Contractor will be responsible for obtaining a copy from GPL Inc.</li> </ul>
<b>16.2</b>	The date by which the Site has been transmitted to Contractor for use shall be the same date as the <b>“Notice to Proceed”</b>
<b>19.0</b>	Disputes or disagreement arising between the Employer and the Contractor shall be settled in accordance with the Laws of Guyana.
<b>B. Time Control</b>	

<b>20.1</b>	The Contractor shall submit for approval a Work Program within seven (7) days from the date of the Letter of Acceptance.
<b>20.2</b>	The period of submission of updated Work Program – <b>within seven (7) days of request by Engineer.</b>
<b>20.3</b>	The retention for untimely submission of Work Program is <b>\$10,000 Guyana Dollars per day.</b>
<b>C. Quality Control</b>	
<b>23.2</b>	The Defects Liability Period is <b>nine (9) months</b>
<b>26.1</b>	Any correction of Defects must commence within <b>fourteen (14) days</b> of receipt of Engineer’s notice.
<b>D. Cost Control</b>	
<b>30.1</b>	The Employer shall pay the Contractor sums according to the certificates of performed works confirmed by the Engineer during 28 days after the date of invoicing pursuant to the certificate of performed works. The Employer shall pay a rate of 0.02% interest of Certificate of Performed works when a payment is delayed without reasonable cause.
<b>31.1</b>	<b>Retention</b> The percentage of payments due to be retained of the value of works done to correct possible defects is <b>10%.</b>
<b>32.1</b>	<b>Liquidated Damages</b> The penalty to be paid by the Contractor for delay of the completion of works is <b>0.5% per day to a maximum of 5%.</b>
<b>34.1</b>	<b>Mobilization/ Advance Payment</b> The time frame by which mobilization/advance payment is to be provided and the amount is <b>15% of the contract sum</b> and to be submitted in the form of a Bank Guarantee or a bond from an Insurance Company licensed by the Bank of Guyana.
<b>34.3</b>	Repayment of advance payment for mobilization and equipment shall be repaid at a rate of 30% of the amount of all interim (progress) payment certificates: The advance shall be repaid with percentage deductions from the interim (progress) payments certified by the Engineer under the Contract. Deductions shall commence in the next interim Payment Certificate following that in which the total of all such payments to the Contractor has reached not less than 15% of the Contract Price.
<b>35.1</b>	<b>A Performance Security is required in the amount of 10% of Contract Price and in the form of a Bank Guarantee or a bond from an Insurance Company licensed by the Bank of Guyana.</b>
<b>E. Finishing the Contract</b>	
<b>40.2 (b)</b>	<b>When a suspension order is not revoked by the Employer after 30 days</b>
<b>40.2 (d)</b>	<b>When payment to the Contractor is delayed beyond 60 days following invoicing</b>
<b>40.2 (g)</b>	<b>The maximum number of days of delay is: 10 days; consistent with clause 32.1 on liquidated damages.</b>

## **DRAWINGS**

**PLEASE SEE ATTACHMENT TO THE TENDER DOCUMENT**



## **BILLS OF QUANTITIES**

**See Below**



CLIENT: GUYANA POWER AND LIGHT INC  
 PROJECT: REHABILITATION OF MAIN ENTRANCE BRIDGE AT  
 CANEFIELD POWER STATION



December 20, 2021

ENGINEER'S ESTIMATE

**BILL No.1: PRELIMINARIES**

NO.	DESCRIPTION	UNIT	QTY	RATE	TOTAL
	<b>BILL No.1 - PRELIMINARIES</b>				
1.0	<b>PRELIMINARY PARTICULARS</b>				
1.1	<b>Funding</b> The funding shall be provided by the Guyana Power & light Inc., of 40 Main street, North Cummingsburg, Georgetown.				
1.2	<b>Engineer</b> The Engineer shall be the Civil Engineer - Administrative Department, Guyana Power & Light Inc.				
1.3	<b>Contract</b> the General Conditions of contract, Form of Tender and Agreement. The Conditions of contract should be carefully read as such conditions may have a considerable bearing on the tender.				
1.4	<b>Quantities</b> The quantities shown in the Bills have been measured net, as fixed in position, and the bidder shall allow in his prices for waste, laps, etc. The quantities given are thus generally not suitable for the ordering of materials.				
1.5	<b>Provisional Sum</b> The term 'Provisional Sum' shall mean a sum provided for works or for costs which cannot be entirely foreseen, defined or detailed at the time the tender documents are prepared. Such sums shall be used in whole or in part as directed by the Engineer & shall be deemed to be inclusive of any profit required by the contractor, unless otherwise indicated.				
1.6	<b>Description of Site</b> The site of the proposed works is located at Canefield, East Canje Berbice.				
1.7	<b>Description of Works</b> The works consists of the Rehabilitation of a Timber Bridge with a span of approximately 58' and width 17'. It also includes repairs to timber wing wall.				
1.8	<b>Visiting the Site</b> The Contractor is advised to visit the site of the proposed Works in order to ascertain the prevailing site conditions and to obtain all information necessary for costing and executing				

	<b>BILL No.1 - PRELIMINARIES</b>				
<b>2.0</b>	<b>GENERAL MATTERS</b>				
	Allow for the following General Matters in the Unit Rates of				
A.	Plant and Tools.				
B.	Setting out of the works.				
C.	Holiday with pay.				
D.	Transportation of materials, plant & equipment				
E.	Site organization with regards to employment of Foreman-in-Charge, Storekeeper, Cleaner, and Security Guard.				
F.	Lighting and Power.				
G.	Programme and progress Chart.				
H.	Collection & payment of NIS contributions.				
<b>3.0</b>	<b>TEMPORARY WORKS</b>				
	Allow for the following Temporary Works, constructed to the Engineer's satisfaction, and for dis-mantling and removing from site on completion.				
A.	Toilet & Washing facilities for GPL supervisor and	Sum		Nil	-
B.	Mass area for workers and barrier to prevent persons from coming into contact with the works.	Sum	1		
C.	Provide storage and workshop facilities	Sum	1		
D.	Provide a suitable furnished site office of size 15' x 15'.	Sum		Nil	-
E.	Provide water for the works	Sum	1		
F.	Provide all scaffolding necessary for the works	Sum	1		
G.	Provide for the protection of all sections of the Works from inclement weather	Sum	1		
H.	Allow a Provisional Sum for the testing of concrete to be incorporated in the Works	Prov. Sum		Nil	-
	<b>CARRIED FORWARD</b>				

<b>BOUGHT FORWARD</b>					
<b>4.0</b>	<b>OTHER MATTERS</b>				
A.	Allow for the following Insurance's: (1) Contractor's All Risk Insurance The Insurance must be for the entire contract period. (Construction Period + Defects Liability Period)	Sum	1		
	(2) Public Liability Insurance The Insurance must be for the entire contract period. (Construction Period + Defects Liability Period)	Sum	1		
	(3) Employer's Liability Insurance The Insurance must be for the entire contract period. (Construction Period + Defects Liability Period)	Sum	1		
B.	Allow for surety for providing Mobilization Advance.	Sum	1		
C.	Allow for surety for providing Performance Bond. Bond to be valid until the defects liability period has expired.	Sum	1		
D.	Allow for progress photographs, 12 digital photos per week.	Sum	1		
E.	Allow for clearing the site of all vegetation, and maintaining same during the execution of the project.	Sum	1		
F.	Allow for the removal of construction debris.	Sum	1		
G.	Allow for the safety and health of workers and keep on site an adequate First Aid Kit.	Sum	1		
H.	Allow for the construction of a temporary foot bridge with a span of 57 ft. and 4 ft. wide. Bridge to be remove after main entrance bridge is constructed.	Sum	1		
<b>TO BILL SUMMARY</b>					



CLIENT: GUYANA POWER AND LIGHT INC  
 PROJECT: REHABILITATION OF MAIN ENTRANCE BRIDGE AT  
 CANEFIELD POWER STATION



ENGINEER'S ESTIMATE

BILL No. 3: TIMBER BRIDGE REHEBILITATION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	<b>General Note</b>				
	<i>All rates must include for transportation, materials, labor, machinery and equipment, taxes, overheads and profits. Finish level of Timber Bridge will be determine on site.</i>				
3.1.0	<b>Construction of Bridge Structure</b>				
3.1.1	Provide for the setting out of structure position, including piles .	Sum	1		
3.2.0	<b>Piles position (6 nos)</b>				
3.2.1	Supply, debark, point, ring, tar and drive 45 feet long x 14 inches butt x 8 inches tip minimum Green heart	Ln Ft	270		
3.2.2	Notch GH piles to receive timber pile caps (pile caps measured separately) and coat expose surface with tar (2 coats)	Nos	6		
3.3.0	<b>Pile Caps</b>				
3.3.1	Supply, cut, tar (2 coats) & place 6" x 12" Green Heart pile cap (double) to GH piles, bolted (bolts measured separately) as shown in drawing. Allow for all joints on GH piles.	Bm	2304		
3.3.2	Allow for drilling of GH piles & GH pile caps, supply and install to secure pile caps to pile 1" diameter grade 8 bolts at 26 inches long with 4" x 4" x 1/4" thk washers. (washers measured separate)	Nos	12		
3.3.3	Provide and install 4" x 4" x 1/4" MS washers, coated in 2 coats of coal tax epoxy, both side of bolts securing pile caps	Nos	24		
3.4.0	<b>Stringer</b>				
3.4.1	Supply, tar (2 coats) and place 2" x 12" wearing strips to bridge deck allow for 1" space between each strip and secure same with 6" coach screws.	Bm	1160		
3.4.2	Provide and install 8" x 14" Green Heart stringer (beam) allow for 2 coats of tar to all surfaces, as shown in drawing. secure to pile caps (bolts measured separate)	Bm	5,600		
<b>TOTAL CARRIED FORWARD</b>					

<b>TOTAL BOUGHT FORWARD</b>				
<b>Construction of Bridge Structure</b> <i>Continue</i>				
3.4.3	Allow for drilling of GH stringer & GH pile caps, supply and install to secure pile caps to pile 1" diameter grade 8 bolts at 22 inches long with 4" x 4" washers. (washers measured separate) include for counter sinking of bolt head in stringer & fill with tar.	Nos	72	
3.4.4	Provide and install 4" x 4" MS washers, coated in 2 coats of coal tar epoxy, both side of bolts securing stringer	Nos	72	
3.5.0	<b>Deck Planks</b>			
3.5.1	Supply, tar (2 coats) and place 2" x 12" decking planks to bridge allow for 1" space between each planks and secure same with 6" coach screws, provide for single coach screw to pile caps along the run and double coach screw at each end or joints of each planks	Bm	1734	
3.6.0	<b>Timber Curb</b>			
	Provide for supply, cut, tar (2 coat) & place GH curb wall, allow for all joints on spacers.			
3.6.1	Spacer - 3" x 6" x 12" long spacers	Bm	42	
3.6.2	Bolts - 3/4" dia. x 8" long (grade 8)	Nos	28	
3.7.0	<b>Hand Rail</b>			
	<i>Provide for the construction of hand rail, constructed from GH materials. allow for all joints on supports &amp; 2 coats tar.</i>			
3.7.1	Rail support - 4" x 4" vertical member @ 4'-0" long, bolted to stringer. (bolts measured separate)	Bm	75	
3.7.2	Mid rail - 2" x 8" Horizontal member provide for securing with screws. Allow for notching rail support as shown in drawing (dressed)	Bm	348	
3.7.3	Bottom rail - 3" x 6" Horizontal member provide for securing with screws (dressed)	Bm	174	
3.7.4	Bolts - 1/2" dia. x 10" long (grade 8), allow for 2 side galvanized washers (wide)	Nos	44	
<b>TOTAL CARRIED FORWARD</b>				



CLIENT: GUYANA POWER AND LIGHT INC  
 PROJECT: REHABILITATION OF MAIN ENTRANCE BRIDGE AT  
 CANEFIELD POWER STATION



ENGINEER'S ESTIMATE

BILL No. 3: TIMBER BRIDGE REHEBILITATION

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
3.7.2	Mid rail - 2" x 8" Horizontal member provide for securing with screws. Allow for notching rail support as shown in drawing (dressed)	Bm	348		
3.7.3	Bottom rail - 3" x 6" Horizontal member provide for securing with screws (dressed)	Bm	174		
3.7.4	Bolts - 1/2" dia. x 10" long (grade 8), allow for 2 side galvanized washers (wide)	Nos	44		
<b>TOTAL CARRIED FORWARD</b>					
<b>TOTAL BOUGHT FORWARD</b>					
3.8.0	<b>Timber Revetment - Approach of Timber Bridge</b>				
3.8.1	Supply, debark, point, ring, tar and drive 30 feet long x 12 inches butt x 8 inches tip minimum Green heart	Ln Ft	240		
3.8.2	Excavate for room to install wailers (top & bottom) 6ft from proposed revetment line	Cu Yd.	40		
3.8.3	Supply, cut, tar (2 coats) & place 6" x 8" GH wailer (top and bottom) Secure with bolts (bolts measured separate)	Bm	288		
3.8.4	Allow for drilling of GH piles & GH wailer, supply and install to secure pile caps to pile 1" diameter grade 8 bolts at 22 inches long with 4" x 4" washers. (washers measured separate)	Nos	12		
3.8.5	Supply and install 4" x 4" MS washers, coated in 2 coats of coal tar epoxy, both side of bolts securing pile caps	Nos	24		
3.8.6	Supply, cut, tar (2 coats) & press into place 2" x 12" x 15'-0" GH timber ply's	Bm	2592		
3.8.7	Provide for the back filling & compaction (95% Proctor Density) to revetment	Cu Yd.	40		
<b>TO BILL SUMMARY</b>					

# TECHNICAL SPECIFICATIONS (EXCERPT)

<b>SECTION 000 - GENERAL</b> .....	<b>44</b>
002 DOCUMENTS .....	44
003 DESCRIPTION OF WORKS TO BE UNDERTAKEN .....	44
004 DATUM LEVELS .....	44
<b>SECTION 100 - PREAMBLES TO ALL WORK SECTIONS</b> .....	<b>45</b>
101 DESCRIPTION TO APPLY .....	45
102 RATES .....	45
103 DEFINITIONS .....	45
104 DEFECTIVE WORK.....	45
105 MATERIALS AND WORKMANSHIP .....	45
106 CALCULATION OF QUANTITIES .....	46
107 PROPRIETARY PRODUCTS.....	46
<b>SECTION 200 - PROVISIONAL AND PRIME COST SUMS</b> .....	<b>47</b>
201 DEFINITIONS .....	47
202 General Attendance.....	47
203 PRIME COST SUMS.....	47
203.1 Nominated Sub-Contractors .....	47
203.2 Nominated Supplies.....	47
206 PROVISIONAL NET SUMS.....	48
207 TEST OF MATERIALS .....	48
<b>SECTION 300 – SITE CLEARING</b> .....	<b>49</b>
301 CLEARING .....	49
302 GRUBBING .....	49
303 REDUCED LEVEL EXCAVATION.....	49
304 FILL TO MAKE UP LEVELS .....	49
305 WHITE SAND .....	50
306 PROTECTION .....	50
307 DISPOSAL OF REFUSE.....	51
308 UTILITIES .....	51
<b>SECTION 400 - EXCAVATION AND EARTHWORK</b> .....	<b>51</b>
401 GENERAL .....	51
402 NATURE OF GROUND.....	52
403 SURPLUS EXCAVATION .....	52
404 WATER-LEVEL.....	52
405 APPROVAL OF BOTTOMS .....	52
406 LEVEL AND RAM .....	53
407 EXCESSIVE EXCAVATION .....	53
408 BACKFILL .....	53
409 PLANKING AND STRUTTING .....	54
410 DAMP-PROOF MEMBRANE.....	54
411 SUB-TERRANEAN TERMITE PROOFING .....	54
412 PRICING .....	55
<b>SECTION 500 - CONCRETE WORK</b> .....	<b>55</b>
501 GENERAL .....	55
502 REINFORCED CONCRETE .....	56
503 PLAIN CONCRETE.....	56
504 MATERIALS.....	56
505 TESTS.....	58
506 PRELIMINARY STRENGTH.....	61

507	WORK STRENGTH.....	62
508	WORK TEST FAILURE.....	62
509	SITE CONTROL.....	63
510	READY-MIXED CONCRETE .....	63
511	REINFORCEMENT .....	63
512	FORMWORK.....	65
514	CONCRETING .....	69
515	CONCRETE IN WATER TIGHT CONSTRUCTION .....	71
516	FINISHING WORK TO CONCRETE FACES .....	71
517	STANDARD OF WORKMANSHIP .....	72
	SECTION 700 - PILING.....	73
701	GENERAL .....	73
702	SETTING OUT .....	73
703	DISTURBANCE AND DAMAGE .....	73
704	LENGTHS & DAIMETER OF PILES .....	74
705	OBSTRUCTIONS .....	74
706	PROGRAMME AND PROGRESS REPORTS.....	74
707	RECORDS .....	74
708	TOLERANCES .....	75
709	DRIVING.....	75
710	ACCEPTANCE OF PILES .....	76
711	RE-DRIVING PILES.....	76
712	TIMBER PILES .....	77
713	TOLERANCE OF TIMBER PILES .....	77
714	INSPECTION, HANDLING AND STORAGE OF TIMBER PILES .....	77
715	HEADS OF TIMBER PILES .....	78
716	SPLICING OF TIMBER LENGTHS.....	78
718	PROTECTION OF STRUCTURAL TIMBER .....	79
719	TOP ELEVATION AND ALIGNMENT OF PILES .....	79
	SECTION 800 - ANCHOR BOLTS .....	79

## **SECTION 000 - GENERAL**

### **001 CONDITIONS OF CONTRACT**

The Conditions of Contract shall be in accordance with (NPTAB).

### **002 DOCUMENTS**

These specifications shall be read in conjunction with the:

- a) Contract drawings
- b) Bills of Quantities

### **003 DESCRIPTION OF WORKS TO BE UNDERTAKEN**

The renovation works to be completed on the Wakenaam Power Plant Building are as follows:

- (1) Concrete cable trenches and drains
- (2) Walls, floors, ceiling, windows
- (3) Supply and installation of building electrics

### **004 DATUM LEVELS**

The level shown on the drawings refers to Georgetown Datum.

## **SECTION 100 - PREAMBLES TO ALL WORK SECTIONS**

### **101 DESCRIPTION TO APPLY**

Description of materials and workmanship referring to items, which are not included or required in the Works described in the Bills of Quantities, shall be disregarded unless subsequently introduced as a variation. All measurements shall be taken net as described in the Bill of Quantities.

### **102 RATES**

The rates inserted by the Contractor shall include for complying with all provisions of this section unless specifically otherwise stated or measured.

### **103 DEFINITIONS**

"Engineer" herein shall mean the individual, partner, company or firm appointed by the Government of Guyana to supervise the construction of the Works.

The term "the Works" shall mean, "the whole of the Works envisaged by the Contract"

Words importing the singular only shall also include the plural and vice versa.

The following abbreviations are used:

BS - British Standard

BSCP - British Standard Code of Practice

ASTM- American Society for Testing and Materials

### **104 DEFECTIVE WORK**

The Engineer reserve the right to check the work executed by the Contractor at such times as he deems fit; there is however, no duty on his part to make such checks and any failure by him to observe errors shall not relieve him of his responsibilities in these respects.

### **105 MATERIALS AND WORKMANSHIP**

All materials and workmanship shall conform to the highest standard and quality, and shall always be to the approval of the Engineer.

Materials rejected by the Engineer shall be removed immediately from the site and replaced with that in accordance with these specifications.

Workmanship rejected by the Engineer shall be taken down/demolished immediately, and the work re-done to the approval of the Engineer.

## **106      CALCULATION OF QUANTITIES**

All work unless otherwise described has been measured net as fixed in position and the Contractor is to allow in his prices for waste, laps etc. The quantities, therefore, are NOT suitable for the ordering of materials.

Throughout these Bills of Quantities, the following abbreviations have been used.

C.M	-	Cubic Meter
S.M	-	Square Meter
L.M	-	Linear Meter
Kg	-	Kilogram
Nr.	-	Number
L.M	-	Linear Meter
Cwt.	-	Hundredweight
Tonne	-	Tonne (2,240 Lbs.)
L	-	Liter
Lgth	-	Length
Mm	-	Millimeters

All weights and measurements mentioned in these Bills of Quantities are those normally used in Guyana.

Description of materials and workmanship given in any one-work section shall apply equally to all work sections, unless otherwise described.

Notwithstanding any of the foregoing the whole of the materials and workmanship shall be subject to the approval of the Engineer.

## **107      PROPRIETARY PRODUCTS**

All proprietary products shall be used strictly in accordance with the manufacturer's instructions unless otherwise described.

## **SECTION 200 - PROVISIONAL AND PRIME COST SUMS**

### **201 DEFINITIONS**

#### **202 General Attendance**

General attendance on Nominated Sub-Contractors, Local Authorities and Public Undertaking, that is including "the use of Contractor's temporary roads, paving and paths, standing scaffolding, standing power operated hoisting plant, the provision of temporary lighting and water supply, clearing away rubbish, provision of space for the sub-contractor's own offices and for the storage of his plant and materials and the use of mess rooms, sanitary accommodation and welfare facilities"

In addition, general attendance shall be deemed to include arranging with Local Authorities, Public Undertakings, Nominated Sub-Contractors and Nominated Suppliers the time for commencement of their work on the site or manufacture and delivery of their goods and materials, obtaining particulars of holes, mortises, chases, recesses, fixing and the like and supplying them with all dimensions and other information required for the proper execution of the Works.

### **203 PRIME COST SUMS**

#### **203.1 Nominated Sub-Contractors**

The P.C. Sums given are for which the terms of **Contract Conditions** will apply.

Except for loss or damage the nominated Sub-Contractor shall be responsible for loss and damage and insurance against such loss or damage to any materials and goods brought onto or delivered to the site for his own use until such materials and goods have been fully, finally and properly incorporated in the Works except also for any loss or damage due to any negligence, omission or default of the Contractor, his servants or agents, or any other Sub-Contractor of the Contractor, or of the Employer of any person for whom the Employer is responsible.

The Contractor shall make arrangements with the various Nominated Sub-contractors so that their work proceeds in accordance with the agreed programme and shall furnish to them all necessary dimensions, marks, lines, levels, pegs, etc., for setting out and shall be responsible for the accuracy of same.

Nominated Sub-contractors will be responsible for covering up and protecting their Works during its execution but immediately upon its completion the Contractor shall assume this responsibility.

#### **203.2 Nominated Supplies**

The P.C. sums given are for goods and materials to which the terms of Contract Condition apply.

The cost required to be paid by the Contractor for conveying goods and materials to the site, of any special packing and the like, are included in the appropriate prime cost sums and particulars are not given in the measured items.

## **206        PROVISIONAL NET SUMS**

The Provisional net sums given are inclusive of any profit or cash discounts to the Main Contractor. Any item of Profit is therefore included which the Contractor should price accordingly as part of his tender.

## **207        TEST OF MATERIALS**

The provisional net sum is for charges for testing materials, which will be executed by the Laboratory named by the Engineer and to which the terms of Contract Conditions will apply.

The term Contractor's services in connection with these tests is to be read as take test sections of the work when required, store, pack, label, record details and dispatch carriage paid to the testing laboratory.



## **SECTION 300 – SITE CLEARING**

### **301 CLEARING**

All areas within the site which requires clearing as determined by the Engineer shall be cleared of all trees, bush, pits, rubbish and other objectionable matter, and such materials shall be removed from the site or otherwise disposed as approved by the Engineer.

Fences, walls, buildings, ruins and similar items shall also be cleared from site and suitably disposed as approved by the Engineer.

Trees and shrubs designated by the Engineer shall be left standing and care shall be exercised by the Contractor not to damage or injure such trees and shrubs.

Any damage to the works, public or private property caused by the Contractor's operations in clearing and grubbing shall be repaid or replaced at the expense of the Contractor.

All clearing operations shall be performed well in advance of other construction operations.

### **302 GRUBBING**

Grubbing shall consist of removing all trees, stumps, roots, vegetable matter and other objectionable matter from areas to be occupied by the permanent works.

Grubbing to areas not occupied by the permanent works shall be done only if approved in writing by the Engineer.

All suitable materials generated from grubbing shall be used as far as practicable for purposes of filling of site or landscaping.

### **303 REDUCED LEVEL EXCAVATION**

Reduced level excavation shall be done only if approved in writing by the Engineer.

Excavation arising out of reduced level excavation shall be spread and leveled on site.

### **304 FILL TO MAKE UP LEVELS**

Fill to make up levels shall consist of materials generated from site and imported materials.

Imported material shall consist of white sand or other material approved by the Engineer. All imported material to be used to make up levels shall be free from deleterious matter.

This work shall consist of supplying, placing, spreading and compacting of selected granular fill materials, or other approved material, all as shown on the plans or as directed by the Engineer and as specified herein.

### 305 WHITE SAND

White Sand shall be local white sand free from foreign and deleterious materials and with the following gradation requirements:

<i>ASTM</i>	<i>Sieve No.</i>	<i>Limited of % Passing</i>
4	(4.75 mm)	100
8	(2.36 mm)	93 - 100
16	(1.18 mm)	87 - 98
30	(600 micron)	78 - 95
50	(300 micron)	65 - 85
100	(150 micron)	40 - 75
200	(75 micron)	15 - 45

CBR obtained shall not be less than 15% when compacted to the standard proctor density in accordance with AASHTO T 99, method C, and tested after soaking for four days. In addition, the materials shall be non-plastic.

Placing and compacting: The fill materials shall be placed in uniform layers not exceeding 150mm thick and compacted to the 95% of its proctor value and to the lines, grades and cross sections shown on the plan or as directed by the Engineer.

### 306 PROTECTION

Protect adjoining property from damage.

Existing trees, shrubs and plant materials to remain shall be protected by barricades, planking, fences or other acceptable means.

Existing site improvements shall be adequately protected. Damage to site improvements shall be repaired to former condition or replaced with approved equal work.

Existing structures to remain shall be protected from settlement or other damage. Damages shall be repaired to former condition or replaced with approved equal work.

Existing utilities to remain shall be protected and maintained to prevent leakage, settlement or other damage. Damage shall be repaired or replaced to former condition and as required by the utility company, municipal or land owner affected.

Damages shall be reported immediately to the Engineer and repairs made immediately by the Contractor at his expense.

### **307 DISPOSAL OF REFUSE**

Refuse material removed shall be disposed of by removal from the site, except as permitted by law and as approved by the Engineer.

The Contractor shall be responsible for compliance with all local laws and regulations concerning the disposal of waste materials.

### **308 UTILITIES**

The Contractor shall prevent damage to pipes, conduits, wire, cables or structures above or below ground that are the property of the Utility Companies or concern Utility Companies. The Contractor must consult the appropriate Utility Authority to determine the exact location and extent of all services that are likely to be affected by the Works. The drawings are provided only as a guide to the general location of major service. The Contractor is to take the necessary care and precautionary measures and provide the necessary protection as required by the Utility Authorities. The Contractor will be required to bear the cost of such protection and other measures unless specifically stated otherwise.

## **SECTION 400 - EXCAVATION AND EARTHWORK**

### **401 GENERAL**

The excavation is to be carried out to the lines and levels shown on the drawings or to such other dimensions as the Engineer or his representative may supply.

Excavation and backfilling shall be carried out in such a manner as to avoid damage to underground services. The Contractor shall be fully responsible for damages to any services or property, which might be disturbed or damaged.

## **402 NATURE OF GROUND**

**A.** Ascertain the nature of the ground and sub-soil to determine whether water, running sand or any other difficulties that are likely to be encountered and whether cutting by hand or mechanical means must be used.

**B.** Using mechanical and/or pneumatic equipment for excavations the Contractor shall ensure the equipment capacity and suitability so as not to hinder the progress of Works, The Contractor shall employ experienced operators and take precautions so as not to disturb the material at the bottom of the finished excavation level. Over excavation may be carried out after obtaining a written permission from the Engineer and excavation shall be filled with mass concrete (10 N/mm<sup>2</sup>) at the Contractor's expense.

**C.** Remove any large pieces of rocks encountered with wedges and layers or rock drills. Blasting will not be permitted on site without the written permission of the Engineer and the relevant Local Governing Authority.

**D.** Excavations must be kept dry regardless of the source of the water. If sump holes are necessary, the positions are to be approved by the Engineer.

**E.** Measures must be taken to ensure that moisture conditions in the soil are so controlled as to have no deleterious effect on the foundations. Excessive drying out or wetting must therefore be avoided during construction. Foundations are to be cast promptly after completion of excavation.

## **403 SURPLUS EXCAVATION**

All excavated material shall be deposited on a spoil heap on site for reuse as fill. All cleared vegetation shall be burnt or otherwise disposed of by the Contractor as approved. Burning will not be permitted on site, without the written permission of the Engineer and the Relevant Local Governing Authority.

## **404 WATER-LEVEL**

Ground water level has not been established. The Contractor will be responsible for establishing the ground water level.

## **405 APPROVAL OF BOTTOMS**

**A.** The excavation for all foundations shall be inspected by the Engineer or his representative before any

concrete is placed and the Contractor shall give minimum of twenty four (24) hours notice that such an inspection will be required.

**B.** The bottom 50mm of excavation for concrete shall be removed on the same day as the concrete (or blinding layer) is placed on it. If the excavation should become disturbed or weakened by water or other means the Contractor shall be required to remove a further thickness of soil as the Engineer or his representative may direct and to backfill same with plain concrete with characteristic strength of 10 N/mm<sup>2</sup> at the Contractor's own expense

#### **406 LEVEL AND RAM**

**A.** Compaction of fill material in general and in confirmed areas is to be carried out with a suitable compactor respectively to compact excavated materials in layers not exceeding 150mm when loose. Stones likely to hinder proper compaction shall be removed before and during compacting operation.

**B.** The Contractor is to allow for watering where necessary and for delays, which may occur to allow soil to dry out to appropriate moisture content. Any soft areas, which may develop during compaction, shall be moved and replaced with selected fill material.

#### **407 EXCESSIVE EXCAVATION**

Should excavation be taken below the specified levels, the difference in level shall be made up in concrete 10 N/mm<sup>2</sup> at the Contractor's own expense.

#### **408 BACKFILL**

**A.** Backfilling shall be carried out around foundations and at the back of walls, etc., up to the reduced level or as directed. It shall be carried out in horizontal layers not exceeding 150mm loose thickness, moistened or dried as required and thoroughly compacted by mechanical or other approved means to a dry density not less than 95% of the Standard Proctor Density.

**B.** The Contractor shall take due precaution to ensure the safety of any block or reinforced concrete walls which may be subject to excessive load during the compaction of the fill and/or hardcore by shoring or otherwise protecting these walls.

**C.** No fill material shall be placed where free water is standing on the surface of the area where the fill is to be placed and no compaction of fill will be permitted with free water on any point of the fill to be compacted.

**E.** No backfilling shall be carried out which covers work which has not been inspected and approved.

#### **Fill under slabs on ground**

**F.** Fill material to areas under floor slabs shall be materials approved by the Engineer or his representative

and compacted in layers not exceeding 150mm compacted thickness. Where molten rocks, quarry overburden or similar approved materials have been used, the Contractor shall ensure that the moisture content is suitable for optimum density after compaction and shall water where necessary and allow for delays which may occur to allow the soil to dry out to an appropriate moisture content. Any soft areas, which may develop during compaction, shall be removed and replaced with selected materials as directed.

### **Materials arising**

**G.** Materials found in the excavations are to be used in the Works with the written permission of the Engineer.

**H.** Hardcore is defined, for the purposes of this contract, as material that can be excavated by mechanical equipment including a D8 tractor with ripper. Rock is defined, for the purposes of this contract, as materials that can be excavated only by the use of wedges and levers or rock drills and blasting.

## **409 PLANKING AND STRUTTING**

The Contractor shall provide adequate timbering to prevent collapse of the earth cuts where appropriate. The Contractor shall be entirely responsible for the excavations and any damage caused by them to other parts of the Works. Excavations are to be exposed for as short a time as possible.

## **410 DAMP-PROOF MEMBRANE**

**A.** The damp proofing is to be done using 500 gauge polythene (polyethylene) sheeting.

**B.** The polythene sheeting is to be laid over blinded hardcore with minimum 300mm end and side laps double welted and carried over wall for the full area of the ground floor slabs.

## **411 SUB-TERRANEAN TERMITE PROOFING**

**A.** Treatment of the site of the building shall be of the following toxicant as an emulsion in water at the minimum concentration listed:

Aldrin	--	0.5 %	by weight
Chlordane	--	1.0 %	by weight
Dieldrin	--	0.5 %	by weight
Heptachlor	--	0.5 %	by weight

**B.** Toxicant emulsion shall be applied by spray immediately before pouring of concrete at the rate of 5 liters per m<sup>2</sup> of surface area of excavations and 2.5 liters per m<sup>2</sup> on filling and sand beds.

C. Treatment shall not be carried out when rain is falling or when the ground is wet. A warranty of at least 10 years shall be obtained against infestation.

## **412 PRICING**

Prices for Excavation and Earthwork shall include:

1. All considerations arising from the specification.
2. Hand and/or mechanical excavation and disposal in whatever types of soil and fittings are encountered excluding concrete and rock but including roots, drain pipes and other obstructions and the Contractor shall judge for himself the nature of the conditions.
3. Separating vegetable soil from sub-soil including the provision of separate spoil heaps.
4. Extra difficulties of getting out and disposal and the extra bulking of concrete and rock.
5. Planking and strutting left in at the Contractor's volition
6. Temporary retention of fillings.
7. Disposal of trees and other vegetation cut down and grubbed up.
8. Excavation in gravel and hardcore.
9. Allow for excavation in items measured as "extra over excavation" for any additional cost of disposal.
10. The description "get out" shall include for all wheeling, bucketing out, double handling or re-excavating from temporary spoil heaps of surplus material as may be necessary preparatory to removing from site.

## **SECTION 500 - CONCRETE WORK**

### **501 GENERAL.**

Concrete shall be made with cement, fine aggregate, coarse aggregate and water. No other agent shall be incorporated in the mix without the prior approval of the Engineer. The Contractor shall ensure that the use of any such approved additive will not adversely affect the strength, durability or appearance of the finished concrete Works.

#### **Definitions**

The following terms whenever used in this Specification shall be taken to have the meaning assigned to them below;

**A.** "Plain Concrete" shall mean concrete used in members made with a structural grade of concrete, listed, but not containing steel reinforcement.

**B.** "Structural props" shall mean those components of the strutting formwork, which will be retained from concrete faces.

- C. "Satisfactory" shall mean to the satisfaction of the Engineer or his representative.
- D. "Approved" shall mean to the satisfaction of the Engineer or his representative.
- E. "Required" shall mean require by the terms of this Specification or any other Contract documents.
- F. "Passed by the Engineer or his representative" shall mean accepted as complying with the Specification's requirements as far as can be judged from visual inspection.
- G. "Current issue" shall mean latest issue at the date of tender invitation.
- H. "Failure to comply with this Specification" shall mean failure to comply satisfactorily with all the requirements of this Specification.

### **Responsibility**

No approval or acceptance by the Engineer or his representative shall in any way relieve the Contractor of his responsibility for the quality of materials and the standard of workmanship in the finished Works, and for the strength, durability and appearance of the finished concrete Works.

### **502 REINFORCED CONCRETE**

The reinforced concrete Works have been designed generally in accordance with the recommendations contained in the British Standard Code of Practice for the Structural use of Concrete (BS 8110: 1985). The reinforced concrete Works are to comply with the recommendations of this Code of Practice, unless specifically excluded or modified hereafter.

### **503 PLAIN CONCRETE**

**Plain concrete shall comply with all the relevant requirements for the reinforced concrete.**

### **504 MATERIALS**

#### **General**

All materials in the Works shall comply in all respects with the best standard available locally, based on the relevant British Standard except for any deviations specifically authorized in subsequent clauses of this Specification.

The constituent materials of concrete shall be cement, aggregates and water. No admixtures to this concrete shall be permitted without the prior approval of the Engineer.



## A. Cement

Sieve Size	Fine Zone 1	Aggregates Zone 2	Zone 3	Coarse 40-5 mm	Aggregates 20-5 mm	14-5mm
50mm				100	-	-
37.5mm				90-100	100	-
20mm				35-70	90-100	100
14mm				-	-	90-100
10mm				1-40	30-60	50-85

Cement shall be Portland Cement complying with B.S.12. All cement shall be delivered to site in sealed bags.

No re-bagged cement will be permitted during the course of the construction and every endeavor shall be made to ensure that the colour of the cement is constant throughout the contract except with permission of the Engineer.

## B. Aggregates

Aggregates shall comply with the recommendations of B.S.882. In special circumstances, a deviation from B.S.882 in respect of grading of aggregate may be accepted, subject to the prior approval of the Engineer. The nominal maximum sizes of coarse aggregates shall be 20mm, except where otherwise directed by the Engineer.

Percentage by weight passing.

## C. Water

Water to be used in the Works shall be clean and free from all harmful matter, in suspension or solution, that would have adverse effects on setting, hardening and strength of Portland Cement. A continuous supply of water shall be available during all mixing, placing and curing operations.

## D. Reinforcement

Mild steel reinforcement shall be hot rolled mild steel with specified characteristics complying with the B.S.4449 or approved equivalent. Hot rolled high yield steel shall have a specified characteristic strength of 410. N/mm<sup>2</sup> and comply with B.S. 4449 or approved equivalent. Cold rolled high yield steel shall have specified characteristic strength of 461.24 N/mm<sup>2</sup> for bars up to and including 0.64" diameter and 425.15 N/mm<sup>2</sup> for bars exceeding 0.64" in diameter. Welded steel fabric shall comply with B.S.4483 or approved equivalent.

## GRADING OF COARSE AND FINE AGGREGATES (BS882)

5mm	-	-	-	0-5	0-10	0-10
2.36mm	60-100	65-100	80-100			
1.18mm	30-90	45-100	70-100			
600µm	15-54	28-80	55-100			
300µm	5-40	5-48	5-70			
150µm	-	-	-			

### E. Admixtures

Admixtures for improving the concrete may be permitted but only after the Contractor has satisfied the Engineer that it will be to the advantage of the Employer. Use of the Admixtures shall be made only on the written permission of the Engineer and in any case the permission to use the same shall not be construed to mean that extra will be paid.

When admixtures are used in the Works, very strict control is to be maintained to ensure that the correct quantity is used all times.

### F. Storage

All cements shall be stored in weather proof shed of adequate size having a raised dry floor.

Aggregates shall be stored on hard paved areas with adequate dividing walls, or in approved containers to prevent mixing of different types of aggregates and be kept clean and free from contamination.

Cement and aggregates shall be used in the order in which they are received on the site and their storage shall be arranged to facilitate this procedure.

Reinforcement shall be stored in racks clear of the ground. Where materials are to be stored on suspended floors or roofs, the Contractor shall ensure that such storage will not overload or distort the structural frame.

All materials which have been damaged and contaminated, or do not comply with the requirements of this Specifications shall be rejected and shall be removed from the site immediately at the Contractor's expense.

## 505 TESTS

### A. General

Before the commencement of the Contract, the Contractor shall submit to the Engineer for his approval, names of the Local Testing Authority he proposes to employ.

The Contractor shall provide for all equipment necessary for carrying out all tests on site specified or described in this Specification, and he shall make and provide for all necessary arrangements for the delivery of all samples and test pieces to be tested by the approved Testing Authority.

The Contractor shall provide for maintaining all testing equipment on Site in proper working order to the satisfaction of the Engineer.

The Contractor shall provide for sending copies of tests results to the Engineer or his representative where these are required.

The Contractor will be paid for all tests specifically required in this Specification.

The Contractor will not be paid for any special test called for by the Engineer in consequence of any failure by the Contractor to comply with this Specification.

The Contractor will be paid, at rates to be agreed, for any other special tests called for by the Engineer unless the tests results show failure by the Contractor to comply with this Specification.

### **B. Cement**

The Contractor shall state his source of cement to be used on the Site and verify these are to the relevant B.S.

The manufacturer's certificate of tests including compressive strength tests carried out in accordance with B.S. 12 for Portland cement shall be supplied and kept on site for each consignment of cement delivered to the Works. At the commencement of the Contract, the Contractor shall deliver a 23Kg sample of each type of cement he intends to use to the approved Testing Authority.

### **C. Aggregates**

Samples of aggregates to be used shall be supplied if so requested by the Engineer.

All sampling and testing of aggregates shall be carried out in accordance with the relevant recommendations of B.S.882 .

At the commencement of the Contract, the Contractor shall deliver to the approved Testing Authority for inspection and analysis, three separate samples of each type of aggregates to be used in the structural concrete grades. For each type of aggregate, the three samples shall be taken at the proposed source of supply at intervals of not less than one day. For fine aggregate, the samples shall be 23Kg weight each and for coarse aggregates the samples shall be 45Kg weight each.

To ensure that no significant variation in the grading of the aggregate occurs during the Contract, sieve analysis shall be carried out on site at fortnightly intervals. The results of these analyses shall be recorded on a chart to be kept on the Site and to be handed to the Engineer on completion of the structural concrete Works.

If the grading of any aggregate is changed, the Engineer shall be notified before any of this aggregate is

used in the Works.

The quantity of water contained in the aggregate shall be determined by an approved method at least once a day, when concrete mixing is in progress.

#### **D. Mixing Plant**

Weight batching shall be checked weekly in the presence of the Engineer or his representative. The checking shall be carried out with approved weights provided by the Contractor for this purpose.

#### **E. Materials**

The water gauge of the concrete mixer shall be inspected and tested daily when concreting is in progress. If any fault in the mixing plant is detected by these tests or otherwise the fault shall be rectified to the satisfaction of the Engineer before any further use is made of the equipment.

#### **F. Concrete Tests**

Concrete test cubes shall be made, cured and tested and the results recorded in accordance with the recommendation of the current issue of B.S. 1881, unless specifically modified in subsequent clauses of the Specification.

The test specimens shall be 150mm cubes, made in steel moulds of approved design. The test cubes shall be taken from typical batches in the presence of the Engineer or his representative, with prior notice.

Slump test or compaction factor tests of the mixed concrete shall be carried out at regular intervals and the results recorded and kept on the Site.

#### **Exposed Concrete Finishes**

Where exposed concrete finishes are required, the Contractor shall provide in a suitable position, test samples of each type of finish to be used in the Works. The Engineer shall approve the test samples before these finishes are put in hand in the Works.

#### **Load Test**

Load test of completed parts of the structure may be called for by the Engineer at any time.

The test procedure and the standard of acceptance will be specified by the Engineer.

Where the results of such tests indicate that any member or part of the structure does not comply with this Specification, that part of the structure shall be classed as defective work.

A reduction in the specified strength may be permitted subject to the following conditions:-

- (i) The Contractor shall satisfy the Engineer that the standard of supervision and concrete control to be exercised on site for the duration of the structural Works, justifies such a reduction.
- (ii) The average strength of the concrete used in the Works shall be assessed according to a statistical method, applied to Works cube tests results.
- (iii) Trial mixes are made from three separate batches of concrete which are prepared and three cube tests obtained from each batch.

The trial mix proportions will be approved provided that:

- (a) The mixes have sufficient workability to allow concrete to be placed and properly compacted by the methods to be used on site.
- (b) The average strength of the mix cubes tested at 28 days exceeds the specified characteristic strength by the current margins less  $3.5 \text{ N/mm}^2$ .
- (c) Tests at an earlier age may be permitted provided that satisfactory age-strength relationships have been established by experiment.

The mixes shall be designed to have sufficient workability to allow concrete to be placed and properly compacted by the methods to be used on site.

Compacted calculations for the mix proportions and the information and assumptions on which they are based, shall be submitted to the Engineer, for each mix listed in the Table, before the cubes for the preliminary strength tests are made.

## **506 PRELIMINARY STRENGTH**

Preliminary Strength cubes test shall be carried out to check the calculated proportions for each structural concrete mix.

Preliminary cubes shall be made for each mix from three samples of aggregates and the sample of cement sent to approved Testing Authority. From each sample of aggregate, 6 cubes shall be made, 3 for test at seven days and 3 for test at twenty-eight days.

Each of three cubes tested at twenty-eight days shall be accepted as satisfactory if, either all 3 cubes have a crushing strength greater than the preliminary design strength or the average strength of the 3 cubes is greater than the preliminary design strength and the difference between the greatest and the least is not more than 20% of that average.

If for any mix, the test result of one set of 3 cubes tested at twenty-eight days fall below this requirement the mix shall be rejected, the proportions revised and the testing procedure repeated.

For each structural concrete mix, the twenty-eight day preliminary strength shall be calculated as the

average of all the cubes tested at twenty-eight days and the seven day preliminary strength of all the cubes tested at seven days.

Results of all preliminary tests shall be sent to the Engineer prior to the execution of any concrete works.

## **507 WORK STRENGTH**

Compliance with the specified characteristic strength shall be judged by test made on concrete cubes at 28 days. Tests at an earlier age may be accepted provided that satisfactory age strength relationships have been established by experiment.

The minimum rate of sampling shall be for every 6 m<sup>3</sup> or every 20 batches of concrete supplied whichever is the lesser volume. No variation in this sampling rate will be permitted without the prior approval of the Engineer.

Four cubes shall be made from each sample for testing at 28 days or at an earlier age approved by the Engineer.

The samples where practicable shall be taken at the point of discharge from the mixer or in the case of ready-mixed concrete, at the point of discharge from the delivery vehicle.

Each set of four cubes tested at 28-days shall be accepted as satisfactory provided that:-

- (a) The average strength determined from any group of four consecutive test cubes exceeds the specified characteristic strength by not less than 0.5 x the current margin.
- (b) Each individual test result is greater than 85% of the specified characteristic strength.

If at any time the mean strength or the standard deviation fails to satisfy the requirement given above, the Engineer shall be notified immediately and action shall be taken as the Engineer shall direct.

In all cases any estimate of the corresponding 28 days strength may be obtained from the seven day cube tests by assuming the ratio of 28 to 7 day strengths to be the same as that obtained from the average strengths of the preliminary tests for the same mix.

Results of all Works cube tests and test analysis shall be kept on Site and copies shall be sent to the Engineer as soon as the results are available. All records of Works cube tests shall indicate clearly which part of the structure each sample of concrete represents.

## **508 WORK TEST FAILURE**

If any set of 7 days cube test results indicates a low 28 days strength to be expected, the Engineer shall be notified immediately and no props shall be removed from the effective part of the structure until the cause is determined.

If any set of 28-day cube test results fall below the specified strength, the Engineer shall be notified immediately and the cause of the failure investigated.

The extent of the area of the structure affected shall be defined by the Engineer.

All the costs of, and all the charges in consequence of the courses of action the Contractor is directed to follow shall be borne by the Contractor.

## **509 SITE CONTROL**

The water-cement ratio determined in the calculation of proportions for each mix shall be accurately maintained. The amount of water used in each batch shall be controlled by direct measurement and due allowance shall be made for water content of the aggregates as is determined by the daily test.

The slump test or compaction factor test shall be used as a guide to the workability of the mixed concrete.

If a change in the grading of any aggregate is unavoidable, the proportions of all structural concrete mixes affected shall be revised to take account of the altered grading.

## **510 READY-MIXED CONCRETE**

Permission must be obtained and the name of the supplier submitted before the use of ready-mix concrete. Permission must also be obtained from the Engineer to change the supplier of ready-mixed concrete and also to revert back to site mixed concrete. The concrete must be discharged into the formwork within 1 hour of mixing. All the requirements for site mixed concrete, previously given must be complied with, except for time of discharge. Any ready mixed concrete that has not been deposited within one (1) hour of mixing shall not be used and shall be removed from the site. If required to do so, the Contractor shall produce certificates showing batch records of the ready mixed concrete. Experienced ready mixed truck drivers only will be allowed to deliver the ready mixed concrete and they, if dry mix is delivered to the site then, when told to mix-up by the Contractor's Supervisor, the truck drivers will discharge into a mixer drum the exact amount of water required in accordance with previous clauses of this specification. The amount of water in the mix can only be changed on the authority of the Engineer.

Although the ready mixed concrete suppliers sometimes perform testing, the Contractor must carry out his own testing in accordance with the requirements for site mixed concrete. The concrete cubes shall be tested for strength by an independent authority and the results submitted to the Engineer without delay.

## **511 REINFORCEMENT**

### **A. General**

Reinforcement bending schedules will be provided listing the cut length, diameter or size, bending dimensions and location of each bar in the Works.

Before the bars are cut to length the Contractor must check:-

- (1) that reinforcement schedules are provided for each part of the structure sufficiently in advance of

his concreting programme;

(2) that each schedule includes the correct quantities of reinforcement as detailed on the drawing to which it relates;

(3) that the grades of reinforcement given in each schedule corresponds to those shown on the relevant drawings.

The Engineer shall be notified of any errors disclosed by these checks.

The Contractor shall be responsible for all delays and charges arising directly from the failure to comply with these requirements.

### **B. Bending**

All reinforcement bars shall be accurately shaped in a manner that will not injure the materials, to the details shown on the drawings and bending schedules. Bars shall not be bent hot.

The minimum diameter of frames to be used when bending high tensile bars shall be six times the bar diameter. The bar diameter shall be the diameter of the largest circle that can be inscribed in the cross-section of the bar.

### **C. Cleaning**

All reinforcement shall be free of all loose mill scale and thoroughly cleaned to remove all loose rust, oil, grease or other harmful matter, immediately prior to being placed in position in the Works.

### **D. Placing**

All reinforcement shall be accurately placed, securely fixed and adequately maintained in the positions shown on the drawings.

The concrete cover to the reinforcement detailed on the drawings shall be maintained by use of approved methods.

The Contractor shall supply and fix all necessary chairs required to maintain the reinforcement in the correct position. The spacing of chairs and the diameter of bars used in their manufacture shall be agreed with the Engineer.

All laps of fabric and all intersections of bars shall be securely connected with malleable iron wire of suitable size or by another approved method. The wire is to be arranged with ends bent away from the formwork so that the concrete cover is not reduced by more than the diameter of the wire.

No metal part of any device used for connecting bars for maintaining reinforcement in the correct position shall remain permanently within the specified minimum concrete cover to the reinforcement.

The concrete cover to reinforcement shall be as detailed on the structural drawings.

### **E. Welding**

Welding of steel reinforcement is not required for structural purpose unless specifically detailed on drawing.



No welding or reinforcement for fixing shall be put in hand without the written permission of the Engineer. Welding of cold worked high tensile steel reinforcement will not be permitted.

## **512 FORMWORK**

### **A. General**

Before construction commences the Contractor shall notify the Engineer of the general method and system of formwork he proposes to use for all the main structural members.

Formwork and its supporting members shall be sufficiently strong to carry the Works and the entire incidental loading. The props and lateral supports shall be sufficiently closely spaced to prevent displacement or visible deflection of the shutters under the weight or hydraulic pressure of the wet concrete. All joints in the formwork and joints between the formwork and previous work shall be sufficiently tight to prevent loss of liquid from the concrete through these joints.

Methods of fixing and locating formwork, which result in holes through the concrete section where the formwork is removed, shall not be used.

No metal part of any device for maintaining formwork in the correct location shall remain permanently within the specified concrete cover to the main reinforcement.

The use of concrete retarders or similar preparations on the formwork surface shall be subject to the prior approval of Engineer.

### **B. Mortises, holes, chases in concrete**

Fixing blocks, ends of brackets, bars, bolts, etc., shall be cast in the concrete at the time of placing and all mortises, holes, apertures, chases, grooves, etc. shall be accurately set out in the formwork as the concrete is placed. No part of the concrete Work shall be cut away from any such item or for any other reason, without the Engineer permission.

The Contractor shall obtain from all sub-contractors; complete information of their requirements regarding conduits, pipes, fixing blocks and boxes, chases, holes and any other items to be cast or formed in the concrete members, subject to the condition that failure of a sub-contractor to supply such information shall not be allowed to delay the progress of the Contract.

The Contractor shall ensure that all sub-contractors are informed of his programme for all the structural work at the commencement of the Contract. He shall also ensure that sub-contractor's requirements relating to the concrete are approved by the Engineer before work is commenced.

At the commencement of the Contract, the Contractor shall supply all sub-contractors with written copies

of the items under this heading of the Specification.

### **C. Propping**

The vertical propping to all formwork shall be carried down sufficiently far to provide the necessary support without damage, overstress or displacement of any part of the construction.

Structural props shall be retained in position until the new construction is sufficiently strong to support its own weight and any loads to be placed on it during the construction period.

Structural props for beams and slabs shall be positioned to divide the clear span of each member into equal lengths. The number of props provided in each span shall be at least three per span. For two-way spanning slabs, structural props as specified above shall be provided for each direction of span. For slabs spanning in one direction only, the placing of props in the direction perpendicular to the spans shall not exceed one quarter the span. All members with spans exceeding 12.2 m shall be propped to the Engineer's satisfaction.

### **D. Beam and slab formwork**

All formwork to soffits shall be constructed so that it can be removed without disturbing the structural props.

Unless otherwise detailed on the Drawings, the formwork of all floor beams and slabs shall be constructed with an upward camber giving a rise at mid-span of 3mm for each 3.1m span. For roof beams and slabs, the formwork shall be cambered to give a rise at mid-span of 6mm for each 3.1m of span.

### **E. Final Preparation**

The internal faces of the formwork may be coated with an approved preparation to prevent adhesion of the concrete to the forms, provided that the use of this preparation will not stain the surface of the finished concrete. None of this preparation shall be allowed to touch the reinforcement.

Immediately before the concrete is placed in any section of the formwork, the interior of that section shall be completely cleared of all extraneous materials.

Each section of the formwork to structural members shall be inspected and passed by the Engineer or his representative immediately before the concrete is placed in that section. At least 24 hours notice shall be given when such an inspection is required.

### **F. Exposed Concrete Faces**

Unless otherwise specified, all concrete faces to be exposed on the finished Works shall be left as struck with a fairfaced, true to line and level within the specified tolerances for Works.

After inspection, all superfluous fins and similar projection shall be carefully removed. No render or other applied finish shall be used to obtain a fairface to the concrete.

All concrete faces to be exposed in the finished Works shall be adequately protected against damage and surface staining during the execution of the subsequent Work.

Any finished Works which the Engineer shall judge inferior in any respect to the standard of the relevant approved sample of which is subjected to subsequent damage or surface staining, shall be rejected and treated as defective work.

### **G. Formwork to produce a board marked finish**

Form or form lining to consist of approved rough textured softwood boards seasoned to a moisture content of not more than 25% and not less than 18%.

Arrange boards of varying textures and uniform 100mm width alternating the thickness by 96.5mm to give indentations to the surface and a uniform overall pattern. Assemble boards to prevent penetration of grout between them and soak reassembled forms with clean water before erecting and keep damp until concrete is placed.

Obtain approval for use and type of release agent.

Do not cover spacers without approval. Formwork ties to occur in a regular pattern in positions agreed with the Engineer.

The finish is to be left as struck. Making good will not be permitted.

### **F. Striking for formwork**

#### **General**

The structure shall not be distorted, damaged or overloaded in any way by the removal of the formwork from concrete members.

The responsibility for the safe removal of any part of the formwork or strutting shall rest with the Contractor.

#### **Minimum Striking Times**

The minimum striking times for removing formwork to structural members shall be determined from the Table F. The times are given in days, where each day is to be of 24 hours duration. Before the formwork is removed for any structural member, the Contractor shall ensure that the concrete in that member has attained sufficient strength for striking to proceed.

**TABLE F – MINIMUM STRIKING TIMES**

<b>LOCATION</b>	<b>MINIMUM TIME O.P.C. CONCRETE (Days)</b>
Vertical formwork to Columns	2
Soffit formwork to slab (structural props left in)	4
Soffit formwork to beams (structural props left in)	10
Slab structural props	
Beams structural props	14

For a multi-storeyed structure, after striking the formwork of the suspended beams, the beams shall be propped as specified and the props shall be removed only after striking the formwork of the beams for the floor above.

### **513 CONSTRUCTION JOINTS AND EXPANSION JOINTS**

#### **A. Position of construction Joints**

The Contractor shall ensure that all construction joints are arranged to minimise the effect of shrinkage of the concrete. Generally, the distance between construction joints in walls and slabs shall not exceed 6.1m-0mm.

The position of all joints shall be agreed with the Engineer before work is commenced.

Concrete placing shall be carried continuously between consecutive construction joints.

Construction joints between different grades of concrete and between concrete mixes using different cements shall be made and positioned as the Engineer will direct.

#### **B. Treatment of construction Joints**

All construction joints shall be formed with Neo Seal. Boards shall be fixed vertically unless otherwise directed. All joints shall be joggled.

All construction joints shall be hacked and all laitance and honeycombed concrete removed from the contact

face before the adjacent section is concreted. Where an adjacent face of the concrete is to be exposed in the finished Works, hacking of the contact face shall be terminated 25mm away from the face to be exposed. Air and water jetting immediately after striking stop-ends may be used instead of hacking subject to the prior approval of the Engineer. All loose materials shall be removed from the contact face immediately after hacking or jetting has been completed.

When work is to be resumed at a construction joint, it shall be swept clean and treated with 2:1 sand/cement slurry or approved bonding agent before starting the new pour.

At vertical joints the fresh concrete shall be placed directly against the hacked and treated contact face.

### **C. Expansion Joints**

Expansion joints shall be positioned and formed in accordance with the details shown on the drawings.

All expansion joints shall be filled with an approved compressible material unless otherwise indicated on the drawings.

## **514 CONCRETING**

### **A. Mixing**

Concrete shall be mixed in approved mechanical batch type concrete mixer. Mixing shall be continued until there is a uniform distribution of the materials in the mixer and the mass is uniform in colour. The mixing time for each batch shall not be less than the minimum period recommended by the mixer manufacturer.

The volume of mixed materials in each batch shall not exceed the rated capacity of the mixer. Each batch of concrete shall be completely discharged before the mixer drum is re-charged.

The mixer drum shall be thoroughly washed out with clean water when mixing ceases, including short stoppages for meals or on any change of type of cement used in the mix.

### **B. Transporting**

Concrete shall be transported as rapidly as possible from the mixer to its final position without segregation or loss of any of the ingredients.

All plant and equipment used for transporting concrete shall be kept clean; all containers used for

transporting concrete shall be thoroughly washed out whenever mixing ceases.

Runs and gangways for concrete transporters and main runs for foot traffic shall not be supported or allowed to bear on the fixed reinforcement.

### **C. Placing**

Concrete shall be placed while still sufficiently plastic for adequately compaction.

At all times when reinforced concrete is being placed, a competent steel fixer shall be in continuous attendance on the concrete; he shall adjust and correct the position of any reinforcement which may be displaced.

The Contractor shall keep on site a complete record of the Works showing the time and date when concrete is placed in each part of the Works. This record shall be available at all times for inspection by the Engineer.

### **D. Compacting**

Concrete shall be thoroughly compacted by mechanical means during the placing and shall be carefully worked around all reinforcement and embedded fixtures and into the sides and corners of the formwork, using a heavy-duty, and high frequency vibrator.

### **E. Curing**

All surfaces of freshly placed concrete structural concrete shall be covered with approved material and kept constantly wet for 7 days, except that for concrete made with rapid hardening cement, the minimum curing period shall be 3 days.

Soffit and site forms left in position shall be regarded as effective in keeping those surface wet.

The Contractor shall notify the Engineer of the system methods of curing he proposed to use for all structural concrete members before the Works are commenced.

### **F. Concrete strength requirements (BS 1881 & BS EN 12390)**

<b>Concrete Use</b>	<b>Minimum Cement Content (Kg/m<sup>3</sup> of Concrete)</b>	<b>Maximum free water / cement ratio</b>	<b>Specified Characteristic Compressive Cube Strength at 28 days (N/ mm<sup>2</sup>)</b>
Reinforced	175	0.45	25.0
Mass	175	0.45	25.0
Infill	160	0.48	20.0
Blinding	145	0.50	10.0

## **515 CONCRETE IN WATER TIGHT CONSTRUCTION**

### **A. General**

All work required to be watertight in the finished Works will be so indicated on the drawings.

The Contractor shall include in his rates for any water- proofing additives he proposes to use but the use of such additives shall be subjected to prior approval of the Engineer.

Where in the opinion of the Engineer damp patches of leakage of water in the finished work are due to incorrect placing or inadequate compaction of the concrete or to incorrect preparation of the joints or to inadequate allowance for shrinkage, the affected work shall be made good at the Contractor's expense.

### **B. Water-bars**

Where shown on the drawings, water-bars of approved material make and design shall be incorporated in construction joints in concrete in watertight construction. Water-bars shall be joined in an approved manner.

Before commencing the Works, the Contractor shall obtain the Engineer's approval of the methods to be used to support and maintain the water-bars in the correct locations while the concrete is placed.

## **516 FINISHING WORK TO CONCRETE FACES**

### **A. General**

After removal of the formwork, no treatment of any kind other than that required for curing the concrete shall be applied to the concrete faces until the Engineer or his representative has inspected them.

### **B. Plastered concrete faces**

All concrete faces, which are to be plastered or rendered in the finished Works, are to be thoroughly hacked with a suitable tool to provide an adequate surface key.

The use of adhesives or other preparations on any concrete faces shall be subject to the prior approval of the Engineer.

## 517 STANDARD OF WORKMANSHIP

### A. Working tolerances

Unless otherwise indicated on the drawings, the setting out dimensions and levels of the finished Works shall be within the maximum tolerances shown below.

DESCRIPTION	MAXIMUM TOLERANCE
All dimensions of 3.1m and over	6mm
All dimensions less than 3.1	3mm
Slab top surfaces levels (all points in the surfaces)	6mm

At any construction joint in a continuous concrete faces any discrepancy in the face across the joint shall not exceed 3mm.

Columns and walls shall not be more than 6mm out of plumb in any one-storey height, and not more than 20mm out of plumb in the total height.

### B. Defective Work

Where, in the opinion of the Engineer, any of the finished Works, or the materials or workmanship in any part of the Works, does not comply with all the relevant requirements of this Specification, that part of the Works shall be classed as defective work.

All work classed, as defective work shall be cut out and removed from the Works and replaced to the satisfaction of the Engineer.

The extent of the work to be removed and the methods to be used in the removal and replacement of this work shall be in accordance with the Engineer directions. In all cases, cutting out of defective concrete work shall be carried back to a satisfactory construction joint before the replacement of the defective work and any other work thereby affected is commenced.

All removal and replacement of defective work and all costs or charges arising from such removal or replacement shall be at the Contractor's expense.



## **SECTION 700 - PILING**

### **701 GENERAL**

Before any piling work is commenced the Contractor shall, in amplification of information accompanying his tender, submit to the Engineer for approval full details of his proposed piling plant and detailed method statements for carrying out works. Such details shall include, where applicable, a full description of the piling frame, hammer, helmet and packing, method of handling, pitching and supporting the piles before and during driving, the proposed driving procedure to obtain the required penetration and/or the proposed set for the working load on the pile, and the method of calculation.

The Contractor shall not commence any piling until the plant and methods which he proposed to use have been approved by the Engineer but such approval shall not relieve the Contractor from any of his obligations and responsibilities under the Contract. If for any reason the Contractor wishes to make any change in the plant and methods of working which have been approved by the Engineer, he shall not make any such change without having first obtained the Engineer's approval thereof.

### **702 SETTING OUT**

The Contractor shall establish and maintain permanent datum level points, base lines and grid lines to the satisfaction of the Engineer, and shall set out with a suitable pin or marker the position of each pile. The setting out of each pile shall be agreed with the Engineer at least 24 hours prior to commencing work on a pile and adequate notice for checking shall be given by the Contractor.

Notwithstanding such checking and agreement, the Contractor shall be responsible for the correct and proper setting out of the piles and for the correctness of the positions, levels, dimensions, and alignment of the piles.

### **703 DISTURBANCE AND DAMAGE**

The Contractor shall carry out the piling work in such a manner and at such times as to reduce noise and disturbance.

If during the execution of the Works, damage is likely to be caused to mains, services or adjacent structures, the Contractor shall submit to the Engineer his proposals for avoidance of such damage.

The Contractor shall ensure that damage does not occur to completed piling works and shall submit to the Engineer for approval his proposed sequence and timing for driving, having regard to the avoidance of damage to the adjacent piles.

#### **704 LENGTHS & DAIMETER OF PILES**

The lengths and diameter of piles are indicated on the Drawings and Activity Schedule and may be adjusted by the Engineer based on information obtained during the pile installation, e.g. penetration per blow using specified hammer, etc.

The Contractors shall make allowance in his fabrication length for damage to pile heads that may occur during driving.

#### **705 OBSTRUCTIONS**

If during the execution of the works the Contractor should encounter obstructions in the ground whether or not they were foreseeable, he shall forthwith notify the Engineer, detailing plans for overcoming the obstruction and proceed according to the Engineer's instructions.

#### **706 PROGRAMME AND PROGRESS REPORTS**

The Contractors shall inform the Engineer each day of the programme of piling for the following day and shall give adequate notice of his intention to work outside normal working hours and weekends, where approved.

The Contractor shall submit to the Engineer on the first day of each week or on such other date as the Engineer may decide, a progress report showing the rate of progress to that date and progress during the previous week or period of all main items of piling works as required by the Engineer.

#### **707 RECORDS**

The Contractor shall keep complete records of all data required by the Engineer covering installation of each pile and shall submit two signed copies of these records to the Engineer not later than noon of the next working day after installation of the piles.

## **708 TOLERANCES**

Piles shall be driven as accurately as possible to the vertical. The permitted deviation of the pile centre from the centre point shown on the drawings or setting out plan shall not exceed 75mm measured at the working level of the piling or as otherwise agreed by the Engineer.

## **709 DRIVING**

Piles shall be accurately pitched and driven in the position and to the lines shown on the Drawings within the specified tolerances. The lengths of piles driven shall be as shown on the Drawings or such other lengths as the Engineer may direct. Piles shall be driven in sequence approved by the Engineer.

At the stages during driving, piles shall be adequately supported and restrained without damage to the piles or any coatings or preservative treatment, by means of ladders, trestles, temporary supports or other guide arrangements to maintain position and alignments and prevent buckling. Where necessary, in the opinion of the Engineer, extension leaders shall be fitted. Handling, slinging and pitching of piles shall be by means or methods approved by the Engineer.

Piles shall be driven by means of plant and methods approved by the Engineer. Helmets or anvil blocks of the approved type shall be used for preventing damage to the heads and use of a follower or dolly shall not be permitted except with the agreement of the Engineer. Driving shall be carried out continuously until the specified depth and/or penetration per blow is reached, except that the Engineer may permit suspension of driving if he is satisfied that the suspension is beyond the control of the Contractor.

The Contractor shall report to the Engineer without delay any unforeseen change in driving characteristics that may be noted. Detailed records of the driving of all piles shall be kept by the Contractor in a form required by the Engineer to whom they shall be submitted the day following the pile driving. The Contractor shall give adequate notice of driving and provide facilities to the Engineer to enable him to check driving resistance. A set of pile data shall be taken only in the presence of the Engineer unless otherwise agreed.

The final set of each pile shall be recorded as the number of blows to produce a penetration of 25mm agreed by the Engineer who will need to be satisfied when a final set is measured as to the condition of the pile.

The Contractor shall ensure that piles are temporarily braced or stayed to the satisfaction of the Engineer immediately after driving to prevent loosening of the piles in the ground and to ensure that no damage resulting from oscillation, vibration or movement of any free standing pile can occur.

## **710 ACCEPTANCE OF PILES**

If a pile appears to be satisfactory, the Engineer will agree to the cessation of driving but such agreement shall not constitute acceptance of the pile and he may order retrieving as a result of information obtained from subsequent driving of piles.

A pile meeting the specification requirements and driven within the specified tolerances or as otherwise agreed by the Engineer, will be accepted only when each defined row, of which the pile forms a part has been completed.

Where additional piles or extra works are necessary as a result of incorrectly placed or inaccurately driven piles or other defective work or damage which in the opinion of the Engineer are attributed to the Contractor, such additional piles or extra works instructed by the Engineer shall be carried out at the Contractor's expense.

Piles driven or deflected outside the specified tolerances shall, if required by the Engineer, be withdrawn, re-pitched and re-driven by the Contractor at his expense. In carrying out such work, any resulting holes due to withdrawal of the pile or from measures for moving the pile shall be packed with approved non-plastic material prior to replacing pile.

## **711 RE-DRIVING PILES**

The Contractor shall, where instructed by the Engineer, take levels and measurements to determine any movement of the ground or pile. Piles which have risen as a result of driving adjacent piles shall be re-driven to the original depth or set, unless otherwise directed by the Engineer who may require the Contractor to carry out such approved corrective measures as are necessary in his opinion. During re-driving, checks where required, shall be carried out to an approved procedure.

## **712      TIMBER PILES**

All timber supplied for use as piles shall be Hardwood (Greenheart) thoroughly seasoned, straight grained and free from cracks, shakes, fungal or pest attack and from other defects, complying with grade stresses as specified by BS 5756 grading rules. Piles shall be one length unless otherwise approved by the Engineer.

The Contractor shall submit copies of consignment notes and certificates from suppliers, giving such information on deliveries of timber as the Engineer may require.

Tree trunks where approved for use as round piles shall have the bark removed but the sapwood left in place and shall be treated with a preservative as specified.

Where timber is damaged during handling and installation, all damaged areas shall be over coated with two coats of approved preservative, well brushed in. All pile heads, whether or not trimmed to level shall be given three heavy coats of approved preservative, sufficient time between coats being allowed to ensure maximum penetration into timber.

## **713      TOLERANCE OF TIMBER PILES**

For a round pile, the following characteristics are required: maximum deviation from a straight line should not be greater than 100mm in any plane through the pile parallel to the vertical axis.

## **714      INSPECTION, HANDLING AND STORAGE OF TIMBER PILES**

The Contractor shall notify the Engineer of the delivery of timber to the site or to the place where preservation treatment is to be carried out and shall provide all necessary labour and materials to enable the Engineer to inspect and measure each piece at the time of delivery and immediately prior to driving.

Accepted timber shall be stacked and protected to the satisfaction of the Engineer. Care shall be taken during handling to prevent the surface of treated piles from being broken and any cuts or breaks which may result from the use of hooks or chains shall be well brushed with two coats of preservative before driving.

## **715 HEADS OF TIMBER PILES**

The pile head shall be flat and at right angle to the axis of the piles.

Except where specified to the contrary, the head of each pile shall be trimmed to a round cross section and fitted with a tight steel ring. The ring shall not be less than 50mm by 20mm cross section and the ring joint shall be welded for its full section. The external diameter of the ring shall be that of the least transverse diameter of the firm head of the pile. The top of the ring shall be between 100mm and 20mm from the top of the pile.

If the ring is displaced during driving, it shall be refitted and if broken a new ring shall be fitted. If during driving the head becomes excessively broomed or otherwise damaged, the damaged part shall be cut off, the head re-trimmed and the ring refitted.

After driving, the heads shall be cut off square at the designed cut off level of the piles. In estimating the required lengths of timber piles, the Contractor shall make due allowance for the removal of broomed or split timber as well as for cutting off the heads of piles at the required levels.

## **716 SPLICING OF TIMBER LENGTHS**

Where the Engineer approves lengthening of timber piles, the position and details of splice shall be as shown on Drawings or as directed or agreed by the Engineer.

Where it is necessary to partly extend a partly driven pile, the upper part shall be securely supported during the splicing.

The Contractor shall observe spliced joints continuously during driving to detect any departure in true alignment between the lengths of pile on each side of the joint or for any signs of distress or damage to the splice.

If any such departure in alignment, distress or damage is observed, the Contractor shall suspend driving and inform the Engineer.

## **718 PROTECTION OF STRUCTURAL TIMBER**

Unless specified otherwise all structural timber used shall be coated with two coats of an approved bituminous paint.

For all joints, all timber to timber surfaces shall be coated with two coats of approved bituminous paint before assembling.

## **719 TOP ELEVATION AND ALIGNMENT OF PILES**

The top elevation of the timber sheet pile revetment will be approximately 28.85 m GD but the final elevation shall be confirmed on the site by the Engineer with maximum allowable deviation from the required line of 50mm from the vertical measured both in the plane of driving and perpendicular to the plane of driving. The alignment of piles shall be determined on site by the Engineer.

## **SECTION 800 - ANCHOR BOLTS**

### **General**

Anchor bolts shall be set as shown on the plans unless changes are permitted by the Engineer. If anchor bolts are cast in substructure concrete, templates, or other suitable means, shall be used to keep the bolts vertical at the required embedment and in the correct horizontal position during concrete placement.

If the Contractor elects to drill the finished, cured concrete in order to set the anchor bolts, the reinforcing steel shall be positioned prior to casting the concrete so that it will not be damaged during drilling. If anchor bolts are drilled and grouted, material and construction details shall be in conformance with the drawings.

The Contractor shall accurately mark the location of anchor bolts to be installed, establish the elevation of bearing surfaces and check bearing plates to insure installation at their exact elevation.

### **A. Bolts, Nuts and Washers**

Nuts and washers shall meet the requirements of ASTM A325M. Bolts, nuts and washers shall conform to the following unless specified otherwise on the plans, standard sheets, manufacturer's drawings', or in the contract documents.

*Bolts ASTM F568 Class 4.6*

*Nuts ASTM A563M Grade A or Better*

*Washers ASTM F436M*

### **B. Setting Anchor Bolts**

Anchor bolts shall be carefully set to proper location, alignment, and elevation by using templates. Templates cast into the footing concrete shall have minimum 50 mm diameter perforations or be made of bar sock to prevent honeycombing. Templates exposed in the end product shall be galvanized. Elevations shall be determined by the Engineer. Anchor bolts shall not be realigned by bending to fit the base plate. Anchor bolts that do not fit the sign base plates will be rejected. The Contractor may propose a remediation method for rejected anchor bolts subject to approval of the Regional Director. Rejected anchor bolts, and the concrete they are embedded in shall be replaced by new materials at no cost to the Department

### **C. Finish to Column Bases**

Column bases and base plates shall be finished in accordance with the following requirements:

- 1) Steel bearing plates 2 in. (50 mm) or less in thickness are permitted without milling provided a satisfactory contact bearing is obtained. Steel bearing plates over 2 in. (50 mm) but not over 4 in. (100 mm) in thickness are permitted to be straightened by pressing or, if presses are not available, by milling for bearing to obtain a satisfactory contact bearing. Steel bearing plates over 4 in. (100 mm) in thickness shall be milled for bearing surfaces.
- 2) Bottom surfaces of bearing plates and column bases that are grouted to ensure full bearing contact on foundations need not be milled.
- 3) Top surfaces of bearing plates need not be milled when complete-joint penetration groove welds are provided between the column and the bearing plate.

### **D. Fit of Column Compression Joints and Base Plates.**

Lack of contact bearing not exceeding a gap of 1/16 in. (2 mm), regardless of the type of *splice* used (*partial-joint-penetration groove welded* or bolted), is permitted. If the gap exceeds 1/16 in. (2 mm), but is less than 1/4 in. (6 mm), and if an engineering investigation shows that sufficient contact area does not exist, the gap shall be packed out with non tapered steel *shims*. Shims need not be other than mild steel, regardless of the grade of the main material.

### **E. Holes for Anchor Bolts.**

Holes for anchor bolts shall be permitted to be *thermally cut*.



# TECHNICAL SPECIFICATIONS – LOW VOLTAGE ELECTRICAL SYSTEM

1.	SCOPE.....	82
2.	APPLICABLE STANDARDS .....	82
3.	INSTALLATION/SERVICE CONDITIONS .....	83
4.	ELECTRICAL SYSTEM CONDITIONS .....	83
5.	TYPE OF LV SYSTEM .....	84
6.	ELECTRICAL RATINGS .....	84
7.	ELECTRICAL INSTALLATION.....	84
7.1	MATERIALS .....	84
7.2	SETTING OUT.....	84
7.3	CUTTING AWAY, MAKING GOOD & TRENCHING.....	84
7.4	MAIN SUPPLY .....	85
7.5	DISTRIBUTION BOARD .....	85
7.6	SUB-MAINS.....	85
7.7	CONDUITS & PIPING.....	86
7.8	LED LIGHTING FITTINGS .....	86
7.9	SOCKET OUTLETS (Points) .....	86
7.10	SWITCHES .....	87
7.11	GROUNDING AND BONDING.....	87
7.12	480/240/120Volts Transformer.....	87
7.13	LABELLING .....	87
8.	TESTNG .....	88
9.	RATING AND CONNECTION PLATE .....	88
10.	SURFACE TREATMENT.....	88
11.	DRAWINGS.....	88
12.	COMPLIANCE WITH SPECIFICATION.....	88
13.	COMPLIANCE WITH REGULATIONS.....	89
14.	QUALITY ASSURANCE, INSPECTION AND TESTING .....	89
14.1	GENERAL .....	89
14.2	QUALITY ASSURANCE SYSTEM.....	89
14.3	QUALITY PLANS.....	90
14.4	INSPECTION AND TESTING.....	90
15.	NON-COMPLIANCE SCHEDULE .....	91
16.	SHIPPING.....	Error! Bookmark not defined.

## 1. SCOPE

This specification covers the design, supply, installation, testing, and performance requirements of the Low Voltage system for use in the Wakenaam Power Plant – an Isolated Electric Power systems of the Guyana Power & Light, Inc.

## 2. APPLICABLE STANDARDS

Except where modified by this specification, the Low Voltage system shall be designed, installed and tested in accordance with the latest editions of the following standards (Table 1). The bidder may propose alternative standards, but shall demonstrate that they give a degree of quality and performance equivalent to or better than the referenced standards herein.

Acceptability of an alternative standard is at the discretion of the Purchaser.

The Bidder shall furnish a copy of the alternative standard proposed along with the bid. If the alternative standard is not written in the English Language, a certified English Language translated version of the original standard shall be submitted with the bid.

Table 1: Applicable Standards

Item No.	ANSI/IEC Standards	Title
1	IEC 60529	Degrees of Protection Provided by Enclosures (IP Code)
2	IEC 60076	Power Transformers
3	IEC 61439	Low-voltage switchgear and controlgear assemblies
4	NEMA 2	National Electrical Manufacturers Association – Type 2
5	NFPA 70	National Electrical Code (NEC)

In case of conflict, the order of precedence shall be:

- This Technical Specification
- NEC or IEEE or IEC Standards

### 3. INSTALLATION/SERVICE CONDITIONS

The installation conditions of the Low Voltage system shall be as follows:

1. Maximum altitude above mean sea level - less than 1,000 m;
2. Maximum ambient air temperature - 40<sup>0</sup>C;
3. Maximum daily average ambient air temperature - 33<sup>0</sup>C;
4. Minimum ambient temperature - 15<sup>0</sup>C; and
5. Maximum relative humidity - 99.5%.

All outdoor materials, components and equipment shall be designed and protected for use in exposed, heavily polluted and salty, corrosive and humid tropical coastal atmospheric conditions.

### 4. ELECTRICAL SYSTEM CONDITIONS

The Low Voltage system shall be suitable for installation within GPL’s Wakenaam Power Plant, which has the following characteristics as shown in see Table 2.

Table 2: Characteristics of GPL’s Wakenaam LV System

Nominal System Voltage, Frequency and Phase	Low Voltage	240/120V, 60 Hz, 1φ-3 wire,
Voltage Class – Low Voltage	600V	
Insulation Level		
Insulation level at 240 Volts and below	600V	
System Grounding		
Neutral Grounding	Low Voltage Side	Solidly Grounded Using Plant Grounding Grid

## **5. TYPE OF LV SYSTEM**

The LV system shall be 240/120 Volts AC, single phase, three (3) wire. The neutral conductor shall be grounded via the plant's grounding grid. As a minimum, the system installation and workmanship shall be in accordance with the National Electrical Code (NEC) and any other required local electrical code, or guidance given by the Government Electrical Inspectorate Department, Ministry of Public Works.

## **6. ELECTRICAL RATINGS**

Electrical equipment ratings shall be as per system design and Bill of Quantities (BOQ) provided in the tender.

## **7. ELECTRICAL INSTALLATION**

### **7.1 MATERIALS AND WORKMANSHIP**

All materials used, including those not specifically described shall be the best of their respective type, and of adequate size and strength, to ensure, the mechanical and electrical soundness of the installation. Such details being in the form of the manufacturers' literature, sketches, etc.

If at any time during the progress of the Works the Project Engineer or Electrical Engineer on behalf of the Client shall disapprove of any material involved, the Contractor shall remove forthwith such materials from the site and substitute materials of approved quality, type, size, rating/capacity, and standard/specification.

If any portion of the work executed is considered by the Project Engineer or Electrical Engineer to be defective or imperfect or not in accordance with the terms of contract, technical specification, design or resulting from any formal discussions, such defective work shall be removed forthwith and re-executed, in a manner approved by the Project Engineer or Electrical Engineer and at the expense of the Contractor.

### **7.2 SETTING OUT**

The "Contractor" shall be responsible for the accurate marking and setting out of the installation as per Client's design. The drawings indicate the proposed positions of the fittings and outlets, but the "Contractor" must refer to the architectural and structural details, in order to ensure seamless integration with the other services, building structure, ceiling tile arrangement, etc.

### **7.3 CUTTING AWAY, MAKING GOOD & TRENCHING**

Cutting away, making good and trenching will not be a part of the "Contractor's" work. The "Contractor" shall identify and accurately locate all cutting away, trenching, and other builders' work and arrange for the execution.

## **7.4 MAIN SUPPLY**

### **DESCRIPTION:**

The main supply shall comprise Low Smoke Zero Halogen (LSZH) cables with copper conductors as sized and indicated on the design drawings. These cables terminate at the 480V switchgear and at the high side of the station use transformers. In addition, these cables shall be used to connect the low voltage side of the station use transformers to the 240/120Volts distribution busbar.

### **INSTALLATION:**

The cable shall be housed in schedule 80 P.V.C. conduit, sized as indicated on the design drawing, buried into the walls of the building.

## **7.5 DISTRIBUTION BOARD**

### **DESCRIPTION**

The board shall be the MCB type suitable for surface mounting or insert into the walls of the building. The enclosures shall be fabricated from corrosion resistant material or treated for use in a salt laden atmosphere. The breakers shall operate at their rated capacity at a minimum of 30 deg. C without derating and have a minimum short circuit current of 10,000 A symmetrical on 120/240V. The distribution board shall be in compliance with IEC 61439.

### **INSTALLATION:**

The board shall be fixed to the building by no less than four (4) corrosion resistant screws, washers, and raw plugs in a readily accessible area as per the NEC.

The internal wiring shall be neatly arranged connections firmly made and the neutral wire fixed on the neutral bar in a position corresponding to that of the breaker controlling the circuit.

All distribution boards shall carry fixed indelible circuit charts to indicate the number and locations of lights or points (socket outlets) controlled by the breaker.

## **7.6 SUB-MAINS**

### **DESCRIPTION:**

The cables taking the supply from the 240/120 Volts busbar to the distribution boards (panel). Unless otherwise indicated, these shall be LSZH insulated, single core copper conductors, rated at no less than 600V, and sized as indicated on the drawings. The cables shall be red for the lines and black for the neutral or colour coded with P.V.C. tape at each termination.

#### INSTALLATION:

The cable shall be drawn in P.V.C. schedule 80 conduit of adequate size, making allowance for space factor. The conduit shall be run at high level (eaves) within the building.

The cable's insulation shall not be nicked, brushed or in any way damaged, to permit the ingress of water to the conductor, which may lead to low conductor resistance to earth.

### **7.7 CONDUITS & PIPING**

#### DESCRIPTION:

Adequately sized, high impact schedule 80 P.V.C. conduit shall be used for all high-level runs within the buildings. Watertight P.V.C. piping of adequate size, shall be used for all runs below ground level as per design.

#### INSTALLATION:

The conduit shall be installed in its entirety before cables are drawn in. Inspection boxes, draw boxes, bends, tees, etc., shall be accessible for the purpose of withdrawal or addition of cables. All boxes in which underground conduit (pipe) are terminated must be positioned at 2' - 0" above finished floor level. All conduit (pipe) rising below ground, must run concealed in the wall, and all boxes in which such conduit (pipe) terminate, must be flushed, and the covers (lids) must be fixed with four screws, in order to minimize vandalism.

All conduit (pipe) run below ground must be permanently watertight and be run at a depth of 18".

Conduit running below ground across open areas, shall be protected by 6" x 1" greenheart slab, and the route marked by 9" concrete cube partly buried cable marker at 20' - 0" intervals; on top of the cable marker shall be inscribed "ELECTRIC CABLES".

### **7.8 LED LIGHTING FITTINGS**

#### DESCRIPTION:

Lighting fixtures shall be 4000K/ 5000K LED Complete Lighting Fixture as per design drawings and BOQ, inclusive of all screws and other additional accessories for its firm and safe installation. Operating voltage shall be 120 to 277 Vac, 60Hz and shall be 50,000 hr of rated life. Internal lighting fixtures shall have a rating of no less than IP3x while outdoor lighting shall have rating of no less than IP6x as per IEC 60529.

#### INSTALLATION:

The indoor fittings shall be fixed firmly to the ceiling surface by no less than four (4) 1" x #8 corrosion resistant screws and washers. Outdoor wall packs shall be installed 10' above the finished ground level of the power plant compound.

### **7.9 SOCKET OUTLETS (Points)**

#### DESCRIPTION:

15A Socket Outlet with and without GFCI: These duplex polarized sockets shall be the surface mounting type of non-panelled wall and the flush type on panelled walls with grounded metallic bases. The outlet shall be ivory or white plated. The receptacle for the outlet pins shall be oblong and parallel for line and neutral and semi-circular for the earth (North American type) so as to avoid reversal of polarity as per the NEC.

#### INSTALLATION:

The outlet box shall be mounted flush in the wall at a height of 18" centre from finished floor level and 6" centre from working tops and must be effectively earthed. The outlet must be fixed to the box by no less than two (2) security screws.

NOTE: The voltage supply to each outlet must be clearly and permanently marked on the wall (not on the outlet) adjacent to the outlet.

### **7.10 SWITCHES**

#### DESCRIPTION:

These shall be suitable for use on A.C. circuits and for switching LED Lighting fittings as per design drawing. They shall be the surface mounting for non- panelled walls and flush type for panelled walls. Switches rated at no less than 6A shall be for lighting circuits, and no less than 32A for air conditioning circuits, both at 240V.

#### INSTALLATION:

Unless otherwise instructed, all switches shall be positioned at a height of 4'3" centre from finished floor level, 5" from the adjacent door jamb and 16" from all finished edges and /or corners. The Architect's drawing must be checked to ensure that the position of the switched is not in conflict with door swings, and other structural limitations.

### **7.11 GROUNDING AND BONDING**

Grounding and bonding shall be done in accordance with the NEC article 250. The earth terminals of all socket outlets, and the mounting boxes shall be permanently and effectively connected to earth. All exposed non-current carrying metal parts of fittings, electrical components; equipment and the steel frame of the buildings shall be effectively bonded to earth. The earth loop impedance of all circuits shall be low enough to ensure the proper operation of all circuits' breakers. The earth continuity conductor shall be of copper, adequately sized, and bonded to the earth electrode to ensure compliance with the regulations. The earth electrode shall be 3/4" solid copper rod, or galvanized steel pipe of no less than 1" diameter, driven to a minimum of (8'-0") eight feet into the ground. Connection of the earth continuity conductor to the main switch and switchgear shall be made by means of soldered or crimped lug, spring and flat washer and bolt and nut.

### **7.12 480/240/120VOLTS TRANSFORMER**

The Station use transformer shall be the indoor, 1-Phase 75 kVA 480/240Primary Volt - 240/120 Secondary Volt Dry Type Transformer - NEMA 2 (Station Use). It shall comply with IEC 60076- 11 Dry-type Transformers.

### **7.13 LABELLING**

The Contractor shall supply and fix traffolyte or similar approved permanent tables, to indicate the function of all main switches and breakers on the main switchgear and wherever the function of such items are not obvious. Printed circuit lists shall be fixed on the inside covers of all distribution boards, to indicate the lights/points on the circuit and their location. All labels shall be fixed to their respective positions before the hand-over date. The following notice, of such durability, as would remain legible throughout the life of the installation, shall be fixed in a prominent position near the main switchgear.

## **8. TESTING**

The Contractor shall arrange for the installation to be inspected and tested by the Government Electrical Inspector and a certificate of compliance issued, by the Government Electrical Inspector, to the Client/Owner.

At the time of final inspection and test, all connections at panels and all splices, etc., must be made. All breakers must be in place, and circuits continuous from breakers to all receptacles, etc., must be connected. Each entire wiring systems must be tested free from short circuits and grounds and have an insulated resistance between conductors and ground based on maximum load not less than required by the Government Electrical Inspectorate.

In case of rejection of part or whole of the installation by the Chief Electrical Inspector of the Government Electrical Inspectorate, the Contractor shall at his own expense do any additional or remedial works to supply the any additional material necessary to obtain approval.

## **9. RATING AND CONNECTION PLATE**

Each transformer shall be provided with anodized aluminium laser engraved nameplate. Additionally, bidders shall ensure that the following attributes are indicated on the aforementioned nameplate:

1. Serial number;
2. Standard to which it is manufactured and tested;
3. Rated voltage;
4. Rated currents in A;
5. Power frequency withstand voltage in kV;
6. Continuous ambient temperature at which ratings apply in °C (40);
7. Name of the purchaser (**Property of Guyana Power & Light Inc.**)

Colours shall be permanent and free from fading. All labels and plates shall be of non-corrosive material.

## **10. SURFACE TREATMENT**

Enclosures shall be painted to provide a durable finish which offers good corrosion protection, chemical/solvent resistance, and hardness. In addition, the finish shall be highly resistant to discoloration and scratches.

## **11. DRAWINGS**

The supplier shall submit drawings for approval within 5 working days after notification of contract award.

## **12. COMPLIANCE WITH SPECIFICATION**

The Low Voltage System shall comply in all respects with the requirements of this specification. However, any minor departure from the provisions of the specification shall be disclosed at the time of tendering in the Non-Compliance Schedule in this document. (See page 15).



### **13. COMPLIANCE WITH REGULATIONS**

All the equipment shall comply in all respects with the Laws of Guyana Governing the Importation of Commercial Items and/or Goods.

The equipment and connections shall be designed and arranged to minimize the risk of fire and any damage that might be caused in the event of a fire.

### **14. QUALITY ASSURANCE, INSPECTION AND TESTING**

#### **14.1 GENERAL**

To ensure that the supply and services are in accordance with the Specification herein, with the regulations of Guyana and with relevant authorized international standards, the Proponent shall have in place suitable Quality Assurance Programmes and Procedures to ensure that all activities are being controlled and documented, as necessary.

The quality assurance arrangements shall conform to the relevant requirements of ISO 9001 or ISO 9002, as deemed appropriate by the Purchaser and the Proponent.

The systems and procedures that the Proponent will use to ensure that the supply complies with the specified requirements, shall be defined in the Proponent's Quality Plan.

The Proponent shall operate systems that implement the following:

**Hold Point** "A stage in the material procurement or workmanship process beyond which work shall not proceed without the documented approval of designated individuals or organisations."

The Purchaser's written approval is required to authorise work to progress beyond the Hold Points indicated in approved Quality Plans.

**Notification Point** "A stage in material procurement or workmanship process for which advance notice of the activity is required to facilitate witness."

If the Purchaser's representative does not attend after receiving documented notification in accordance with the agreed procedures and with the correct period of notice, then work may proceed.

#### **14.2 QUALITY ASSURANCE SYSTEM**

Unless the Proponent's Quality Assurance System has been audited and approved by the Purchaser, a Quality Assurance System shall be submitted to the Purchaser for approval within a minimum of One (1) month from the placement of order, or such other period as shall be agreed with the Purchaser. The Quality Assurance System shall provide a description of the Quality Control System for the supply and shall, unless advised otherwise, shall include, but not limited to the following details:

1. The structure of the organisation;
2. The duties and responsibilities assigned to staff to ensure quality of work;
3. The system for purchasing, taking delivery and verification of the specifications of raw materials;
4. The system for ensuring the quality of workmanship
5. The system for control of documentation;
6. The system for the retention of records; and
7. The arrangement for the Proponent's internal auditing.

### 14.3 QUALITY PLANS

The Quality Plans shall set out the activities in a logical sequence and, unless advised otherwise, shall include, but limited to the following:

1. An outline of the proposed programme sequence;
2. The duties and responsibilities assigned to staff ensuring the quality of work;
3. Hold and notification points;
4. Submission of engineering documents required by the specification;
5. The inspection of materials and components on receipt;
6. Reference to the Supplier's procedures appropriate to each activity;
7. Inspection during fabrication and assembly; and
8. Final inspection and test.

### 14.4 INSPECTION AND TESTING

The Manufacturer/Proponent shall afford the Purchaser without charge, all reasonable facilities to assure that the equipment being furnished are in accordance with the specifications herein.

The Purchaser reserves the right to reject an item of the equipment if the test results do not comply with the values specified herein.

Tests, including any retests required, shall be carried out by the Supplier at no extra charge, at the manufacturer's works.

Full details of the proposed methods of testing, including connection diagrams, shall be submitted to the Purchaser by the Supplier for approval, at least one month before testing.

All costs in connection with the testing, including any necessary re-testing, shall be borne by the Manufacturer/Proponent.

Any cost incurred by the Purchaser in connection with inspection and re-testing as a result of the failure of the Low Voltage System or any of its components under test or damage during transport or offloading shall be to the account of the Proponent.

The Proponent shall submit to the Purchaser three signed copies of the test certificates, giving the results of the tests as required. No materials shall be dispatched until the test certificates have been received by the Purchaser and the Proponent has been informed that they are acceptable.

The test certificates must show the actual values obtained from the tests, in the units used in this specification, and **not** merely confirm that the requirements have been met.

No inspection or lack of inspection or approval by the Purchaser's Representative of equipment or materials whether supplied by the Proponent or a Sub-Proponent, shall relieve the Proponent from his/her liability to complete the contracted works in accordance with the contract would exonerate him/her from any of his/her guarantees.

**15. NON-COMPLIANCE SCHEDULE**

On this schedule, the Proponent shall provide a list of non-compliance with this specification, documenting the effects that such non-compliance is likely to have on the equipment/component life span and operating characteristics. Each non-compliance shall be referred to the relevant specification clause.

Clause No.	Non-Compliance

## Form

### QUALIFICATION INFORMATION

#### 1. For individual bidders or individual members of a partnership

##### 1.1 Constitution and legal status of Bidder (*attach copy*).

License No. and its validity period to execute the Works: \_\_\_\_\_ (attach copy)

Place of registration: \_\_\_\_\_

Principal kind of business: \_\_\_\_\_

Power of Attorney issued to signatory of the Bid: (*attach*).

##### 1.2 Total volume of the Works executed for the last (2) two years in GYD:

---



---



---

##### 1.3 Experience as a prime Contractor during the last two years. The value is indicated in GYD.

No.	Project name and location	Name of Purchasers and their telephone numbers	Items of Works and Year of Completion	Value of Contract

##### 1.4 The availability of the following items of equipment to the Contractor is of substantial importance for the Works. The Bidder must respond to all request listed below:

Item of equipment	Model and year of production	Number of available items	Condition (new, good, poor)	Owned, rented (from whom?) to be purchased (from whom?)

##### 1.5 Qualifications and experience of employees proposed for the key administrative and line positions in order to execute the Contract.

Position	Full Name	Years of experience	Years of experience at similar position
Manager			
Foreman			
Quality Inspector			

1.6 Main subcontractors (when required)

Nature of Works	Value of Subcontract	Subcontractor (name, address, telephone number)	Years of experience in carrying out similar works

1.7 Presence of tax debts, of payments to Social Fund (reply and attach supporting documents).

1.8 Information on current litigation (and recent – within past 2 years) in which the Bidder involved.

Other party (ies)	Cause of dispute	Disputed amounts

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

1.10 Equipment availability must be supported by proof of ownership and or letter of commitment to lease.

**2 For a partnership (syndicate)**

2.1 Information specified in 1.1—1.8 shall be provided for each partner of the partnership (syndicate).

2.2 Information given 1.9 shall be provided by the partnership (syndicate).

2.3 Attach the power of attorney of the signatory (ies) of the Bid authorizing him or them to sign the bid on behalf of the partnership (syndicate).

2.4 Attach the Agreement between the partners of the partnership (syndicate) (to be binding on all partners) which shows that:

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

I certify the authenticity of all the above information.

\_\_\_\_\_ (Full Name)                      \_\_\_\_\_ (Position)                      \_\_\_\_\_ (Signature and Seal)

Dated on «\_\_\_\_\_» day of \_\_\_\_\_ 200\_.

**Form**

**CONTRACTOR'S BID**

Date:
IFB No:

TO: \_\_\_\_\_

*(Name and address of Employer)*

Having examined the bidding documents including Annexes and Addenda No \_\_\_\_\_ *[specify numbers]*, the receipt of which is hereby acknowledged, we offer to execute \_\_\_\_\_ *[description of works]* in accordance with the Contract conditions attached herein for the total amount of \_\_\_\_\_ GYD *[the Total Amount of Bid in Words and Figures]*.

Alternative bids (at the Employer's request):

Also we offer to execute the works pursuant to alternative bids for the amount of \_\_\_\_\_ GYD,

*(add or reduce to basic bid price)*

and we declare that:

- (a) We, including all subcontractors, regarding any part of the Contract, in accordance with these bidding documents, have no conflict of interests pursuant to sub-clause 3 (i) of the Instruction to Bidders;
- (b) We, including all subcontractors, regarding any part of the Contract, in accordance with these bidding documents, have not been declared by the [National Procurement and Tender Administration] to be ineligible, or are not ineligible pursuant to laws of Guyana.

If our Bid is accepted, we shall furnish the Performance Security for the amount of \_\_\_\_\_ in order to execute the Contract properly and within the dates specified in the bidding documents.

If our bid is accepted we request advance payment in the amount of [ ... ] thousand GYD for proper performance of the contract. From our part, we undertake to furnish a bank guarantee for the advance payment in the above amount.

We hereby confirm that this bid shall be valid within \_\_\_\_\_ days of the date established from the bid opening date, and it shall remain binding on before the expiry of indicated period.

Prior to preparation and execution of a formal Contract, this Bid together with your written confirmation of its acceptance shall be equivalent to conclusion of a Contract to be binding upon both parties.

We understand that you are not required to accept the lowest or any bid you receive.

Dated the \_\_\_\_\_ day of \_\_\_\_\_ 200\_\_.

Duly authorized to sign the Bid for and on behalf of \_\_\_\_\_ *(name of Contractor )*

\_\_\_\_\_  
*(FULL NAME))*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Signature and Seal)*

**Form**

**PUBLIC PROCUREMENT CONTRACT FOR WORKS  
BETWEEN THE EMPLOYER AND CONTRACTOR**

**CONTRACT**

This Contract made the \_\_\_\_\_ day of \_\_\_\_\_ two thousand and \_\_\_\_\_  
(date) (month)

**BETWEEN** the Employer (name and address of organization)

\_\_\_\_\_ and the Contractor (name and address of organization)

\_\_\_\_\_ for execution of the Works (name and location of Works)

In view of that the Employer wishes to have the Contractor execute \_\_\_\_\_  
(name of contract)

(hereinafter called the Works) and the Employer has accepted the Contractor' Bid for the execution and completion of the Works, and for correction of any defects therein.

THIS CONTRACT WITNESSES the following:

1. The words and expressions in this Contract have the same meanings as they do in the General Conditions of Contract.
2. Below listed documents shall form this Contract and shall be deemed the integral part of it, namely:
  1. Contract,
  2. Letter of Acceptance,
  3. Contractor's Bid,
  4. Special Conditions of Contract,
  5. General Conditions of Contract,
  6. Technical Specifications,
  7. Drawings,
  8. Priced Bill of Quantities, and priced Consumable Materials ; and,
  9. Other documents included in the Contract Documents:

\_\_\_\_\_ (specify additional documents which the Purchaser is intended to included in the Contract Documents according to the General Conditions of Contract)

3. Taking into account the payments to be made by the Employer to the Contractor in accordance with the above-stated, the Contractor shall enter into the Contract with the Purchaser to execute and complete the Works, and to correct any defect therein in full accordance with conditions of the Contract.

4. The Purchaser shall pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

**EMPLOYER**

\_\_\_\_\_  
*(signature and seal)*

\_\_\_\_\_  
*(name, last name, title)*

**CONTRACTOR**

\_\_\_\_\_  
*(signature and seal)*

\_\_\_\_\_  
*(name, last name, title)*



Contract No:	Dated:
Purchaser(name of organization):	
Contractor(name of organization):	
Amount of Work order GYD:	
Agreed(signature of the person agreed with Work order):	
Date of agreement:	

**WORK ORDER No. \_\_\_\_\_**

(to be made up by the Purchaser for any change against decrease or increase of items of works)

No	Name of item and consumable materials	Unit	Quantity	Unit price in Bill of Quantities	Unit price offered	Value of change	Contractual value	Amount of increase (+) decrease (-)
I	Use of unit prices							
II	Consumable materials							

Signature of Contractor \_\_\_\_\_

Signature of Engineer \_\_\_\_\_

**SETTLEMENT**

payable contract No. \_\_\_\_\_ dated \_\_\_\_\_ 201 \_\_\_\_\_

(in GYD)

No.	Types of settlement	Amount
1	Initial Contract Price	
2	Total amount of Work orders	
3	Total Contract Price - total	
4	Works done for the previous period	
5	Works done for the last month	
6	Works done for the previous period according to Work orders	
7	Works done for the last month according to Work orders	
8	Works done from the Start Date – total	
9	Advance payment made	
10	Advance payments retained for repayment for the previous period	
11	Advance payments to be retained for repayment for the last month	
12	10% retained from the volumes of works done for the previous period	
13	10% to be retained from the volumes of works for the last month	
14	Other retention	
15	Total to be retained	
16	Total to be paid	
17	The remaining amount by the Completion Date	

The Employer

\_\_\_\_\_ Seal

\_\_\_\_\_  
(signature, full name, title)

the Contractor

\_\_\_\_\_ Seal

\_\_\_\_\_  
(signature, full name, title)

## Form

### **Bid Security** **(Bank guarantee)**

Whereas \_\_\_\_\_ [*name of Bidder*] (hereinafter called "the Bidder") is ready to submit his bid dated [*date of bid submission*] for the execution of [*description of works*] (hereinafter called "the Bid"),

KNOW ALL PEOPLE that WE \_\_\_\_\_ [*name of bank*] from \_\_\_\_\_ [*name of country*] having our registered office at the address \_\_\_\_\_ [*address of bank*], (hereinafter called "the Bank"), are bound to \_\_\_\_\_ [*name of Employer*] (hereinafter called "the Employer") for the amount of \_\_\_\_\_ by which the payment shall be made in whole and on time to the indicated Purchaser; and the Bank is bound with these obligations on behalf of its name, its successors and authorized. This is to confirm that the license issued to the Bank shall provide for activity on issuance of the security, and the person (s) signing this security is entitled to act on behalf of the Bank, and if the approval of Board of Directors, or of General Stockholders Meeting is required, then it is already received, and there is no other approval required.

THE CONDITIONS of this obligation are as follows:

1. If the Bidder:
  - (a) withdraws his Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
  - (b) rejects the adjustment of bid price pursuant to Clause 27.
  
2. If the Bidder, having received a notice of that his Bid is accepted by the Employer, during the validity period of that bid:
  - (a) fails or rejects to sign the Contract, at the request; or
  - (b) fails or rejects to furnish the Performance Security in accordance with the Instructions to Bidders;

We undertake to pay the Employer the above sum upon receipt of his first written request, without needing the Employer to show grounds or reasons of that request, provided that the sum requested by the Purchaser is due to him because of the occurrence of one or both conditions, specifying the condition (s) occurred.

This security shall remain valid during \_\_\_\_\_ days inclusive following the expiry of the Bid validity period, and any request in respect thereof should reach the Bank not later than the above date.

\_\_\_\_\_  
(Full name of Bank's representative) (Title) (Signature and seal)  
Dated on \_\_\_\_ day of \_\_\_\_\_ 201\_\_.

Address of the Bank issued the guarantee: \_\_\_\_\_



**Form**

**Bank Guarantee for Advance Payment**

TO \_\_\_\_\_  
[Name Employer]  
[Name of Contract] \_\_\_\_\_

We, \_\_\_\_\_ [name of Bank] in accordance with the conditions of Contract which provide for advance payment (*name and address of the Contractor*), and whereas the Contractor has undertaken to provide you a Bank guarantee for advance payment to the Employer.

THEREFORE WE hereby affirm that we are the Guarantors, and are responsible to you on behalf of the Contractor to a total sum \_\_\_\_\_ GYD (*amount of guarantee in figures and words*), and we undertake to pay you on you first request and without objection on our part, and without the preliminary address to the Contractor, any sum or sums within the above limits. We also agree that no alteration or addition in the terms of Contract which is subject to implementation, or any other contract documents which may be made by the Purchaser and the Contractor shall release us from obligations under the guarantee, and we hereby waive any notice of such alteration, or addition. We confirm that the license issued to the Bank shall provide for activity on issuance of a bank guarantee, and the person signing the guarantee is entitled to act on behalf of the Bank, and if the approval of Board of Directors or of General Stockholders Meeting is required, then it is already received, and there is no other approval required.

This guarantee shall be valid and remain in force from the date of advance payment received by the Contractor under the Contract, and until the date when the Employer receives a full compensation of the relevant amount of Advance Payment.

The Advance Payment referred to above must be received by the Contractor in its account number \_\_\_\_\_ [insert account number] at \_\_\_\_\_ [insert name and address of Bank].

The maximum amount of this guarantee shall be progressively reduced by the amount of the Advance Payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the Interim Payment Certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the \_\_\_\_\_ [insert date], whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

\_\_\_\_\_  
(Full name of Bank's representative)                      (Title)                      (Signature and seal)

Dated on \_\_\_\_\_ day of \_\_\_\_\_ 201\_\_.

Address of the Bank issued the guarantee: \_\_\_\_\_

**Form**

**Letter of Acceptance**

(letterhead paper of Employer)

\_\_\_\_\_ (date)

To: \_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

This is to notify you that your bid dated the \_\_\_\_\_ day of \_\_\_\_\_ 201\_\_, for the execution of \_\_\_\_\_ (description of works) to the total sum of \_\_\_\_\_

\_\_\_\_\_  
(Amount in Figures and Words)

as amended and modified in accordance with the Instructions to Bidders is hereby accepted by our organization.

At the same time, we are sending you the Form of Contract and requesting you, in accordance with Clause 32.2 of the Instruction to Bidders, during 7 (seven) days to sign and date the Form of Contract, and return it at our address. Along with the signed Contract, we request you to furnish us, pursuant to ITB Clause 33, with the Performance Security.

You hereby instructed to start the Works pursuant to the Contract conditions.

Name of organization \_\_\_\_\_

Full name and Title \_\_\_\_\_

Signature of Authorized Representative \_\_\_\_\_

Annex: the Contract

**Form  
Power of attorney**

TO: *[name of Employer]*

WHEREAS \_\_\_\_\_ *[name of Contractor]*, who is the Contractor for the execution of Works *[description of works]*.

do hereby authorize \_\_\_\_\_ *[name and address of Contractor's Representative]* to submit the Bid, and subsequently negotiate with you, and sign the Contract based on the *Invitation for Bids* which we hereby extend our full guarantees for the execution of Works based the *Invitation for Bids*.

\_\_\_\_\_  
*[Full name, title, signature for and on behalf of Contractor]*

Dated on \_\_\_\_\_ day of \_\_\_\_\_ 200\_\_\_\_. ....

(date)

(seal)

\_\_\_\_\_  
*Note:* The power of attorney must be drafted on a letterhead paper of the Contractor, and signed by a competent person authorized by the Contractor. The Bidder shall include the power of attorney in its Bid.

<b>EVALUATION CRITERIA</b>			
<b>NON-FINANCIAL ASSESSMENT</b>	<b>COMPULSORY REQUIREMENT</b>	<b>RESPONSIVE</b>	
		<b>Yes</b>	<b>No</b>
1	Submission of Valid Company Registration		
	Submission of Valid Certificate of Compliance –GRA		
	Submission of Valid Certificate of Compliances –NIS		
	Completion of Form of Tender (signed)		
	Audited Financial Statement from a Registered Chartered Accountant/Accounting Firm		
	Record of Past Experience or Similar Works		
	Submit statement of any or no Litigation against company		
	Bid Security in the amount required		
	List of Current ongoing Projects and Status		

Points will be award to bidders. The bidder with the highest points will be awarded the project. The points are split between X-points, tendered price and Y-points, other adequacies equally, as follows:

**X-Points (60 points):**

Lowest Bid (Tender Price) - 60 Points

**Y- Points (40 points)**

Financial Adequacy - 10 points

Technical Adequacy - 20 points

Managerial Adequacy- 10 points

**X-points**

***Lowest Tendered Price (Max – 60 points)***

The X-points is calculated using the following ;



$$X = \frac{\text{Lowest Tendered Price}}{\text{Tendered Price}} \times 60$$

**Y-points**

***Financial Adequacy (Max -10 points):***

***Table No.1 + Table No.2 = 10 points***

The financial adequacy is composed of two parts. The first being based on the financial resources, available to the bidder.

<b>Credit available as percentage of bid price</b>	<b>Points gained(Max 5 Points)</b>
>50%	5
40-50	4
30-40	3
20-30	2
<20	1

**Table 1 – Financial assessment based on credit available**

<b>Value of outstanding works as percentage of average annual turnover in last 3 years.</b>	<b>Points gained(Max 10 Points)</b>
>50%	1
40-50	2
30-40	3
20-30	4
<20	5

**Table 2– Financial assessment based value of outstanding work.**

**A penalty of immediate rejection of a proposal or termination of the contract will be applied upon discovery of misrepresentation of information.**

In addition, the bidder must include audited financial statements for the last three fiscal years and also evidence of access to funds stated.

The Contractor should provide proof in the following forms”

1. Bank Statement (s)
2. Letter of Credit (L/C)
3. Bank Reference
4. Any other evidence in support of funding

**Technical Adequacy (Max – 20points)**

**Equipment**

Equipment	Total Points = 10	
	Owned (100%)	Rental (50%)
Excavator	4	2
Skid Steer	2	1
Dump Truck	2	1
Concrete Mixer Drum	1	0.5
Plate Compactor	1	0.5

**Table 3 – Points to be gained based on Equipment**

*Note: Contractors who own machinery/equipment, must provide affidavit of Ownership/registration.*

*Contractors, who lease machinery and equipment, must provide proof of access to the equipment/machinery and attached certificate of registration.*

**Personnel**

Personnel	Minimum Qualification and Experience(Total Points = 10)	Qualification and Experience	
		5 yrs and over	Below 5 yrs
Civil Engineer	Civil Engineering degree from recognized University and 5 years experience in similar capacity.	4	2
Foreman	Ordinary Technical Diploma in technology plus 5 years experience.	3	1.5
Excavator operator	Certificate in operation of heavy duty machines plus 5 years experience.	2	1
Truck Driver	Certificate in operation of heavy duty machines plus 5 years experience.	1	0.5

**Table 4 – Points to be gained based on quality of personnel.**

*Please note that Curriculum Vitae(s) of Contractor Personnel listed in table must be provided. Certified copies of certificates must be provided for evaluation.*

**Managerial Adequacy (Max – 10 Points)**

**Methodology (Total 5 points)**

Technical Proposal	Points (Total = 5 points)	
	Completeness	Partial ally complete
Method Statement	2.5	1
Work Programme	2.5	1

The Method Statement should include:

1. A general understanding of work.
2. Procurement method
3. Mobilization & demobilization complete

The Work Programme should include:

1. Realistic Gantt Chart(s)
2. Drawings(s) when necessary

***Experience (5 Points)***

Item	Points
Minimum 3 projects of similar nature in the last 5 years	5
Minimum 2 projects of similar nature in the last 5 years	3
Minimum 1 project of similar nature in the last 2years	2

Bidders must submit copies of certificate of completion/contact information etc., for list of projects completed from the relevant agencies

**Table 5 – Points to be assigned on managerial adequacy**

***Penalties***

Penalty points will be deducted for a bidder that in the past had contracts terminated by GPL based on non-performance. The deductibles are 5 points for every contract terminated.

***Minimum Thresholds***

Bidders failing to meet the following criteria will not be evaluated, as they would be deemed unqualified for the works.

1. Minimum X-points of 30
2. Minimum Y-points of 28

**NOTES ON EVALUATION**

- (a) The Contract would be awarded to the Bidder whose bid is determined to be substantially Responsive to the Bid Document and who has offered the lowest evaluated Bid Price.

### **Minimum Thresholds**

As per the Evaluation Criteria, Section (b) under the “Financial Assessment,” A bidder must have at least 70% as a minimum requirement and at least 50% of the points in each category of the Non-Financial Assessment before being considered for the Financial Assessment.

As per the Evaluation Criteria, Section (c) under the “Financial Assessment the Bidder evaluated as being substantially responsive and submitted the lowest bid price would be therefore recommended for the award.

### **Detailed Bid Evaluation**

The evaluation criteria are divided into non-financial and financial assessments. A Bidder must first meet the minimum non-financial requirement before being considered for the financial assessment. The contract would be awarded to the bidder whose bid is determined to be substantially responsive to the bid document and who has offered the lowest evaluated bid price. each category of the Non-Financial Assessment before being considered for the Financial Assessment.

**A penalty of immediate rejection of a bid or termination of contract will be applied upon discovery of misrepresentation of information**

**A penalty of 0.5% of the value for every completed calendar day that the work exceeds the promised delivery time, to a maximum of 5% of the value of the contract.**

**Law of Guyana: Procurement Act 2003**

Section 39 – Subsection 6 (b)

- (a) The procuring entity may grant a margin of preference not exceeding ten percent to tenders submitted by domestic contractors or for the benefit of tenders for domestically produced goods, provided that such preference is specified in the tender documents. If the lowest evaluated tender was submitted by a foreign tenderer, the evaluating committee will apply the margin of preference, the lowest evaluated tender was submitted by a domestic tenderer, such tenderer shall be awarded the contract. Otherwise, the foreign tenderer who has submitted the lowest evaluated tender shall be awarded the contract.